THE EFFECT OF FOREIGN DIRECT INVESTMENT

ON THE ECONOMY OF THE IRISH REPUBLIC

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Abstract

Since the mid-fifties, Ireland has drastically altered her trade policy in favour of freer trade. This has been accompanied by a massive programme of incentives to attract Foreign Direct Investment (FDI). This thesis documents the magnitude and structural composition of FDI. A detailed analysis is made of the characteristics of foreign owned projects, their impact on the development of the domestic sector and on the external trade of the host country. The share of the foreign firms' value added which remains in Ireland (Retained Value) is calculated. This is supplemented by two methods of cost benefit analysis; Domestic Resource Cost analysis, which values all costs and benefits in international price equivalents and a calculation of the net return on the input of Government funds.

The major benefits of FDI are the creation of new employment (over 40,000 jobs up to 1972) and the increase in industrial exports (46% of manufactured exports were from foreign owned firms in 1970). Other secondary benefits have been small but FDI has contributed positively to the Irish balance of payments. Costs have arisen from payment of subsidies and constraints placed on the growth of the domestic sector by the competition for resources. The introduction of a large foreign sector has resulted in dualistic development and the weakness of linkage effects makes this endemic.

Policy conclusions are that a more formal and structural system of appraisal, properly valuing benefits should be implemented. The inflow of FDI would be somewhat reduced and resources should be devoted to developing the domestic sector, through both public and private enterprise. FDI should be regarded as a 'bridging loan' for those sectors where mobilising domestic resources is difficult. More effort should be made to exploit the benefits of FDI by increased selectivity and closer integration with the domestic economy.

Glossary

AFF	An Foras Forbartha (The National Institute for Physical Planning and Construction Research)
AFT	An Foras Tionscal (The Grants Board)
AIFTA	Anglo-Irish Free Trade Area
AnCo	An Chomhairle Oiliuna (The Industrial Training Authority)
CSO	Central Statistics Office
DAs	Designated Areas
DC	Domestic Cost
DRC	Domestic Resource Costs
EEC	European Economic Communities
ERP	Effective Rate of Protection
FDI	Foreign Direct Investment
GDCF	Gross Domestic Capital Formation
GNP	Gross National Product
IB	Internal Balance Model of Balance of Payments Impact
IDA	Industrial Development Authority
LDC	Less Developed Country
LRB	Long Run Balance Model of Balance of Payments Impact
MEC	Marginal Efficiency of Capital
MNE	Multinational Enterprise
NDA	Non-designated Area
NET	Nitrigin Eireann Teoranta (State owned Nitrogeneous Fertiliser Company)
NVA	National Value Added

OECD	Organisation for Economic Co-operation and Development
R & D	Research and Development
RV	Retained Value
SFADCo	Shannon Free Airport Development Company
SIC	Standard Industrial Classification
SWR	Shadow Wage Rate
T of T	Terms of Trade

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Introduction

Objectives of the Enquiry

The purpose of this thesis is to identify and where possible, to quantify the effect of Foreign Direct Investment (FDI) in manufacturing industry on the economy of the Republic of Ireland. The study therefore involves the examination of certain key areas of the Irish economy and the impact of FDI on such areas. The ultimate aim is to estimate the change in Irish real income brought about by foreign investment and the operations of foreign-owned firms.

Irish development policy has relied heavily on achieving industrial growth through attracting foreign-owned industrial projects to Ireland. Substantial incentives are available to such projects including an extensive scheme of non-repayable cash grants. In view of this development policy, an analysis of effects on the economy is of pressing interest.

The analysis of FDI requires a framework rather different from that needed to analyse domestic investment. Foreign ownership, with its resultant effects on the distribution of gains from production and its consequences for the behaviour of firms, must be analysed within the framework of the theory of foreign direct

investment and the multinational firm. The derivation of methodology is the subject of the remainder of this Introduction.

The Theory of Foreign Direct Investment and the Formulation of Methodology

Foreign Investment is the act of establishing income earning assets in a country other than the country of ownership of the firm (or individual) carrying out the investment. This thesis is concerned only with direct foreign investment rather than portfolio foreign investment, the latter being the purchase of foreign securities which does not entail control of the enterprise whose shares are purchased. The major conduit of FDI is the multi-national enterprise (MNE), defined simply as a firm which owns or controls income-generating assets in more than one country.[1] The concern of the thesis is the aggregate effect on the host economy of all investments made by MNEs in recent years. Consequently the terminology "Foreign Direct Investment" is most frequently used. This does not mean however that intra-firm decision variables can be ignored and several sections of the thesis are explicitly concerned with this aspect of FDI.[2]

The standard theory of international trade, the Heckscher-Ohlin-Stolper-Samuelson approach, was not designed to account for capital movements and such movements were first explained in a monetary framework in terms of inter-

national interest rate differentials. This is a more satisfactory approach to portfolio investment, where control of the foreign assets is not involved and where capital is transferred in a pure form rather than to FDI which involves the transfer of a package of resources (capital, skills, technology).

The first theoretical analysis of the possible effects of FDI on the host economy was that of MacDougall (1960).[3] FDI was viewed as an addition to the capital stock of the host country and the analytical device used was the marginal physical product of capital schedule. This suggests that foreign capital is homogeneous with host country capital and that the transferred resource consists of a single factor - both assumptions which the modern theory would refute. As a guide for methodology, MacDougall's contribution suggests that the areas of benefit and cost to the host country from FDI will be from taxes and subsidies on foreign capital, external economies and changes in the distribution of income (for a move along with marginal physical product curve with an inflow of foreign capital will distribute income away from domestic capitalists towards domestic labour). MacDougall's analysis also allows for improvements in the technology of production brought about by foreign investment. In the analysis there must be some mechanism of transmission of such know-how to host country factors if a gain is to result.[4]

A major advance in the theory of direct investment came with the Hymer/Kindleberger "monopolistic advantages" theory. International investment was placed firmly within the realm of the theory of industrial organisation and market structure.[5] The basis of the theory is that any international investor (MNE) must possess certain monopolistic advantages to be able to compete with domestic firms in the host market. Such advantages can be acquired in both the factor and product market. Technology and managerial expertise have long been considered as factors of production and the ability to draw on knowledge (including the ability to innovate and adapt quickly) is vital to modern production. Such advantages can be compounded by the product market, as we shall see.

The theory must go on to show either that the advantages, when divested from production are non marketable or that the market value of such advantages is far below the net advantages of direct investment. The producer of knowledge in the modern world economy is rewarded by a temporary monopoly position and although the knowledge acquires the status of a public good (i.e. it can be exploited at very low marginal cost) within the inventing firm, outsiders are faced with acquisition costs.[6] The motivation for direct investment is postulated to be exploitation of this temporary monopoly position. The possession of such a monopoly position is a necessary condition for direct foreign investment to take place.

If the return to such a "patent" depends to some extent on local production and the holder is a profit maximiser, then this is a sufficient condition for FDI to take place. The return may depend on local production (and on the control of that production) if there is no market in existence for the particular type of knowledge being exploited. If such a market does exist, it is unlikely that a market value, representing an approximation to the capitalised future return on the "patent", would correctly assess the worth of the advantage to the firm, given the inter-dependency of rents which is a result of the integrated nature of modern production. This is particularly true if the advantage is in managerial expertise; which must be exercised in an organisational setting, or in a technological innovation related to on-stream production.

In many cases, the general position in the factor market is compounded by differentiation in the product market. Foreign direct investment is encouraged by the existence of two sets of entry barriers to the product market of the "host" country.[7] The first barrier concerns national markets. Barriers to servicing national markets through exports - such as tariffs, quotas and subsidies to domestic producers, encourage foreign firms to establish production facilities in the protected market. Such barriers enhance a locational advantage to produce in the host country. The second barrier is a relative one - it concerns the inability of indigenous

firms to produce a competitive product. Thus an "ownership effect" exists independently of a "location effect". This ownership effect arises through the monopolistic advantage of the MNE or because of economies of size or integration. In the same location foreign firms enjoy a competitive edge and they can more easily overcome "the costs of foreigners" where such conditions apply.

All the above discussion is concerned with "horizontal" direct investments - where the foreign firm carries out the same stage of production abroad as at home. However "vertical" foreign investment is also a prevalent feature of the operations of MNEs. Such investment is intended to give control over "downstream" raw material or other factor input or of a forward stage of production.[8] The avoidance of uncertainty (given the absence of future markets) and the creation of barriers to entry are the major motivating factors here.

This monopolistic advantages theory has been fruitful in stimulating the development of academic research. Horst[9] has shown that it provides a framework for analysing the firm's choice between exports, licensing and direct investment as the best means of servicing a foreign market. Similarly, rival models of the investment behaviour of MNEs have been postulated, which will have important repercussions on the host economy. Barlow and Wender[10] and Penrose[11] have suggested a "Gambler's

Earnings Hypothesis" of foreign investment behaviour. In essence, the hypothesis suggests that the MNE will reinvest profits, like a compulsive gambler, until a real killing is made, at which point a lump sum gain will be transferred across the exchanges to the source country. Conversely, Stevens suggests that the investment and dividend (remittance) behaviour of MNEs is governed by exactly the same considerations as any other firm and that global profit maximisation is the norm.[12]

The Product Cycle Hypothesis of Raymond Vernon is a further development.[13] The hypothesis suggests that the location behaviour of the MNE will vary according to the development of the product and the technology under which it is produced. Vernon suggests that for two reasons the pressure to innovate is greatest in the U.S.A. Firstly, the very high labour costs induce entrepreneurs to substitute new equipment and techniques for high cost labour. Secondly, because of high income levels, new wants first appear in the U.S.A. and because the transmission of such wants to entrepreneurs is a function of geographical proximity, these demands will first be met by U.S. firms. Consequently U.S. firms will first create new products. However, as production becomes more standardised and techniques more stable, the producers will be attracted by emerging markets elsewhere and FDI will occur because of cost advantages (and perhaps demand stimulating advantages) of being present in a market. In the final,

"mature product" stage technology is stabilised and the main determinant of location is labour cost (the product is by now much more labour intensive than in the earlier stages) and the investments will be located where low cost labour can be obtained. This may mean that production will be split into separate stages, each with a different location determinant.

As a guide for the methodology for the investigation of the effects of FDI on the host economy, the above theory is most illuminating. Attention is directed to the existence and means of exploiting monopolistic advantages and so to the industrial structure of the host country and to the factor and product market relationships displayed there. In particular, the fields of technological gain and loss (diffusion and costs), efficiency gains, managerial and organisational improvement, external costs and benefits, losses from monopolistic exploitation and effects on the internal and external distribution of income, are highlighted. Attention is also focused on the balance of payments and on real incomes (and potential income).

However, other areas of economic theory are of great importance in the formulation of methodology. International trade theory and the economics of industrial structure are obviously relevant. A further area is that of development economics. Many of the central issues of development

economics are involved in assessing the impact of FDI on: savings, employment growth and distribution. Many of the concepts of development economics are of use in illuminating the impact of FDI; dualistic development, linkage effects and other "growth stimuli" are such concepts.

One approach to FDI which is useful in categorising the effects on the host is Corden's "enclave" approach.[14] The foreign firms are regarded as constituting an "enclave" which can for analytical purposes be considered as a separate "economy". Corden suggests that the relations between this "economy" and the host economy are vital. The MNE-rest of the world relationships are unimportant compared to enclave-host relations. Given this, Corden suggests that four major connecting relationships are to be analysed: (1) trade relations both ways - the two way movement of goods, (2) factor movements, which will normally be only one way, from the host to the enclave, (3) transfers (taxes and subsidies) which can go both ways, (4) externalities, both positive and negative, which can be described as unpriced services. The approach suggests that welfare gains and losses can be described in standard "gains from trade" terms between host and enclave (there is thus always a potential gain from the MNE), plus gains from employing labour at a wage greater than social opportunity cost.

+ Here Corden means that the relationship (host country to MNE) is a non zero sum game.

Several areas of economic theory can thus be brought together to provide the methodological framework for the analysis of the effects of FDI on a host country such as Ireland. An integrated framework is adopted here. The structure of the thesis with attendant methodology is now outlined.

Chapter I provides the essential background by analysing the structure of the Irish economy. Chapter II outlines in detail the development of Irish policy towards FDI and provides a review of the development strategy of the Irish Republic. The following Chapter provides a quantification of the amount of FDI in Ireland in recent years. It goes on to categorise foreign projects in various ways in order to provide an overall picture of the nature of recent FDI. The industrial structure of FDI is analysed using concepts derived from the theory of industrial organisation and the theories of FDI related to this approach. The Chapter quantifies and evaluates the importance of the foreign owned sector of Irish industry.

The first part of Chapter IV is largely concerned with tariffs and trade, and so it relies heavily on international trade theory, the theory of effective protection and the theory of the MNE, particularly as regards methods of market servicing. In the latter part of the Chapter, the theory of the MNE is used in analysing the economic functions performed by the Irish subsidiary of

the foreign owned firms. The foreign owned sector of Irish industry is analysed in an attempt to discover if its existence has contributed to dualistic development of the economy. The "enclave approach" referred to above, is further refined by the calculation of "Retained Value" which is the proportion of the output of foreign owned firms accruing to Irish factors. This Chapter includes a re-appraisal of the analysis of FDI carried out by Cooper and Whelan;[15] a task which is continued in Chapter VII.

Chapter V evaluates the impact of FDI on the productive efficiency of the host economy, both at the micro and macro level. The Chapter analyses the comparative efficiency of the foreign owned and the domestically owned sectors. The strength of the mechanisms of transmission of efficiency from the foreign to the domestic sector are evaluated. This Chapter also focuses on the capital intensity of foreign owned projects and investigates the technological impact of foreign direct investment.

The relationship between FDI and the host country's external balance of payments is brought out in Chapter VI, which relies on an analytical model derived originally from the analysis of project appraisal in LDCs and from international trade theory. The Chapter also introduces a model relevant for the discussion of external adjustment where FDI is a major influence in the domestic economy.

Chapters VI and VII utilise a system of shadow pricing, relying on values given by international trading relationships, in order to define a system which more closely reflects social valuations.

Chapter VII represents an attempt to organise the effects of FDI into a coherent social cost-benefit framework, and two such schemes are suggested. One relies on a technique of appraisal dependent on international price valuations, the other expresses net benefit per £ of public investment. This Chapter relies on recent advances made in the field of cost benefit analysis, particularly as applied to LDCs.

The conclusion, Chapter VIII, attempts to codify the areas of impact

There are three initial problems of methodology which should be pointed out, two general ones and the third a problem peculiar to the analysis of FDI.

(1) Methodology must be contained by data deficiencies. Lack of data, here as elsewhere, causes the utilisation of second-best and truncated methods. An example of this arises in Chapters VI and VII, where the analysis could be carried out for one year only.

(2) The analyst is faced with the problem of isolating the effects of FDI from other changes occuring in the economy. The identification of causality is a perennial problem of economic analysis. Theory can, as above, direct

attention to the possible direction of causality but then the skills of the applied economist must take over. Thus methodology must steer a course between partial equilibrium analysis, where too much may be held constant, and general equilibrium analysis where all but the most trivial effects may be nullified.

(3) The problem peculiar to (or perhaps most acute in) the analysis of FDI is the "alternative position" assumption. This assumption is addressed to the question of the state of the economy if the particular foreign investment had not taken place. Any analysis is sensitive to the choice of the alternative against which to set the "with-FDI" situation - witness the Reddaway and Hufbauer/Adler reports.[16] General theory can be of little help here. An analysis of the host economy is an essential pre-requisite to an appropriate answer. This present work, in general makes the assumption that there has been little replacement of domestic Irish owned industrial activity and that FDI has represented a net addition to Irish resources. However, in many places, the consequences of taking a different view are made explicit and several quantitative results are subjected to sensitivity analysis, varying the alternative position. The insurmountable fact is that, for the sake of logical analysis, this assumption must be spelled out and at all times the consequences of taking one alternative position rather than another must be made explicit. In relation to this work, the hope is that the assumptions

chosen are the most realistic ones given the conditions of the Irish economy and in particular the constraints on its development.

The first Chapter provides a brief introduction to the Irish economy as a prelude to the main body of analysis, contained in the following six Chapters.

Introduction

Notes and References

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   For the case of Ireland, see Lorraine Donaldson Development Planning in Ireland, Praeger, New York.

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4. MacDougall op. cit. Section VI.

5. Stephen H. Hymer (1960) International Operations of National Firms - A study of Direct Foreign Investment, Unpublished Ph.D. dissertation M.I.T. also C.P. Kindleberger (1969) American Business Abroad, Yale U.P.

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16. W.B. Reddaway et al (1967 and 1968) The effects of U.S. direct investment overseas, Cambridge U.P. G.C. Hufbauer and M. Adler (1968) Overseas Manufacturing Investment and the Balance of Payments, U.S. Treasury Dept. Washington.

Chapter I: The structure of the Irish economy

The contribution of Foreign Direct Investment (FDI) depends very much on the economic environment in which it operates. The economic features of the country such as the size of its population, the existing sectoral distribution of economic activity, the degree of openness of the economy and the general economic climate, all have a bearing on the effectiveness of FDI. The purpose of this chapter is to describe the Irish economic structure. This will provide the necessary background for an analysis of the effects of FDI.

A fundamental factor in any discussion of the Irish economy is its size. Ireland is a small country in virtually every sense. The area of the state is 27,136 square miles (70,282 square km) and its total population in 1971 was 2,971,230.[1] A comparison of Ireland's population with that of the other EEC countries also attests to its relatively small size (Table 1.1)

The other main feature is its relatively low level of development. Ireland is not classed as a less developed country (LDC) in the U.N. "league table". Indeed, judged by its per capita income (1971) of £ 1532, Ireland ranks well above the international poverty line. However, the country displays all the characteristics of an economy at an intermediate stage of development, if not those of an LDC. The high rate of unemployment, net emigration,

relatively high birth rate and the high degree of dependence on agriculture and the services sector are all characteristic features of LDC's also exhibited by Ireland.

The data in Table 1.1 provide further evidence of the low level of development of Ireland compared to her EEC partners. Ireland is the poorest member of the EEC as measured by GNP per capita, which is the most frequently employed, although not the best, yardstick of development. The other social indicators presented in Table 1.1 also emphasise this point. The Irish employment structure is typical of an LDC. A high proportion of the labour force is dependent on agriculture and the services sector. The dependence on the services sector is a result of the large Irish tourist industry. Much more important is the high level of unemployment in Ireland. The Irish unemployment rate is the highest of all EEC countries. A high proportion of consumption expenditure is accounted for by necessities. That Ireland is nowhere near a mass consumption society is shown by the low level of expenditure on such items as cars and telephones. Finally, despite the large proportion claimed by education (line 12), Irish expenditure on the social services as a percentage of national income is the lowest in the EEC.

Table 1.1 Ireland Compared with other EEC countries 1972

Item and Units	IRELAND	U.K.	ITALY	BELGIUM	DENMARK	OVERALL EEC
1. Population (millions)	2.9	55.7	53.9	9.7	4.9	253.2
2. GNP per head ($)	1532	2421	1867	2936	3456	2736
3. Standard of Living: Food, beverages and tobacco as % total expenditure	47.7	34.6	42.9	31.1	-	
4. Private Consumption per head ($)	1040	1510	1200	1810	2080	-
5. Gross Fixed Investment % GNP (1966-70 Average)	21.6	18.6	19.8	21.2	24.6	-

Table 1.1 Continued:

Other Social and Economic Indications	IRELAND	U.K.	ITALY	BELGIUM	DENMARK	OVERALL EEC
6. Live births per 1,000 population	22.8	16.3	17.4	14.8	-	-
7. Deaths per 1,000 population	10.6	11.6	9.6	12.4	9.9	10.9
8. Private cars per 1,000 population	133	215	190	213	218	216
9. Telephones per 1,000 population	106	267	171	211	339	216
10. Doctors per 1,000 inhabitants	1.09	1.18	1.79	1.54	1.46	-
11. Expenditure on Education % of GNP 1969	4.15	4.97	5.80	4.97	6.34	
12. Number at School and University as % of 5 - 24 age group	68.2	63.0	57.3	61.7	-	-
13. Social Expenditure as % of National Income (1966)	12.7	15.9	19.3	20.8	16.7	18.9

Table 1.1 Continued:

Employment Data	IRELAND	U.K.	ITALY	BELGIUM	DENMARK	OVERALL EEC
14. Labour Force as % Population	38.0	45.1	36.4	41.2	47.7	41.2
15. Unemployment as % Labour Force	6.0	2.9	3.2	2.0	1.2	2.1
16. Sectoral Labour Force % :						
Agriculture	26.5	2.7	19.5	4.4	10.9	10.2
Industry	30.9	45.7	44.1	44.3	37.6	44.6
Services	42.6	51.6	36.4	51.3	51.5	45.2

Sources: Report on the Social Situations in the Community 1972
EEC Commission
Economic Survey - Ireland OECD March 1973

A clear picture of the low level of development of Ireland is obtained by comparing her income level with that of other OECD countries.(Table 1.2)

Table 1.2 GNP per head, selected OECD countries 1971

Country	GNP per head $ 1971	
Turkey	360	
Yugoslavia	561+	+1969
Portugal	770	
Spain	1070	
Greece	1220	
IRELAND	1550	
Italy	1880	
UK	2460	
Switzerland	3880	
USA	5160	

Source: OECD: Economic Survey Ireland - March 1973

Amongst the OECD group of countries, Ireland ranks sixth from the bottom in terms of GNP per head.

The picture that emerges from these comparisons is of an economy which is in a stage of transition from a low base. The investment/GNP ratio compares favourably with other EEC countries (Table 1.1 line 5) and indicates that the economy is geared for growth.

The social and institutional background

The Republic of Ireland was established in 1919 when the Dail Eireann (Irish Parliament) ratified the proclamation of the Irish Republic. Ireland is a parliamentary democracy and has adopted the philosophy of a mixed economy. The state owned sector encompasses the railways, the bulk of road passenger and road freight, the exploitation of peat, the production of sugar from beet, steel production, industrial alcohol, nitrogenous fertilisers, airlines and air transport facilities, shipping and life assurance. The economic philosophy of both major parties (Fine Gael and Fianna Fail) is orientated towards private enterprise to be guided and reinforced by the state. This is reflected by the strategy of indicative planning adopted by the state. Several autonomous official bodies such as the Industrial Development Authority (IDA) and Coras Trachtala (the Irish Export Board) have the objective of fostering industrial development through indirect intervention.

An overwhelming proportion of the population - nearly 95% according to the 1961 census, is Roman Catholic. The Catholic Church appears to have considerably influenced the history of the state.[2] Several tenets of this religious belief have been incorporated into the laws and constitution of the state. The prohibition of divorce and of the sale of contraceptives are the most obvious, although such provisions are under review by a constitutional committee.

Such religious sanction may, in large measure, explain the high birth rate in Ireland - a statistic which is the highest in the EEC (Table 1.1 line 6).

However, despite these high birth rates, the population of Ireland did not register an appreciable increase in absolute terms in any time period from the first census of 1841 until 1961. This outcome is the result of the high rates of emigration experienced by Ireland. Table 1.3 shows the post war experience of population changes. Irish emigration has not only been a subject of extensive research but its reduction and eventual elimination has been a cornerstone of Irish economic policy.

Table 1.3 Average Annual Rates of Changes of Population and Net Emigration per 1,000 of Average Population 1946-71

Intercensal Period	Change in Population	Natural Increase	Net Emigration
1946-51	+0.4	8.6	8.2
1951-56	-4.3	9.2	13.4
1956-61	-5.6	9.2	14.8
1961-66	+4.6	10.3	5.7
1966-71	+5.9	10.1	4.2

Source: IDA Regional Industrial Plans 1973-77 Part I
IDA (1972)

Determinants of emigration are often categorised into "push" and "pull" factors. The declining labour needs of Irish agriculture, coupled with the inability of industry to absorb agricultural labour have been the main "push" factors. Social conditions are also important, such as the tradition of emigration, lack of amenities in rural areas and lack of opportunities for economic advancement even for the employed. "Pull" factors such as the better remuneration in the geographically proximate UK labour market, the long standing Anglo-Irish social connections such as a common language and the attraction of the USA, New Zealand and Australia in recent years have also contributed to the high levels of emigration.

A major objective of Irish economic policy has been to reduce and eventually eliminate "involuntary" emigration (which may be defined as job seeking overseas in the absence of employment opportunities in Ireland). One of the main instruments of such a policy in recent years has been the attraction of FDI to stimulate domestic export-orientated investment. The concern of Irish economic planners with emigration is understandable in view of the grave consequences it has had for the economy. The age structure of the population has been distorted by emigration in such a way as to reduce the numbers in the economically active age-groups of 14-64.(Table 1.4)

Table 1.4 Percentage distribution of population by age groups 1946-66

Year	0-14	14-44	45-64	65+
1946	27.9	42.4	19.1	10.6
1951	28.9	41.0	19.4	10.7
1961	31.1	36.4	21.3	11.2
1966	31.2	36.7	20.9	11.2

Source: J. Meenan The Irish Economy Since 1922 Liverpool UP 1970

This decline of numbers in the economically active age group coupled with the high birth rate and declining death rate has resulted in a heavy weight of dependent age groups on a small earning population. As can be seen from Table 1.1 (line 14) the percentage of the total population in the labour force falls below the EEC average (as does Italy - a country with a common religious background and tradition of emigration). It is, however, encouraging to see that the Irish efforts aimed at reducing emigration appear to have met with some preliminary success (see Table 1.5).

Table 1.5 Average Annual Net Emigration 1951-71

Period	Average Annual Net Emigration - Numbers
1951-56	39,353
1956-61	42,040
1961-66	16,121
1966-71	12,184

Source: IDA Regional Industrial Plans 1973-77 Part I

This success in reducing emigration may not have been an unmixed blessing. It may have aggravated unemployment which is a serious economic and social problem facing Ireland. Unemployment has been consistently above 5% of the labour force as Table 1.6 shows throughout the 1957-72 period (except for a short interlude in 1966).

Table 1.6 Unemployment as a percentage of the labour force

Year	1957	/58	/59	/60	/61	/62	/63	/64	/65	/66	/67	/68	/69	/70	/71	/72
Unemployment % Labour Force	6.7	6.4	6.1	5.6	5.0	5.0	5.2	5.2	5.2	4.7	5.0	5.4	5.1	6.0	6.0	6.3

Sources: Report on Full Employment (1967) Central Statistics Office, Dublin.
Review of 1971 and Outlook for 1972 CSO, Dublin
Annual Statistical Abstract (various issues)

Apart from the fall in emigration, the declining labour needs of Irish agriculture and the inability of industry to absorb the labour thus released appear to have been the major causes of such high unemployment rates. To these issues we now turn.

Irish industrial growth from the mid fifties

The data on GNP per capita shown in Table 1.1 which puts Ireland at the bottom of the EEC "league table" conceals the considerable growth and structural change that

the economy has sustained since the early 1950s. From 1956 to 1971 the average annual rate of growth of GNP has been 8.4% in current prices and 3.3% in constant (1958) prices. The full record of Irish GNP growth is contained in Appendix Table A1.1.

A significant feature of Irish economic growth since the fifties is the rapid advance made by the industrial sector in output and employment provision.

(1) Employment changes

Employment changes in the economy reflect the changing distribution of output between the different sectors. Table 1.7 gives employment in manufacturing industry and full time male employment in farm work for 1961-1971. Over this period manufacturing employment increased by 27.5% and employment in agriculture declined by 25.7% - Table 1.8 summarises these trends.

The flow of labour from agriculture is one of the strategic magnitudes in the economy.+ It is a major determinant of the rate of emigration and of the "target" rate of job creation in industry. Despite the creditable rate of job creation (2.5% increase per annum over the period 1961-1971), much of it in foreign owned concerns, industry in general has, as yet, not been able to absorb sufficient labour to reduce unemployment.

+ See Appendix Table 3 and Notes to that table.

Table 1.7 Employment in Manufacturing Industry and Agriculture 1961-71

Year	1. Employment in Manufacturing Industry	2. Males engaged in Farm Work (1st June)
1961	157,600	380,800
1962	163,800	360,800
1963	168,200	354,900
1964	171,900	343,500
1965	172,800	330,000
1966	174,900	319,600
1967	177,300	308,000
1968	183,800	298,600
1969	194,500	288,000
1970	197,200	274,000
1971	196,100	265,000

Source: Review of 1971 and Outlook for 1972 CSO Dublin

Table 1.8 Labour Force and Total at Work 1961-71

Sector	1961 Nos (000)s	1961 % of Total at Work	1971 Nos (000)s	1971 % of Total at Work	Change 1961-71 Nos	Change 1961-71 % of Total at Work	Change 1961-71 Annual Average % Change
1. Agriculture, Fishing and Forestry	379.5	36.1	282.0	26.3	-97.5	-25.7	-2.9
2. Industry (including Building and Construction	275.2	24.2	328.0	30.6	+70.8	+27.5	+2.5
3. Services	415.8	39.5	461.0	43.1	+45.2	+10.9	+1.1
Total at Work	1052.5	100	1071.0	100	+18.5	+ 1.8	+0.2
Out of Work	55.6	-	68.0	-	+12.4	+22.3	+2.1
Total Labour force	1108.1	-	1139.0	-	+30.9	+ 2.6	+0.3

Source: Review of 1971 and Outlook for 1972 CSO Dublin

Table A1.3 shows that agricultural productivity has been rising, thus releasing labour from the land whilst maintaining agricultural output. Therefore, although emigration has fallen, unemployment is still rising.

The data in Table 1.8 also show the importance of the services sector which accounts for 43% of the labour force. Tourism is an important source of employment (and of foreign exchange earnings)+ as Table 1.9 shows.

Table 1.9 Staff employed in the Hotel Industry

Survey	Permanent Jobs	Seasonal Jobs
CERT Survey 1965	10,442	4,370
CERT Survey 1970	12,156	7,663

Source: IDA Regional Industrial Plans 1973-77, IDA Dublin

(CERT = Council for Education, Recruitment and Training for the Hotel Industry).

This reorientation of employment is the result of differential growth between (and within) the major sectors of the economy.

+ Earnings from tourism rose from £ 98.7 million in 1969 to £ 99.1 million the following year and to over £ 100 million in 1971 when such earnings equalled just over one quarter of the value of manufactured goods exported.[3]

(2) The growth of the industrial sector

In the period since the late fifties, there has been a reorientation of the Irish economy towards industrial production. Appendix Table 2 shows that gross output in the Transportable Goods Industries (manufacturing plus mining and quarrying) increased sixfold between 1949-1970. It nearly doubled in the more recent period 1963-1971. Net output more than doubled between 1963 and 1969.

Table 1.10 shows the growth of manufacturing industry in both current and constant prices. Manufacturing output has grown from a base of 100 in 1953 to 239 in 1971.[4] Included also in Table 1.10 is Gross Domestic Capital Formation. Unfortunately data on the sectoral distribution of Gross Domestic Capital Formation are not available. It is clear that industrial investment has contributed significantly to Ireland's recent growth. The volume of Gross Domestic Capital Formation grew by 8.7% per annum over the period 1961-71 as against 3.9% per annum for GNP.

Table 1.10 The growth of manufacturing output in the sixties Gross Domestic Capital Formation as a % of GNP

Year	[1]Gross Output of Manufacturing (£ million)	[2]Volume of Output Index (1960 = 100)	[3]Gross Domestic Formation as % GNP
1960	434.0	100	
1961	479.8	107	14.1
1962	517.4	116	15.6
1963	558.6	121	16.8
1964	614.2	131	18.0
1965	657.6	137	19.2
1966	694.6	142	18.4
1967	786.3	152	19.4
1968	890.3	167	18.6
1969	1010.7	179	22.3
1970	1095.4	185	21.4
1971	1195.3	192	22.5

Source: Review of 1972 and Outlook for 1973 (Prl.3090) CSO Dublin.

Within the manufacturing sector itself, there has been a reorientation away from the "traditional" sectors, food drink and tobacco, clothing and footwear towards chemicals, structural clay products and "other manufacturing" (the fastest growing of all). Table 1.11 shows these trends clearly. The sectors in which there has been substantial foreign investment are the ones with the fastest growth of output, as will be seen later.

Table 1.11 Trends within the industrial sector-volume of production in the major industrial groups 1953-71 (1953=100)

Sector	1958	1963	1968	1970	1971
1. Food	88	112	146	156	163
2. Drink and Tobacco	98	108	124	136	145
3. Textiles	127	189	278	344	356
4. Clothing and Footwear	97	134	160	174	173
5. Wood, Furniture, Brushes, Brooms	93	132	153	174	189
6. Paper and printing	129	172	213	236	239
7. Chemicals	129	206	381	438	437
8. Structural Clay, Glass, Concrete etc.	104	183	318	307	426
9. Metals and Engineering	124	217	302	331	317
10. Other Manufacturing	122	254	430	511	549
Total Manufacturing	106	151	208	230	240

Source: Review of 1972 and Outlook for 1973 (Prl 3090) CSO Dublin.

The table shows that sustained industrial growth began to be achieved in the period 1958-68 after a faltering start in the 1953-58 period. Again the influence of FDI will be seen to be paramount.

Trade and Trade Policy

A characteristic feature of the Irish economy is the high degree of "openness" which stems from the small size of the country. An open economy is one that exhibits a high degree of dependence on foreign trade. A measure of openness is provided by the ratio of the sum of trade flows (exports plus imports including current income on capital) to GNP. In the case of Ireland (1970) this ratio was 83.8% compared to 48.5% in the UK, 61.2% for Denmark, 35.9% for Greece, 22.3% for Japan and 12.4% for the USA.[5] Thus, by international standards, Ireland is heavily dependent on foreign trade.

External trade dependence is however only one facet of openness. In the Irish case, international factor flows of both capital and labour also contribute to the openness. The integration of the UK and Irish labour markets, the use of cheque payments between the UK and Ireland and the unique cultural and kinship ties that exist with the UK, USA, Canada, Australia and New Zealand have all contributed to factor flows.

In view of its high degree of openness, the trade policy pursued by Ireland assumes paramount importance.

Irish trade policy has undergone spectacular changes since the late 1950s. The inward looking policy of industrialisation through import substitution pursued earlier has been replaced by a policy of export based industrialisation and an encouragement of inflows of FDI. These aspects are covered in later chapters as they form the core of the thesis. Suffice it to note here that the change of trade policy has had significant effects on FDI in Ireland.

Regional Disparities

No analysis of the Irish economy can be complete without a discussion of the regional disparities within the country. For the purposes of grant allocation, the Industrial Development Authority (IDA) divides the country into two roughly equal halves; East and West. It is the Western "Designated Areas" (previously and more aptly "Underdeveloped Areas") which lag behind in terms of development. It has been an aim of Government policy to attempt to rectify this imbalance by the creation of new industrial employment. The Third Programme for Economic and Social Development (1969-72) was pledged to "ensure that the benefits of economic growth are spread throughout the country".[6] The new IDA Regional Industrial Plans 1973-77 have set targets for regional job creation and development. Here we present four major indicators of regional imbalance; viz. (1) income (2) level of industrialisation (3) migration (4) unemployment.

(1) Incomes: Table 1.12 shows the spread of incomes in the nine planning regions of Ireland (see Map 1).[7]

In 1969, the personal income level of the Eastern region (which includes Dublin) was over 70% higher than that of Donegal, representing an absolute difference of around £212.00. Although the disparities tended to narrow over the period 1965-69 and the rate of growth of incomes was roughly similar between regions, in absolute terms the more prosperous regions forged ahead.

Table 1.12 Personal Incomes by Region 1965 and 1969

Regions (ranked by 1969 level)	Average Personal Income per Head at Current Prices (£)		Change 1965-69	
	1965	1969	%	Actual (£)
East	359	517	+44.0	+158
South West	286	409	+43.0	+123
Mid West	275	391	+42.2	+116
South East	271	380	+40.2	+109
North East	259	380	+46.7	+121
Midlands	231	325	+40.7	+ 94
West	223	324	+45.3	+101
North West	219	316	+44.3	+ 97
Donegal	215	305	+41.9	+ 90
State	292	420	+43.8	+128

Source: IDA Regional Industrial Plans 1973-77 Part I, IDA, Dublin.

(2) Level of industrialisation. The indicator chosen to represent the level of industrialisation is the percentage of the regional labour force which is employed in the industrial sector. Industrial employment is a particularly good indicator of industrialisation in this case, as it is also a Government policy objective.

Table 1.13 Persons engaged in Industry as a % of total persons at work in each region 1961, 66, 71.

Region (ranked by 1971%)	Percentage in Industry		
	1961	1966	1971(estimated)
East	36.2	37.5	38.6
North East	23.6	27.7	32.9
South West	24.0	27.1	30.5
Mid West	18.3	24.1	27.9
South East	20.4	23.6	26.7
Donegal	16.6	19.8	24.4
Midlands	18.3	20.3	23.8
North West	12.1	13.2	17.4
West	10.8	12.9	15.9
State	24.6	27.5	30.6

Source: As Table 1.11

Some narrowing of the disparities in industrial employment between regions is taking place. A comprehensive policy of inducements and controls, largely under IDA direction, is attempting to divert industry to under-industrialised areas. In 1961 the proportion of

industrial employment in the East was three times that in the West - by 1971 this had declined to two and a half times the industrial employment proportion of the West.

(3) Migration rates

Table 1.14 Population change and Migration Rates by Region 1961-71

Region	% Population Change		Average Annual Rate of Net Migration per 1000 Population		Rank by Population Change	
	1961-66	1966-71	1961-66	1966-71	1961-66	1966-71
East	+9.1	+7.1	+2.7	-0.6	1	1
South West	+1.3	+2.7	-5.7	-3.0	3	2
North East	-1.0	+2.7	-10.7	-3.7	5	3
South East	-0.1	+2.6	-9.8	-4.7	4	4
Mid West	+1.6	+1.7	-6.0	-5.6	2	5
Donegal	-4.6	-0.5	-15.0	-6.9	8	6
Midlands	-2.0	-0.8	-12.6	-9.8	6	7
West	-3.4	-2.3	-13.5	-10.6	7	8
North West	-6.0	-4.0	-15.1	-10.0	9	9
State	+2.3	+3.0	-5.7	-4.2		

Source: As Table 1.11

The five regions which experienced an increase in opoulation during 1966-71 are the Eastern Areas plus the South and Mid West tourist areas. The latter has benefitted from the special employment incentives given by Shannon

Free Airport Development Company Ltd. (SFAD Co.) The population change in the latter period was more positive (or less negative) than the earlier period for all but one region, two of them reversing a decline in population. The East region's growth slowed - and thus the policy aim of checking the growth and spread of Dublin was achieved. However, wide disparities between regions still remain.

(4) Unemployment rates. This indicator is closely related with population change and industrial job provision.

Table 1.15 Regional and State Unemployment Rates

Region (ranked by lowest rate 1971)	Unemployment Rate	
	1966	1971
South East	3.65	4.90
Midlands	3.65	4.93
East	3.54	5.06
South West	4.10	5.19
North West	5.66	5.57
North East	4.97	5.57
Mid West	4.50	5.67
West	5.77	7.36
Donegal	9.70	13.83
State	4.30	5.70

Source: IDA Regional Industrial Plans 1973-77
Part I, IDA Dublin.

The discrepancy between regions in employment provision has been increased as overall unemployment has increased.

The West region and Donegal are clearly in desperate need of employment provision.

It is clear from the foregoing evidence that there are severe regional disparities within the state. Table 1.16 confirms that the indicators of regional differences show a consistency of pattern. Column 5 shows the percentage of IDA expenditure which goes to each region. Grants and other expenditures of the IDA are the major policy tools aimed at reducing regional disparities. The ranking of areas by region is not sufficiently dissimilar from indicators of regional disparity to suggest that IDA expenditure is a sufficiently strong countervailing force. Indeed, IDA expenditure does not seem to favour the poorer regions.

Table 1.16 The Ranking of Regions by five indicators.

Region	[1]Population Change 1966-71	[2]Unemployment Rate 1971	[3]Personal Income level 1969	[4]% at Work Industry 1971	[5]% of IDA Expenditure
East	1	3	1	1	2
North East	2	5	4	2	5
South West	2	4	2	3	1
South East	4	1	4	5	4
Mid West	5	7	3	4	3
Donegal	6	9	9	6	9
Midlands	7	2	6	7	8
West	8	8	7	8	6
North West	9	5	8	9	7

Source: Regional Industrial Plans 1973-77 op cit

The four regions ranked 6-9 by indicator 1 remain in these positions in 14 out of 16 possible instances (columns 1 - 4) and they have the lowest proportions of IDA expenditure, whilst the top two regions, East and South West, are the largest recipients of IDA expenditure. Other criteria (such as the willingness of firms to locate in an area with a stated grant incentive) will influence the location of IDA expenditure and it is clear that regional considerations are not the only ones pertaining to the allocation of grants.

Even within the most backward regions, and the above has identified the four West and North West regions as the "poorest areas", there are sub regions markedly worse off than the region as a whole. The six counties included in Table 1.17 may be particularly singled out. Special remedial action is particularly required in such areas.

Table 1.17 Population performance of selected counties 1961 - 71.

County	[1]Population 1971	[2]1966-71 % Change	[3]1961-66 % Change
Leitrim	28,313	-7.4	-8.7
Mayo	109,497	-5.2	-6.3
Roscommon	53,497	-4.9	-5.0
Longford	28,227	-2.6	-5.4
Cavon	52,674	-2.5	-4.5
Sligo	50,236	-2.0	-4.3

Source: Regional Industrial Plans 1973-77 Part I, IDA Dublin

Government policy has countered emigration in period 1966-71 as compared to 1961-66. The population decline is however still extremely heavy in some areas.

One further regional socio-economic feature is to be noted. The Gaelic speaking population (2.5% of the population of the state) is regionally concentrated in areas known collectively as the Gaeltacht. Such areas exhibit a very high degree of dependence on the agricultural sector (the proportion of workers in industry is less than half that for the state as a whole), generally higher than average unemployment rates, lower than average incomes, a higher than average dependency ratio (449 per 1,000 in the age ranges 0-14 and over 63 years compared to the state's 424 per 1,000) and an imbalance of the sexes (89 females to 100 males compared to 99:100 at the state level). In 1966 the population of the Gaeltacht areas was 72,706 and this figure is rapidly declining (by 7.3% over the period 1961-66). Special measures are in force in an attempt to attract industry to these particularly needy areas.

Finally, the continuing dominance of Dublin is important when the urban structure of the state is considered. The population of Dublin is shown in Table 1.18 and 1.19. Dublin provides 42.3% of total employment in manufacturing and 40.4% of total services sector employment (1971). Although the former proportion has been declining (from 46.8% (1961) and 44.4% (1966)), the latter has been increasing (39.2% 1961 and 40.2% 1966).[8]

Table 1.18 The population of Dublin and the rest of the State.

Population	1961	1966	1971
Dublin	718,332	795,047	849,542
Rest of State	2,100,009	2,088,955	2,131,688
State	2,818,341	2,884,002	2,971,230
Dublin as % State	25.5	27.6	28.6

Source: IDA Regional Industrial Plans 1973-77

Table 1.19 The Urban Structure of Ireland 1966

(All towns over 20,000)

City or Town	Population
Dublin	795,047
Cork	122,146
Limerick	57,570
Waterford	29,842
Galway	26,295
Dundalk	21,678

Source: Regional Studies in Ireland, Colin Buchanan and partners 1968.

The urban structure, Dublin apart, is very sparse. Only six major cities and towns exceeded 20,000 population in 1966. The growth of Dublin and its environs is a major policy concern, but limitation of this growth must not be achieved at the expense of reducing employment

creation. Industrial growth in the East region is limited to those cases where no alternative location is feasible or where the expansion is of a firm already existing in the Dublin Metropolitan Area.[9] Regional policy has in the past attempted to create "counter-magnets" to the growth of Dublin, the most successful attempt being the growth of Limerick-Ennis, through the industrialisation of Shannon Free Airport.

Conclusion

The brief review of Irish economic structure presented in this Chapter shows that the economy is in an intermediate stage between an advanced industrialised economy and an LDC. However, many of the characteristic features of the economy predispose the analyst to view Ireland in terms of concepts originating in the literature on developing countries. Like most LDC's, Ireland is heavily dependent on agriculture and has a weak urban structure. Despite recent rapid advances, the Irish industrial structure is weak and is not well integrated. A consequence of this is the heavy dependence of the economy on the external sector. A further salient fact is the existence of severe regional disparities - again a common feature of LDC's.

Several other socio-economic indicators also show that Ireland exhibits the features of an LDC. The pattern of consumption is orientated towards foodstuffs and away from the "luxury" goods which have become mass

consumption goods in the industrial West (telephones, cars). The low level of provision of social infrastructure, the pattern of social expenditure, the age structure and the high birth rate are all features of underdevelopment.

Finally, Ireland like most LDC's suffers from an imbalance in its factor endowments - a relative abundance of unskilled labour and a shortage of capital and entrepreneurial know-how. The problem is aggrevated by the declining needs of labour in agriculture and the inability of industry to absorb the released labour. The main policy problem has been the containment of emigration. It is this situation that has led Irish economic policy makers to look favourably on FDI which is believed to be a source of capital, technology, skills and enterprise.

It is against this background that the contribution of FDI to the economy must be judged.

Appendix to Chapter I: Irish GNP and Growth

Table A1.1 GNP and Growth of GNP 1956-1971

Year	[1]GNP Current Prices £m	[2]GNP Constant (1958) Prices £m	[3]Rate of Growth of GNP (per annum)	[4]Rate of Growth of Real GNP (per annum)
1956	560.4	610.5		
1957	581.3	616.3	3.7	0.1
1958	600.9	600.9	3.4	-2.5
1959	637.8	626.0	6.1	4.2
1960	674.2	657.4	5.7	5.0
1961	724.3	689.0	7.4	4.8
1962	780.0	710.4	7.7	3.1
1963	835.0	739.1	7.1	4.0
1964	946.0	767.8	13.3	3.9
1965	1012.8	787.9	7.1	2.6
1966	1063.0	797.0	5.0	1.2
1967	1168.5	848.0	9.9	6.4
1968	1319.0	915.0	12.9	7.9
1969	1481.0	953.0	12.3	4.2
1970	1650.0	967.0	11.4	1.5
1971	1858.0	994.0	12.6	2.8

Source: Columns 1 and 2 OECD: Economic Survey - Ireland (Various)

Columns 3 and 4 calculated from cols. 1 and 2

Table A1.2 The Growth in Transportable Goods Industries 1949 - 71

Year	[1]Gross Output Transportable Goods Industries £m	[2]Net Output Transportable Goods Industries £m	[3]Average Numbers Employed
1949	201.7	61.5	135,341
1950	235.5	68.6	143,611
1951	271.9	74.5	148,024
1952	295.7	77.7	143,979
1953	328.9	89.2	150,587
1954	331.7	91.9	153,926
1955	341.7	97.2	156,627
1956	335.4	99.4	154,321
1957	351.0	100.3	149,867
1958	371.1	107.7	150,269
1959	406.9	121.7	153,141
1960	443.1	130.6	159,955
1961	490.8	150.7	167,294
1962	529.8	168.7	172,947
1963	571.4	183.1	177,732
1964	628.4	205.9	181,662
1965	671.3	221.8	182,662
1966	741.6	247.8	184,652
1967	810.1	286.2	187,202
1968	922.2	331.3	194,174
1969	1049.3	389.5	205,144
1970	1137.5	na	207,900
1971	1240.2	na	206,800

Source: Irish Statistical Bulletin 1969

Review of 1972 and Outlook for 1973

(Prl.3090) CSO, Dublin

Table A1.3 Value of agricultural output, decline in employment and net output per man in agriculture 1953-71

Year	[1]Gross Output £ million	[2]Net Output £ million	[3]Males engaged in farm work (1st June)(000s)	[4]Net Output per man (2)/3
1953	177.9	148.4	402.8	0.37
1954	174.4	141.4	421.3	0.34
1955	186.9	154.1	418.4	0.37
1956	175.1	142.8	409.3	0.35
1957	190.2	156.3	398.6	0.39
1958	181.5	145.7	395.3	0.37
1959	191.2	157.0	389.1	0.40
1960	193.1	160.8	382.8	0.42
1961	206.5	169.4	380.8	0.44
1962	213.1	171.9	360.8	0.48
1963	215.0	171.5	354.9	0.48
1964	240.2	194.7	343.5	0.57
1965	252.5	190.6	330.0	0.58
1966	248.9	195.1	319.6	0.61
1967	266.1	208.8	308.0	0.68
1968	303.9	237.2	298.6	0.79
1969	318.9	245.6	288.0	0.85
1970	342.9	261.6	274.0	0.94
1971	386.3	292.1	265.0	1.10

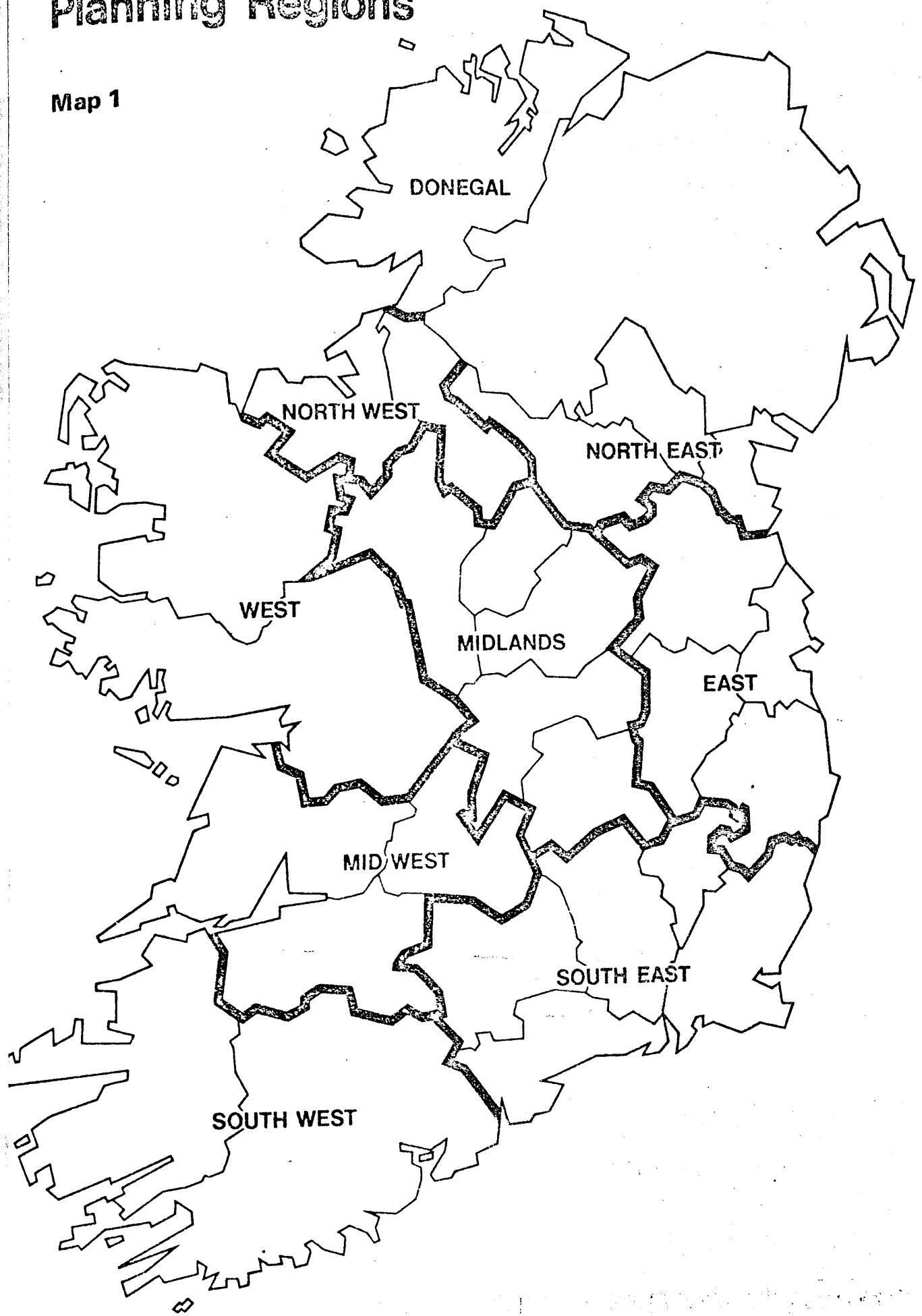
Source: Review of 1971 and Outlook for 1972

CSO Dublin Column 4 calculated by Author

Notes: Clearly, agricultural productivity has been rising from 1958 through new capital intensive techniques in agriculture, consolidation of holdings and ending under-employment (on the assumption that female:male labour ratio in agriculture has been constant).

Planning Regions

Map 1



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3. IDA Regional Industrial Plans 1973-77 Part I, IDA Dublin 1972.

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9. See Padraig O'Huggin (1972) Regional Development and Industrial Location in Ireland : Volume 1 An Foras Forbartha, Dublin.

Chapter II: The Development of Irish Policy Towards Foreign Direct Investment.

> "Let goods be homespun wherever it is reasonably and conveniently possible, and, above all, let finance be primarily national".
>
> J. M. Keynes in University College, Dublin, 1933.[1]

Irish economic policy towards foreign capital has undergone drastic changes since the 1930s when Keynes gave his unequivocal blessing to a policy of self sufficiency and independence from foreign finance and control. Recent Irish policy has actively encouraged Foreign Direct Investment (FDI). A unique feature of significance in this respect is the provision of grants in aid to foreign firms out of national finances. The purpose of this chapter is to analyse Irish policy towards FDI, especially the policy of providing grants to foreign firms.

The Era of Economic Nationalism

The present liberal trade philosophy of the Irish Government stands in glaring contrast to the policy of economic nationalism practised in the early part of this century. The attitude towards trade is paralleled throughout by a complementary attitude to foreign investment.

Ireland had for long been an agricultural hinterland and colonial market of Britain before the founding of the "Irish Free State" in 1922. The establishment of the state gave a huge impetus to a desire for industrial growth and domestic control of the economy. A policy of protectionism, relying on tariffs and quotas, was established and policies of import substitution were instituted, cliefly in consumer products. A policy of selective protection was followed in the twenties turning to one of full protection after the advent of the first Fianna Fail Government (March 1932).[2] The move towards high tariff walls was reinforced by the dispute with Britain over the payment of Irish land annuities and the resultant "economic war". Table 2.1 shows the later stages of the rapid change from a completely free trade economy to one of the most highly protected in the world. (In 1937 the Free State was the fifth most highly protected: British tariffs were two thirds as high and Dutch tariffs only one fifth of the Irish level). The zenith of protectionism was reached in 1936-7.

Table 2.1 The growth of the Irish tariff wall 1930-1938

Date	Tariff List	Tariff level index Average % Ad valorem
Dec.1931	Covered 68 articles	9%
Dec.1936	Covered 281 articles + many quotas	45%
Dec.1937	1,947 articles subject to restrictions	N.A.
1938	N.A.	35%

Source: J. Meenan (1970) The Irish Economy Since 1922 Liverpool University Press.

The Control of Manufactures Acts of 1932-4 were introduced in an attempt to confine ownership and control of industry to Irish citizens. Although the Acts stipulated that majority voting control was to be in Irish hands, they were never fully effective. Keynes saw such policies as a sensible reaction to the Irish situation in a depressed world economy:-

> "... if I were an Irishman, I should find much to attract me in the economic outlook of your present Government towards self-sufficiency".[1]

Throughout this period, tariffs and quota protection constituted the main form of state aid to industry. No direct subsidies were given. The extent of state interference was limited to the provision of infrastructure, information and credit. Indeed, until 1949 the Government contented itself with providing the conditions felt to be conducive to domestic industrial expansion. Policy in the era of economic nationalism was intended to stimulate the private industrial sector in Irish hands, the growth of which was meant to absorb the flow of labour being released from agriculture. The change of policy from protectionism arose from a realisation that emigration and unemployment had not been sufficiently checked.

In addition, the rate of growth slowed down, balance of payments problems became serious and an uneven, inefficient pattern of industrialisation resulted. In supplying the home market, Irish firms produced a wide

range of products and such overdiversification led to short production runs and increasing costs. An unintegrated industrial structure was formed with little dependence on domestic raw materials. Many of the new industries were clustered round the ports. No capital goods industries came into existence because of the small domestic market. From this high cost, high import content production arose balance of payments problems. The realisation that a nation with under three million people cannot support a full range of modern industry led to a fundamental revision of industrial policy, beginning in the immediate post war period.

Irish policy in this period has been attacked on the grounds that it did not pay attention to "the competitive structure, the degree of monopoly, [and] ... to scale and efficiency".[4] However the import substitution policy did achieve the launching of industrial production in the fields where this was easiest, notably in consumer goods industries requiring small amounts of capital and expertise. The costs of import substitution increased as this fragmented production grew wider and such costs became more apparent in subsequent years.

The Era of Economic Liberalisation

The decade of the 1950s can best be described as an era of economic liberalisation in Ireland. It witnessed the repeal of the Control of Manufactures Acts, active

promotion of exports, the adoption of indicative planning and the inception of policies designed to attract foreign owned firms to Ireland.

The establishment of the Industrial Development Authority (IDA) in 1949 heralded a major series of changes in development policy. The functions of the Authority were to be the promotion of new industrial enterprises and the attraction of foreign industrialists to Ireland. The powers of the IDA, however, were not equal to these tasks because the only inducements available were tariff and quota protection of the small domestic market.

In 1952 the first non-repayable grants scheme was instituted under the control of the Grants Board - An Foras Tionscal (AFT). These grants were limited to the establishment and expansion of industries in the Under-developed Areas.+ The grants were intended to counteract the infrastructural deficiencies, higher transport and labour training costs which were preventing industry spreading to these areas. Such grants were payable at a rate of up to 66⅔ of the capital costs of qualifying projects. The grants were open to both foreign owned and Irish firms. However, the inflow of foreign direct investment did not become significant in these years because the grants were not percieved by foreign firms as being large enough to overcome the small size of the Irish market, the Control of Manufactures Acts inhibitions and the agricultural image of Ireland.

+ Later "Designated Areas". Roughly the Western and North Western half of the country.

The next stage in the liberalisation process was prompted by continuing emigration and balance of payments problems. The inward looking growth policy was becoming more difficult to follow because of the exhaustion of import substitution possibilities. The rate of growth slowed down. Emigration became very heavy in the 1956-61 period. (See Table 1.3 in Chapter I)

There was a major shift in policy towards the attraction of FDI as a means of development. It was felt that the domestic sector had proved its inability to raise the investment necessary to reduce unemployment and emigration and that there was a shortage of domestic capitalists willing to expand productive capacity within Ireland.

FDI was seen as a means of bringing productive capital to labour in order to reduce emigration and to improve the balance of payments, directly through the impact on capital account and by increasing exports. It was hoped that FDI could supplement Irish resources by providing technical know-how, capital, entrepreneurial ability and market access. Such resources were seen to be unavailable within Ireland, or available only at prohibitive prices. Entrepreneurial ability was felt to be the crucial constraint. Perhaps it may be more accurate to say that the constraint was the lack of conditions conducive to the profitable performance of the entrepreneurial function within Ireland. The cost of hiring managers, leasing

technology, raising capital and obtaining access to foreign markets, all of which were necessary to achieve the stated policy aims, was felt to be best met by the attraction of FDI. Therefore a substantial incentive scheme for FDI was instigated. Our concern is with the consequences of this programme.

A policy instrument which was to become a major weapon in the armoury of inducements to foreign industrialists, -the export tax relief - was introduced in 1956. The Finance Act of that year allowed 50% exemption from tax of all profits earned from export sales above the 1955 (or 1956) level for a period of 10 years. In 1958 remission was raised to 100% and the Finance Act of 1960 extended full relief from ten to fifteen years. In addition, the Industrial Grants Act of 1956 empowered the IDA to extend the disbursement of grants to new industries established throughout the country, no longer just in the Underdeveloped Areas. In 1957, the inflow of FDI became a significant factor in Irish Gross Domestic Capital Formation for the first time (See Table 3.1). This was the first indication of the high elasticity of supply of foreign capital with respect to changes in domestic incentives.

A major watershed occured in 1958 with the publication of "The First Programme for Economic Development".[5] This was Ireland's first attempt at planning. Prominence was given to export orientated industrial growth and the attraction of foreign capital into export industries was

one of the prime objectives of the plan. The Industrial Development (Encouragement of External Investment) Act 1958 gave exemption from the control of Manufactures Acts to export oriented firms. (In 1964 the Control Acts were repealed). It was noted in "the Programme" that past public investment had built up a strong infrastructural base but that little industrial activity had developed. This is an early indication that the crucial bottleneck on Irish industrial growth was entrepreneurial ability.

The tradition of Irish policy that still stands today is that no distinction be made between foreign and Irish projects when the projects are under consideration for a grant. All rates of grants and other incentives apply equally to domestic and foreign projects. The steps taken in 1959 can, however, be construed largely as an attempt to attract more foreign investment.[6] A separation of functions between the IDA and AFT was also put into force. All grant giving powers were transferred to AFT by the Industrial Grants Act 1959. The role of the IDA was confined to industrial promotion and of recommending projects for grant aid. The IDA also began to open overseas offices to attract foreign projects. Grants became available for industries outside the Underdeveloped Areas at the rates shown in Table 2.2.

Table 2.2 Maximum level of grant 1959 - % of cost of purchase of fixed assets

Underdeveloped Areas	45%
Other Areas	35%
Dublin	25%

Source: Industrial Grants Act 1959

Introduction of the export tax relief scheme laid a further cornerstone of modern policy. Export tax relief was a sufficiently powerful incentive to allow the Grants Board to reduce the level of capital grants whilst still attracting an increasing inflow of FDI. Export tax relief therefore, to some extent, substituted for grants as an important incentive.

The establishment of Shannon Free Airport Development Co. (SFAD Co.) in 1959 marks the beginning of Shannon Airport as a major magnet for foreign capital. This legislation gave finance and special incentives to attract FDI to the industrial estate at Shannon Airport, which, although customs free from 1947, had remained dormant. The incentive package available to foreign investors included custom built factories, labour training grants, machinery grants of up to 50% of total cost and tax exemption on export profits up to the year 1983.

The foundations of current policy of encouraging inward FDI were thus laid in the decade of the fifties.

The decade of the 'sixties. Import liberalisation and export promotion.

The 'sixties saw the further development of the liberal policy towards FDI. The reorientation of incentives towards exporting meant that the rationale for the high tariff and quota protection was being undermined. Tariffs inhibit

exporters by increasing the cost of imported inputs and by making the home market more attractive for producers - inducing a "bias against exports".

In 1963 the report of the Committee on Industrial Organisation found Irish industry to be under-specialised, inefficient and below optimum scale. This was adduced to be evidence of the need to reallocate resources along the lines dictated by comparitive advantage. This process began in 1963 and 1964 when two unilateral tariff cuts of 10% across the board were implemented. Further steps towards free trade were taken with the "Anglo Irish Free Trade Area" agreement (1965) and Irish membership of GATT under which customs duties were to be reduced by an average of 33⅓% in four instalments to 1972. These steps towards freer trade culminated in the agreement to join the EEC - upheld by an overwhelming majority by referendum in 1972 and becoming effective 1st January 1973.

The development policy which was put into practice from the time of the early 1960's contained two linked strands: (1) Movement towards freer trade, with reliance on the expansion of exports (2) the attraction of foreign investment, particularly into the export sector. This link was clearly recognised by the Government. The conditions to be met when qualifying for a grant became the "ability to survive in free trade conditions". However, no test for demonstrating this ex ante were laid out.

The Reorganisation of the IDA

In spite of the increases in manufacturing output and exports achieved in the 'sixties (See Chapter 3), the Directors of the IDA felt that job creation was not expanding at a rate rapid enough to absorb all the labour being released from the agricultural sector. This view was reinforced by the "Report on Full Employment" (1965)[7]. Agricultural employment declined by 2.5% per annum in the years 1951-65 and this rate of decline was expected to continue into the 1980's. (See Table A1.3 in the Appendix to Chapter I). A fall in emigration from 16,000 per annum to 5,000 per annum was also expected. Such projections meant that 181,000 to 218,000 additional jobs had to be created in the period 1966-81 just to maintain the 1965 level of employment.

In response to these conditions and to the projections of the Report the IDA concluded that an overall reappraisal of industrial promotion policy was necessary. The genesis of the current institutional configuration and promotion policy came with the action of the IDA in commissioning two Reports by Arthur D. Little Inc. In the first Report, "A review of the structure of the Industrial Development Authority" (March 1967), widespread changes in the organisational structure of the IDA were recommended. The basis of this recommendation is contained in the following statement:

"We believe it is inappropriate to assign the IDA the responsibility of attracting new industry at

an accelerated rate without also giving it the staff, budget and scope to ensure at least a critical minimum effort".[8]

The Report considered that a critical minimum effort had not then been made and that the incentives offered did not fully offset the disadvantages facing prospective foreign investors. To obtain the objectives desired by the Government, the Report felt that additional resources and a more efficient framework of administration were necessary. The organisational proposals were that the IDA should withdraw from the civil service and be autonomous in hiring staff, in organising its own administration and in employee compensation. All the bodies concerned in incentive promotion and grant giving, it was felt should be consolidated into one body. This would have the valuable by-product of decreasing the time necessary to approve a grant. In addition a reorganisation of the top levels of the IDA and an expansion of staff abroad and in Ireland were recommended.

The second Report "Review of Incentives for Industry in Ireland" (June 1967) suggested several modifications to the scheme of incentives. The proposals were that a simplified and unified system of incentives should be set up and that all projects meeting an agreed set of criteria should receive a uniform percentage grant based on fixed capital assets. The consultants suggested that this would remove a great deal of ambiguity and uncertainty from the

tendering of investment proposal. Appendix I to this Chapter sets out the other suggestions of this Report.

Government action on these proposals was embodied in the Industrial Development Act 1969. The Act adopted most of the organisational proposals of the first Report. An Foras Tionsal was dissolved, its powers and function were transferred to the IDA. The new IDA was assigned functions as follows:

> "(i) to act under the Minister as a body having national responsibility for the furtherance of industrial development,
> (ii) to provide and administer such grants and other financial facilities for industry as it may be authorised by the Oireachtas to provide and administer,
> (iii) to develop, construct, maintain and administer industrial estates and factory buildings (other than at the Shannon Customs Free Airport) together with the associated facilities of such estates and buildings,
> (iv) to provide and arrange, where the Authority considers it necessary, housing for employees in industry,
> (v) to foster the national objective of regional industrial development".[9]

The Authority was given full powers over recruiting and became autonomous from the Civil Service. The present legal maximum of grants towards fixed assets was established. The conditions which were to be satisfied before the project could receive a grant were that

"(a) it would be likely to provide or maintain employment in the State,

(b) financial assistance is necessary to ensure its establishment, maintenance or development, and

(c) it is of a reasonably permanent nature and will be carried on efficiently".[10]

The Act gives considerable room for interpretation to the IDA and concern has been expressed over the amount of legal and financial autonomy given to the Authority. Current policy dates from the implementation of the Act and it is to current policy that we now turn.

Industrial promotion policy as it now stands (post 1969)

The present system of incentives to industrial investment and production consists of a comprehensive package of (non-repayable cash) grants, tax reliefs and provision of services by the Government. The only discrimination between Irish and foreign projects for such awards is that to receive a grant a foreign firm must be non competitive with existing Irish firms on the home market. Foreign projects are accepted under the "New Industries" grants scheme in the main. The IDA also carries out a "small Industry" programme[11] and a "Home

Industry" programme.[12] The latter provides re-equipment grants, information and advice (e.g. on mergers) to existing Irish firms. Approximately 76% of all investment on new IDA assisted industry has been undertaken by foreign owned companies.[13]

Export tax relief is available to any exporting firm, domestic or foreign owned. The whole package of incentives as they now stand is reviewed in detail in Appendix II to this Chapter. The main text is a summary of the Appendix.

Two major sets of incentives are available to foreign investors in Ireland. These are (1) tax reliefs and (2) a variety of grant aid schemes.

(1) a. The most important tax relief is that on export profits. Tax relief extends to 1990. Full (100%) relief is available until 1985 with five additional years relief at a declining rate. Projects at Shannon Airport receive 100% relief until 1990.

b. Exporters are allowed duty free imported inputs.

c. Depreciation allowances are provided for new investment in manufacturing industries.

(2) a. The New Industries grant scheme, under which most foreign firms qualify, provides for grants of up to 50% of capital invested in the designated areas and up to 35% outside these areas. The rate of grant is negotiated with the IDA on a project by project basis. Actual rates of grant aid have been well below the permitted

"administrative maxima" rates because export tax relief has encouraged new investment without the necessity to give such high rates of Governmental aid.

b. In addition grants are available towards labour training, research and development costs in Ireland and to help exporters (the last being disbursed by Coras Trachtala - the Export Board).

c. Interest and rent subsidies are available in special circumstances.

d. Additional grant aid is available for projects at Shannon Airport.

Table 2.3 (which is a summary of Appendix Table 3) shows the actual disbursements under the various acts with the amount and proportion of such grants paid to foreign firms. The final column was calculated by aggregating individual payments to foreign firms. Since 1961-2 the proportion paid to foreign firms has been between 75% and 85% of the total with the exception of 1966-7. In the years since 1969 the proportion of grants paid to foreign firms has been over 82%. In this period, grants paid to Irish firms have increased in absolute terms -although they have formed a declining proportion of the total.

Table 2.3 Grants disbursed under the various Acts

1 Year (ending 31st March)	2 Total Disbursements (£m)	3 Amount paid to foreign firms (£m)	4 % paid to foreign firms (5/4 x 100)
Up March 1955	0.14	0.04	31.3
1955-56	0.13	0.01	8.5
1956	0.12	0.04	35.9
1957	0.33	0.17	53.3
1958	0.40	0.30	74.4
1959	0.82	0.59	72.2
1960	0.58	0.28	48.5
1961	1.43	1.18	84.6
1962	1.61	1.28	79.4
1963	2.69	2.17	80.9
1964	1.71	1.49	85.6
1965	2.14	1.75	81.6
1966	2.49	1.26	50.4
1967	3.02	2.41	80.0
1968	4.57	3.44	75.4
1969	8.92	7.49	84.0
1970	11.72	10.05	85.8
1971	18.38	15.25	82.9

Source: Calculated from AFT and IDA Annual Reports (Various Years)

See also Table A2.3 in Appendix to this Chapter.

The figures shown in Table 2.3 for the annual disbursement of grants by the IDA are approximately equal to the total annual yield of income and corporate profits tax on existing business costs. A redistribution from current producers to future (largely foreign owned) producers is being carried out. Existing foreign owned firms are of course taxed but, as no profits tax is paid by a firm which exports 100% of its output and foreign producers are concentrated in the exporting sector, this amount of tax is no so great as the subsidy currently given. More generally therefore, the transfer of income is from domestically owned firms producing for the domestic market to foreign owned firms producing for export. Over 80% of grants go to foreign owned firms but the porportion of tax paid by foreign owned units is much below this figure. An effective transfer of sizeable proportions is thus taking place through the mechanism of corporate taxes, channeled through the IDA.

It is possible to estimate also the amount of total tax foregone under the provisions of the export tax relief scheme. Table 2.4 shows that over the period 1960-1971 (year ended 31 January), tax foregone by the Revenue Authorities was £ 39.9 millions. If we assume that 46% of this figure accrued to foreign owned firms (the proportion of manufactured exports due to foreign owned firms according to the calculations embodied in Table 3.18) this represents a further subsidy of £ 18.4 millions to foreign owned firms.

Table 2.4 Total tax foregone due to the export tax relief scheme 1960 - 1971.

Year	Tax Relief (£m)
1960	0.4
1961	0.6
1962	0.7
1963	1.2
1964	1.1
1965	1.1
1966	1.6
1967	2.0
1968	4.3
1969	5.1
1970	6.7
1971	15.1
Total 1960-1971	39.9

Source: Dermot McAleese (1972) "Capital Inflow and Direct Foreign Investment in Ireland 1952 to 1970" Journal of the Statistical and Social Inquiry Society of Ireland, Volume XXII, Part IV 1971-2. Table 7,p.83.

Summary

Irish policy provides an extraordinary amount of subsidies for foreign investors. Tax relief on export profits to foreign owned firms has given a national £ 18.4 millions to foreign investors in the period 1960 - 1971. Grant aid to foreign firms from the time that grant schemes began up to the end of 1971, amounted to £ 49.2 millions. In addition tax reliefs have been given on imported inputs for exporters and in respect of depreciation allowances. It is not possible however to compute the amount of subsidy to foreign owned firms which this entails. In addition, the provision of infrastructural facilities for new foreign owned projects has imposed a cost on the Irish taxpayer. There has been therefore a transfer of resources from the domestic to the foreign owned sector.

In view of this resource burden, a cost-benefit analysis of FDI is essential and Chapter VII undertakes this task. It is important to have a clear idea of the returns from the investment compared to such costs. The attraction of FDI to Ireland has clearly been an expensive business and the remainder of the thesis evaluates the impact of FDI on various crucial parameters; the domestic industrial structure, trade flows, the balance of payments and the efficiency of the economic framework. Such effects are collectively assessed in Chapter VII.

Chapter II, Appendix I

Summary of Proposals contained in "Review of Incentives for Industry (Arthur D. Little Inc., June 1967)

1. A simple and unified system of requirements should be set up and all qualifying projects should receive a uniform percentage grant based on fixed capital assets.
2. The depreciation allowances should be broadened. (They were then applicable in the Underdeveloped Areas only).
3. More double tax avoidance agreements to be arranged and a unilateral tax credit system to be implemented until this is possible.
4. Special provisions for "projects offering exceptional benefits to Ireland" which may justify more generous financial benefits than the automatic grant provides. A further set of financial incentives such as guaranteed loan interest rate subsidies or a special package to be available.
5. Capital intensive projects were not to be treated less favourably.
6. Service industries of a technical or scientific type to come within the orbit of grant-aided industry.

Chapter II, Appendix II

Investment Incentives available for New Industry in Ireland

1. Grants

New Industry Grants are available to qualifying projects towards fixed asset costs, defined as site, site development, buildings, new machinery and equipment. The level of grant has been reduced twice from its legal maxima to administrative maxima set by the IDA. This could be done largely because of the attractiveness of the tax relief scheme on export profits. The recommendation of Arthur D. Little Inc. to establish a uniform percentage of fixed assets as the fixed grant to all qualifying projects was rejected. The Government (and IDA) felt that the discretionary power available in fixing the grant as appropriate to each project was more important than any gains in the reduction of uncertainty to the investor. Table A2.2 shows the actual rate of grant approved per job created and as a proportion of fixed assets together with legal and current administrative maxima.

Labour Training Grants are disbursed by the IDA on the basis of wages in the training period and may cover travel and living costs for workers trained abroad. Such grants are available for management training and the hiring of qualified people to train labour. Industrial training centres have been established by AnCo[14] on the three IDA

industrial estates at Galway, Waterford, and Shannon Airport. As can be seen from Table A2.1 only a small proportion of total approvals is represented by labour training (and Research and Development) grants.

Table A2.1 Grants Approved by the IDA 1966-72 to show importance of New Industries Grants

£(000s)

Grants Approved	1966/7	1967/8	1968/9	1969/70	1970/71	1971/72
New Industries and Major Expansions	3,690	7,430	12,511	22,167	22,320	11,642
Adaption	3,999	7,481	2,222	8	-	-
Small Industries	-	84	1,085	1,668	1,189	897
Re-equipment	-	-	-	5,912	5,134	5,105
R & D	-	-	-	-	67	156
Training of Workers	293	380	700	1,488	1,859	920
Total Grants Approval	7,982	15,375	16,518	31,243	30,569	18,720

Source: IDA Annual Report (various), IDA Dublin

Table A2.2 Grants to New Industry

Grant	Grant as % Capital Cost	
Legal Maximum 1969 Act	Designated Areas	Non Designated Areas
	60	45
Administrative Maxima (IDA) 1972	50	35
Rate of Grant Approved (% fixed assets full production)		
Average 1952-70	53.5	40.2
1969-70	53.3	41.1
1970-71	50.8	30.6
	Grants per job created	
	Designated Areas	Non Designated Areas
Administrative Maximum	5000	4000
Projected Grant Payable (Ratio of Grant Approved to projected employment)		
Average 1952-70	1057	1119
1969-70	2286	1944
1970-71	1373	2646

Source: Dermot McAleese "Capital Inflows and Direct Foreign Investment in Ireland 1947-70" Inquiry Journal of the Statistical and Social Society, Volume XXII, Part IV 1971-72, and "Industrial Development in Ireland" IDA, various issues.

Research and Development Grants are non repayable and are available up to a maximum of £15,000 or 50% of approved costs,[15] whichever is the smaller. They were instituted in the Industrial Development Act of 1970. Grants up to a maximum of 35% are also available towards fixed assets of new industrial research facilities on the IDA sponsored Research Park at Naas.

Interest and Rent Subsidies. Under special circumstances, the IDA may also provide interest subsidies and rent subsidies. Low rent factories may be provided on the industrial estates and ready-built factories at reduced terms may be provided for "specially attractive projects". Subsidies towards housing for key workers are provided for in the 1969 Act.

Shannon Free Airport. Additional provisions apply to investment at Shannon Free Airport. Up to half the cost of new machinery and the full cost of the buildings can be claimed. (In addition the tax holiday in export profits gives total exemption until 1990). No inward or outward customs duties are payable from the Customs Free Zone.

Grants from Coras Trachtala. Grants disbursed by the IDA do not cover all that is available to exporters. Coras Trachtala (The Irish Export Board) awards design grants, advertising grants, marketing research and consultancy grants to exporters.

Table A2.3 shows the amount of grants paid under the various Acts. Column 4 shows the total of all grants paid (actual disbursements - Table A2.1 shows approvals). Column 5 shows the amount paid to foreign firms and Column 6 the proportion of the total grant going to foreign firms. New Industry Grants only are included.

Table A2.3 shows that the proportion of grants going to foreign firms has been increasing since the inception of the grants scheme. Since 1958 payments to foreign firms have been over 72%, with the exception of the years ending March 31 1961 and March 31 1967. In the 'seventies the proportion has been over 82%. The proportion of grant disbursed is generally greater than the proportion of foreign projects in total projects, as foreign projects are larger on average, than Irish ones. Nevertheless, it is to be noted that grants paid to Irish firms under the New Industries scheme have been increasing in absolute terms, to a peak of £3.13 million in 1971 - 2.[16]

Table A2.3 Grants paid under the various Acts (£s)

1	2		4	5	6
Year (ending March 31)	Underdeveloped Areas +	Rest	Total Disbursements	Amount paid to Foreign Firms	% to foreign Firms (5/4 x 100)
Up to 31st March 1955	137,355	-	137,355	43,000	31.3
1955-1956	129,293	-	129,293	11,000	8.5
1956-1957	117,100	-	117,100	42,000	35.9
1957-1958	326,600	-	326,600	174,000	53.3
1958-1959	400,336	-	400,336	298,000	74.4
1959-1960	724,626	91,485++	816,111	588,835	72.2
1960-1961	280,441	299,800	580,241	281,358	48.5
1961-1962	930,029	499,990	1,430,019	1,184,923	84.6
1962-1963	997,160	617,353	1,614,513	1,282,388	79.4
1963-1964	1,060,038	1,627,432	2,687,470	2,172,756	80.9
1964-1965	511,612	1,229,629	1,741,241	1,490,529	85.6
1965-1966	902,356	1,237,460	2,139,816	1,745,914	81.6
1966-1967	1,285,771	1,206,857	2,492,628	1,225,170	50.4
1967-1968	1,019,759	1,995,423	3,015,182	2,410,891	80.0
1968-1969	1,191,224	3,377,920	4,569,144	3,443,472	75.4
1969-1970	2,252,549	6,662.460	8,915,009	7,487,211	84.0
1970-1971	3,909,333	7,805,819	11,715,152	10,053,333	85.8
1971-1972	7,154,979	11,224,701	18,379,680	15,245,361	82.9

+ After 1968 Designated Areas. ++ Of which £32,700 IDA payments under 1956 1st April 1959 - 26th August 1959. £59,785 AFT payments sanctioned by IDA 26th August 1959-31st March 1960.

Source: (Table A2.3 Grants paid under the various Acts (£s)

Author's calculations from An Foras Tionscal and IDA Annual Reports. (various)+++

The most spectacular period of growth in disbursement to foreign firms was in the period 1966/67 to 1971/72 in which period payments per annum increased from £1.26 million to £15.25 million. The figures in Table 3.1 below indicate that the proportion of total investment in foreign projects represented by grant aid has increased over this period. Estimated total investment in foreign projects rose from £7.8 million to £36.4 million between 1966 and 1970. The fact that Table A2.3 is in financial years and Table 3.1 in calendar years complicates the issue but it is clear that the proportion of capital costs met by the IDA (or ultimately by the Irish tax payer) has been an increasing proportion of total investment by foreign firms.

+++ Column 5 calculated from AFT and IDA reports by isolating and aggregating payments to individual foreign projects.

The financial cost of grants to foreign investors therefore is a major factor in the total disbursement of the IDA. This represents a burden on the Irish Exchequer and on the tax payer. Grants may be considered as an employment subsidy or as a transfer from one group (the employed) to another (domestic and foreign capitalists and those workers obtaining employment within grant aided firms). The financial cost, however must be considered in the context of a full cost-benefit analysis of FDI. This is introduced in Chapter III and is thoroughly analysed in Chapter VII, where a "real cost" is imputed to payments to foreign entrepreneurs in a full cost-benefit analysis. The important question as to whether the benefits arising from the foreign investment justify these (and other costs) is deferred until those sections of the thesis.

2. Tax Relief

Tax relief is allowed with no discrimination on the basis of ownership. It is aimed at the furtherance of two Governmental objectives, the stimulation of investment (depreciation allowances) and the encouragement of exporting (export profits tax relief and duty free imports).

i. Depreciation Allowances. Generous tax allowances can be claimed by all manufacturers against the depreciation of plant and machinery. Annual allowances of 10-25% on new plant and machinery and 2% on buildings may be claimed. This may however be increased by as much as the entrepreneur chooses (up to 100%) in respect of new plant

and machinery brought into use in the Designated Areas at any time or in the rest of the country in the period 1st April 1971 to 31st March 1973. Alternative provisions allowing 60% of new plant and machinery and 20% of buildings cost to be deducted from taxable profits may be chosen. Further, 20% of capital expenditure is given as an investment allowance in the Designated Areas between April 1971 and March 1973. Taken with the free depreciation provision this allows 120% of investment to be claimed against tax in the first year of operation.

ii. Tax relief on export profits. All exporters of manufactured goods whether foreign or Irish owned, receive complete remission of tax on all profits earned from exporting. Relief of tax is calculated as follows:-

Total sales value = £S

Total Qualifying export sales = £X

Total tax payable = £T

Tax relief then is $£(\frac{X}{S}.T)$

Tax relief extends to 1990. Projects established in and before 1970-71 obtain 15 years relief at 100% and then five additional years at a declining rate. Projects established up to 1975-6 gain 15 years 100% relief but lose the declining percentage relief correspondingly. Industries at Shannon Free Airport receive 100% relief from profits tax until 1990.

This exemption is carried through to dividends. Distributed profits bear only the effective rate of tax

which the company has borne instead of the normal income tax of 35%. Thus if 100% relief has been given, no income tax is withheld from dividends. The individual share-holder may also get equal relief from surtax. In order to extend the benefits of this scheme, the Government have negotiated double taxation avoidance agreements with 13 countries including the main investors in Ireland.

iii. Tax relief for imported inputs. Imported inputs are exempt from duty provided they are embodied in manufactured exports. Consequently 100% exporting firms operate in free trade conditions. This provision has many side effects, one of which is that Irish inputs into exporting firms have to be competitive at world prices. Consequently linkage effects from the exporting sector are reduced, contributing to the "dualism" noted below. It also increased the "effective protection" of any firm producing in part for the domestic market.[17]

The tax reliefs outlined above represent a very high cash grant equivalent.[18] They represent a major incentive for foreign investors to locate in Ireland - perhaps the most important one.[19] Given the sensitivity of foreign capital flows to domestic conditions and incentives, this provision is of major importance.

3. Provision of Infrastructural Facilities.

The provision of infrastructure, legal, physical and informational, constitutes an incentive to foreign investment

through its cost reducing effect. The legal infrastructure relating to FDI allows the minimum of difficulty in establishing a subsidiary. Disclosure of information requirements on the operation of that subsidiary are virtually nil as most foreign companies are private firms, wholly owned by the parent and so no balance sheets are required. Confidentiality is jealously maintained by the IDA and so foreign companies operate in almost complete secrecy. A most important legal provision is that repatriation of dividends, interests and capital is freely allowed.

Physical infrastructure is reasonably well developed in Ireland. Regional development goals dictate the provision of roads, wells, electricity and power services, sewerage and other installations. Most of the infrastructural requirements of manufacturing firms is Government provided even in Designated Areas. This is taken up in a later section on the contribution of foreign firms to the economy from external economies.

Information costs and search costs attendant on the establishment of an enterprise are reduced by the services of the IDA, similar problems with exporting are decreased by the activities of Coras Trachtala and with labour training by AnCo. An "aftercare service" run by the IDA and SFADCo to help new enterprise to overcome their difficulties constitutes a further "hidden subsidy".

Chapter II: Notes and References

1. Quoted in J. Meenan (1970) The Irish Economy Since 1922 Liverpool University Press. Original Text in Studies (177) 1933.
2. The terms "full protection" and "selective protection" are used in Meenan op.cit.
   A tariff commission was established in 1926 to consider applications for protection. Only 15 were received until 1932 when the onus of proof was placed on those seeking protection.
3. Meenan op.cit.
4. C. Brock (1969) "Public Policy and Private Industrial Development" in Economic Policy in Ireland J.A. Bristow and A.A.Tait (Eds) Institute of Public Administration, Dublin.
5. Economic Development (1958) PM 4803 CSO, Dublin.
6. Despite the provision, which still exists, that foreign firms must be non competitive with existing domestic firms on the domestic market.
7. Report on Full Employment (1965) National Industrial Economic Council.
8. Review of the Structure of the Industrial Development Authority (March 1967) Arthur D. Little Inc. page 5. Published by the IDA.
9. Industrial Development Act 1969 p.15. Section II. Stationery Office, Dublin.
10. Ibid p.31 Section 33(3)

11. Small firms are defined as those with up to 50 workers and fixed capital assets of £100,000 in the Designated Areas and up to 30 workers and £60,000 in fixed assets in the Non-Designated Areas. The IDA conducts a search at home and abroad for potential new entrepreneurs under this scheme. The grants available are up to 60% of fixed assets in Designated Areas and 45% in Non-Designated Areas.

12. The Home Industries programme concentrates on domestic firms in particular and disburses Re-equipment grants to provide new plant, machinery and technology. It also involves the IDA in seeking out foreign partners for Irish firms with a view to creating joint ventures or licensing agreements.

13. IDA Annual Report 1971-72 page II: In the New Industry Scheme 76% of total Investment is from foreign owned firms. Industrial Development in Ireland (1972) IDA gives a figure of 74.1% of capital invested - this covers March 1960 to March 1971. In the An Foras Forbartha Survey 73% of firms are foreign owned (see Chapter III below).

14. An Chomhairle Oiluna: The Industrial Training Authority.

15. Salaries and Wages, Equipment and materials, plant and machinery services, buildings and land.

16. IDA Annual Report 1971 - 2 Page 7

17. Dermot McAleese (1971) Effective Tariffs and the Structure of Industrial Protection in Ireland Economic and Social Research Institute Paper No. 62, Dublin June 1971.

18. See Tax Relief for Export Profits (1972) IDA Ireland.

19. Evidence supporting this point is contained in Survey of Grant Aided Industry op.cit. and Lorraine Donaldson (1966) Development Planning in Ireland Praeger New York. It is also supported by the author's conversations with industrialists and IDA administrators in connection with the material of Chapter V.

Chapter III: The Nature and Importance of Foreign Direct Investment in Ireland

The previous Chapter analysed Irish policy towards FDI. This Chapter is devoted to a detailed examination of the structure of FDI in Ireland. It attempts to assess the magnitude of FDI in Ireland, its sectoral distribution and it presents a preliminary evaluation of its possible contribution to Irish development.

Section I Foreign Direct Investment in Manufacturing Industry 1955-70

The incentive programme, which dates from the late 1950s, combined with the attraction of relatively cheap labour and new markets, have resulted in a large and increasing foreign capital formation in the manufacturing sector of the Irish economy.

Data on the amount of FDI in Ireland are not readily available. They have, therefore, to be estimated indirectly. Column I of Table 3.1 presents the estimated amount of FDI in the Irish manufacturing sector. These are estimates based on the projections of total investments made by foreign firms when applying for an IDA grant. It is assumed that the actual amount of investment made in any particular year out of the total projected investment is proportioned to the amount of the grant actually paid in that year from the total approved grant. Thus, if a total grant of £ 50,000 has been approved for a particular project and

£ 25,000 has actually been paid out in a particular year, it is assumed that 50% of the total projected investment is undertaken in that year. The figures in Columns 1 and 2 include reinvestment of profits by foreign firms. However, this reinvestment pertains only to grant aided extension projects. Reinvestment which is not grant aided is not included. It must be noted that the figures presented in Columns 1 and 2 may be underestimates in so far as they exclude investments undertaken by foreign firms who do not obtain further grants. Foreign investments which are non grant aided are excluded - this may have been of importance in the early years, but appears to have declined. This is largely the result of the freer trade policies adopted by Ireland which obviate the need for investment behind tariff walls to service the domestic market.[1] Column 2 in Table 3.1 presents data on fixed capital formation by excluding working capital. Following Mc Aleese[2] it has been assumed that the proportion of working capital in total investment is around one quarter.

Table 3.1 Estimated Foreign Direct Investment in Manufacturing 1955-70 (Grant Aided Projects Only)

Year	1 Total Investment in Foreign Enterprises £000s	2 Fixed Capital Formation in Foreign Enterprises £000s	Gross Fixed Capital Formation in Ireland £000s	Foreign Firms Contribution to G.D.K.F. (2 as % of 3)
1955	171	128	92,400	-
1956	82	62	91,800	-
1957	1,800	1,350	80,100	2
1958	1,677	1,258	80,300	2
1959	2,662	1,997	82,900	2
1960	5,072	3,804	89,700	4
1961	3,694	2,771	108,800	3
1962	3,636	2,727	129,000	2
1963	5,337	4,003	147,700	3
1964	2,985	2,239	173,300	1
1965	10,135	7,601	197,900	4
1966	7,806	5,855	197,100	3
1967	9,869	7,402	217,600	3
1968	23,884	17,918	251,000	7
1969	29,066	21,800	329,000	7
1970	36,424	27,318	353,000	8
Total 1966-1970	137,908			
Total	144,300	107,333		

Source: Columns 1 and 2 calculated from confidential IDA data collected by Mr. John Teeling which he furnished with the permission of the IDA. Column 3: OECD Economic Survey - Ireland (Annual) Various Issues.

Table 3.1 shows that total investment under the control of foreign firms in the Years 1955-70 amounted to over £ 144 millions. McAleese estimates total FDI in the period 1960-70 to be £ 136.6 millions (£ 122 millions IDA aided plus £ 14.1 millions at Shannon Airport).[3] For the same period, the present estimates give £ 137.9 millions. The actual inflow of foreign capital into the manufacturing sector is considerably less than this figure because a substantial proportion of investment is financed from Irish sources: viz. Irish debt, equity participation and grant aid. (See Section 2(i) of this Chapter). Fixed capital formation in foreign enterprises clearly represents an increasing proportion of Gross Domestic Capital Formation, reaching 8% of this agrregate in 1970.

International comparisons of the contribution of FDI to Gross Domestic Capital Formation are difficult to come by because of the lack of data on FDI in general. Compared to some LDCs like Malaysia, the Irish proportion is not very high. Between 1960-66 the proportion of FDI to Gross Domestic Capital Formation amounted to 19.6% in Malaysia. At the other end of the scale is Japan, with only a 0.6% share of FDI in Gross Domestic Capital Formation.+

+ FDI % of Gross Domestic Capital Formation:

	Malaysia		Japan
1960	15.4	1962	0.83
1961	16.9	1963	0.85
1962	16.7	1964	0.32
1963	27.4	1965	0.30
1964	21.4	1966	0.40
1965	21.5	1967	0.41
1966	17.7	1968	0.92

Source: V.N. Balasubramanyam and A.I. MacBean Benefit Cost Analysis of Foreign Investment with Special Reference to Asia. Unpublished.

These two extreme cases reflect the different policies towards FDI pursued by these two countries. The increasing share of FDI in Gross Domestic Capital Formation in Ireland is in part a reflection of its policies towards FDI. The figure of 8% FDI in Gross Domestic Capital Formation represents a high figure in comparison with several LDCs such as Ceylon, India and Pakistan. Policies of host countries are clearly very important determinants of the amount of FDI - Japan prefers licensing, insisting on joint ventures and restrictions on foreign ownership, whilst Malaysia follows an "open door" policy with a battery of incentives for FDI. In this context the Irish reliance on FDI can be seen to be heavy but not unprecedently high.

Section 2 The Nature of Foreign Owned Projects in the Manufacturing Sector.

The data utilised in this section are derived from IDA sources and represent an almost complete coverage of the applications of foreign firms for grant assistance up to January 1972.[4] The figures are projections made by foreign firms of output, investment and employment at full production. The estimates may not have been fully realised in all cases. The number of applications on which data are available is 648 projects (new firms and major extensions). From this data, a complete picture of grant aided FDI can be built up.

(a) Operational status of the applications.

The 648 applications are broken down by operational 'status' in Table 3.2. The categories are defined as follows. (All categories refer to January 1972).

(1) 'Live' firms - those foreign firms in production.

(2) 'Pending' - firms about to begin production having received IDA approval for a grant.

(3) 'Failed' - firms which had begun operations but subsequently closed down.

(4) 'Taken over before failing' - firms which began production but, having met with difficulties, were taken over by another concern (not always by another foreign firm).

Categories (5) to (7) never came into production for the following reasons.

(5) Projects refused grants by the IDA on the grounds of weak finance, inadequate marketing facilities or other reasons.

(6) Firms which were allocated a grant but did not take up the offer.

(7) Firms which withdrew their grant applications.

Table 3.2 Foreign Grant Applications by Operational Status

	Status (January 1972)	Number of Projects
1.	Live	396
2.	Pending	49
3.	Failed	54
4.	Taken over before failure	13
5.	Refused grant by IDA	36
6.	Applicant did not take up grant	40
7.	Firm withdrew application	60
	Total Foreign Applications	648

Source: Author's calculations from IDA data

The proportion of projects which failed after having been at one time operational (i.e. categories 1,3 and 4) is 11.7%. If firms taken over are included as failures, this proportion rises to 14.5%. These figures give some cause for concern about the criteria of acceptance for state finance. Failures are analysed in detail below.

(b) Nationality of parent firm

The nationality of origin of grant applications (parent firms) is shown in Table 3.3. The share of the UK, USA, and Germany is overwhelming, although no one country predominates. The three major investing countries

account for 79% of applications and 80% of live projects. Other major sources are Holland, South Africa, France, Italy and Austria.

Table 3.3 Applications for IDA Grants by Nationality of Parent Firm and Operational Status.

Nationality	STATUS					
	Live	Pending	Failed	Taken over before failure	Refused Grant did not take up grant or withdrew	Total
UK	124	7	19	5	33	188
USA	107	22	6	3	37	175
Germany	87	10	21	4	28	150
Holland	18	1	-	1	3	23
Other	60	9	8	-	35	112
Total	396	49	54	13	136	648

Source: Author's calculations from IDA data.

The distribution of projects pending differs from that of live projects. It reflects an upsurge in US investment and a decline in that of UK investors (only 7 pending projects were of UK origin). This reflects the impact of extensive advertising and promotion by the IDA in the USA and the adverse effect of the Northern Ireland political situation on prospective UK investors.

(c) The Industrial Structure of foreign projects - 'live' projects.

Total projected investment in live firms at full production up to January 1972 is estimated at £192.85 millions. Table 3.1 showed estimated actual investment to be £ 144.3 millions. The difference between the two figures is the amount by which live firms had not achieved (up to 1970) their full production investment levels, less investment in failed projects. (The first figure excludes investment in firms which have failed or been taken over and any firm classified as 'pending' which had begun to invest. The latter figure includes investment in projects which ultimately failed or were taken over).

The industrial breakdown of FDI is of major interest. It will be seen that FDI largely determines the structure of the "modern" sector of Irish industry and the pattern of development of manufacturing industry, which is a vital feature of Irish planning. Table 3.4 shows the sector breakdown of 'live' projects, according to the Standard Industrial Classification (SIC) code, the average size of investment in the industry (all projects by full production level of investment) and the coefficient of variation + of investment size within each SIC grouping. The average investment figure alone does not give an adequate picture of

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+ Coefficient of Variation = $\frac{\text{Standard Deviation}}{\text{Mean}}$

project size and a measure of dispersion is needed to throw light on the diversity of project size within each sector. It is to be noted here that the analysis refers to individual projects, not to firms, which may have undertaken more than one seperate project. Column 5 shows the percentage of the total foreign investment which the particular sector constitutes.

Firm size within each sector is illustrated by average investment and the coefficient of variation round the mean of the sector. The size of the foreign firm's Irish unit will be determined by three major sets of factors.

Firstly, technical conditions within the industry will determine the minimum efficient size of the Irish subsidiary. This will vary within the industry group according to the particular products made and the process utilised by the subsidiary.

Secondly, the resources of the parent firm are important. Large parents tend to set up larger subsidiaries than small firms because of their greater command over resources, preferential treatment in the capital market and possibly because they may have access to easily transferable internal resources. The organisation of the firms international network is also an important determinant of subsidiary size through its influence on the range of functions which the subsidiary is to perform. (Section 3 of this Chapter elaborates this point).

Thirdly, the market at which the output of the subsidiary is aimed. If the unit is intended to service the Irish market only, then a small subsidiary will suffice. The size of the Irish subsidiary increases as the market coverage reaches the UK, the EEC and other markets. In the case of larger (multinational) firms, the Irish unit may perform, not the final stage of production which is often the case, but an intermediate process. In such cases of worldwide organisation of production based on vertically-integrated processes, the Irish unit tends to be large, because the final market is large.

Firm size reflects the nature of the Irish subsidiaries which range, in organisational terms, from autonomous offshoots of overseas firms to fully integrated subsidiaries of multinational firms. Some sectors are notable for diversity in firm size (Table 3.4). Sectors 281 (industrial chenicals), 333-5 (smelted and refined metal) and 282 (plastics and synthetics) each contain one huge firm, which in the case of plastics is nearly four times the size of the next operational unit. Similarly the iron and steel and non ferrous products sector (331,332,339) and sector 36 contain two large and many smaller firms. The large units are subsidiaries of multinational firms. These industries together with sectors 27 (printed matter), 3 (tyres and rubber), 357 (office and computing machinery) and 384 (medical instruments) are the areas in which investments of large size have been made in Ireland. The reasons for this pattern of large scale investment are examined below.

Table 3.4 Foreign Projects - Investment Levels at Full Production - Live Firms

	1 Industry	2 SIC Code	3 Number of Projects	4 Average Investment £000s	5 % of total Investment represented by sector	6 Coefficient of Variation of Investment
1	Meat Products	201	5	518	1.34	1.51
2	Dairy Products	202	22	458	5.22	0.65
3	Canned Food, Grain Mill, Bakery Products	(203, 206,207)	17	237	2.09	1.31
4	Textiles	22	54	335	9.38	1.76
5	Apparel	23	40	271	5.62	1.39
6	Wood and Furniture Products	24	12	357	2.22	1.36
7	Paper and Paperboard, Boxes and Containers	264, 265	6	360	1.12	1.20
8	Printed Matter	27	4	926	1.92	0.56
9	Industrial Chemicals	281	10	2340	12.13	2.84
10	Plastics and Synthetics	282	45	483	11.27	2.82
11	Drugs and Pharmaceuticals	283	11	362	2.06	1.05

Table 3.4 Continued:

1		2	3	4	5	6
12	Soaps and Cosmetics, Paints	284,285	4	164	0.34	1.21
13	Agricultural Chemicals, Mixed Chemicals	287,289	4	292	0.61	1.14
14	Tyres and Rubber Products	3,30,301	7	1516	5.50	0.49
15	Glass, Stone, Clay and Concrete	321,324	5	306	0.79	1.02
16	Iron, Steel and Non-Ferrous Products	(339,331 332)	22	724	8.26	2.71
17	Smelted and Refined Metal, other Non Ferrous	(335,331 332)	9	592	2.76	2.17
18	Metal Cans, other Fabricated Metal	341,342	9	109	0.51	1.20
19	Heating Apparatus, Farm Machinery	(353,343 358)	4	252	0.65	0.91
20	Special Industrial Machinery, General Industrial Machinery	354,356	21	269	2.93	1.20
21	Office and Computing Machinery	357	8	2085	8.65	1.53

Table 3.4 Continued:

	1	2	3	4	5	6
22	Household Appliances, Electronic and Communication Equipment	36	22	346	3.95	1.53
23	Motor Vehicles, other Transportation	371,372	4	348	0.72	1.04
24	Instruments and Precision Goods	38 minus 384	22	228	2.60	1.43
25	Medical Instruments	384	12	879	0.05	1.83
26	Other and unknown Products	19	17	266	2.34	1.11
	All Sectors		396	487	100	-

Source: Author's calculations from IDA data.

Smaller scale investment has been pursued most strongly in the food and textiles/apparel sectors. Also some small scale investment has occured in areas of the metals sector, instruments and precision goods, some sub sections of the chemical industry, the machinery groupings and in "other products".

The industries with a high coefficient of variation are the ones where large projects coexist with smaller scale ones. The large scale investments are in the sectors traditionally associated with direct foreign investment - plastics and synthetics, office and computing machinery, specialist instruments and electronic goods. All these industries can be expected to exhibit large economies of scale and it is within these industries, where markets are worldwide that the multinational enterprise has come to predominate. The sectors listed above are represented in Ireland by one or two very large units of a cross-European (indeed global in some cases) integrated firm. The market aimed at by such units is the EEC and technology intensive production is the norm. The industries also strongly involve product differentiation and this competitive feature allows small firms to coexist with larger rivals.

Column 5 shows that major concentrations of foreign investment are found in industrial chemicals, plastics and synthetics, textiles, iron, steel and non ferrous products and office and computing machinery. The number of seperate projects which contribute to these aggregates varies widely-

industrial chemicals and office and computing machinery are highly concentrated, whilst the foreign owned textiles and plastics and synthetics are constituted by a large number of projects.

The recent literature on FDI is rich in theoretical explanations of such investment.[5] These theories borrow heavily from theories of industrial organisation, trade theory and the economics of technological change. None of the theories, however, are capable of providing a complete self-contained explanation. Each of them is applicable to particular types of FDI. A full explanation of the sectoral distribution of FDI in Ireland also has to rely on different sets of theories. The most important of these theories are those of Stephen Hymer and C.P. Kindleberger and Raymond Vernon's Product Cycle Hypothesis.

The Hymer-Kindleberger explanation of FDI runs in terms of the monopolistic advantages possessed by firms. Such advantages, or income yielding assets, are postulated to be firm specific in that they are not available to competing firms (in the host country). It is reasonable to assume that host country firms in their turn may possess certain advantages which are not available to the foreign firms. They may be endowed with a knowledge of the local market conditions, local laws and customs and the local environment in general. But the firm-specific advantages possessed by the foreign firms may outweigh the disadvantages arising from their having to operate in a foreign environment. In other words the enterprise specific

advantages of the foreign firms can be transferred within the firm to combine with location specific advantages.

The exact nature of the advantage may derive from (1) superior technology of the source country firms, the product of past R & D expenditure. (2) Product differentiation: brand names and advertising or (3) the possession of a "new product" in the Kelvin Lancaster sense of a new combination of desirable attributes[7] or (4) superior organisational and managerial resources which enable the firm to identify and to seize opportunities for profitable investment which host country firms are unable to identify or are unable to exploit because of resource or institutional constraints (e.g. capital market constraint). Such an explanation of FDI is most relevant in sectors which exhibit high R & D outlays, large-scale production and highly differentiated products.[8] Into this category fall chemicals and pharmaceuticals, electronics and electrical engineering, mechanical engineering, motor vehicles, rubber products, oil and petroleum products. All such industries may be classified as research-intensive on a quantifiable criterion of research intensity.[9]

Given that the foreign firms' advantages are firm specific rather than location specific, the firms possessing such advantages have a choice regarding the manner in which they exploit the advantages in servicing foreign markets. They can produce in the source country and export, alternatively they can operate production facilities in the foreign

markets or they can license the advantage they possess to host country firms.

The last alternative - licensing - may not hold much attraction in the context of Ireland, mainly because of the lack of prospective licenses in Ireland. The attractive package of incentives, the availability of cheap labour and the access to European markets which Ireland provides may have added weight to the preference for investment over exporting direct to final markets. Thus the Hymer-Kindleberger explanation appears to be highly relevant particularly in the research-intensive sectors outlined above.

The second explanation which is relevant is the Product Cycle Hypothesis of Raymond Vernon,[10] The emphasis is on the timing of innovation, demand patterns, the organisation of the international firm and comparitive costs of different processes. Briefly the hypothesis suggests that innovation will take place in high income countries and production will first be of a high cost, skilled labour intensive nature. However as demand spreads the need for adaptation and standardisation becomes permanent. Subsidiaries are established in countries with cheaper skilled labour where there is a market for the product. Finally when the product becomes completely standardised, there is a tendency for the mature product, or at least those parts which are unskilled labour intensive to be located in countries with cheap and abundant unskilled labour.

In such a scheme, the processes carried out in Ireland should match its factor proportions. The expectation is that the processes carried out in Ireland will be unskilled labour intensive, often the final stages of production before sale (finishing processes). The cheap labour, and further reduction of costs by the incentive scheme, plus access to the EEC market are the attractions here. This kind of investment can be identified in the plastics and synthetics, metals and machinery, motor vehicles, electronics, pharmaceuticals and par excellence in the "other" products sectors. A further characteristic of such investment is that it is concentrated around Shannon Airport. The goods produced at Shannon are an important subset of such investment which is characterised by high value to low weight products which means that transport costs, both of inputs and exported outputs, do not increase the cost greatly even when the final good is transported back to the source country.

A further major category is vertical direct investment, the motivation of which is to capture raw materials.[11] Recent foreign investment in the metals sector, which is excluded from this work, is an example of this. In the manufacturing sector the major example is the food sector, particularly milk board products but other instances occur in the textiles and glass, stone, clay and concrete sectors. Such interest is here enhanced by cost factors and the EEC market and Irish membership of the Community.

Finally there is a need to invoke historical factors to round off the explanation of FDI in Ireland. The era of protection attracted several projects to service the home market, shielded from competition by the tariff wall. Several such firms survived the removal of tariffs - this applies in the textiles, apparel, wood and furniture, printed matter and metals sector. There has also been some "putting out" of work from Northern Ireland to take advantage of availability of labour and grants. The splitting of Donegal from its traditional markets for dairy produce is a further factor.

It is suggested therefore, that we need to utilise several complementary explanations of the industrial structure of FDI in Ireland. No one single explanation is sufficient to capture the diversity of reasons for which foreign firms establish Irish units. The Product Cycle Hypothesis of Vernon is however very rich in explanatory power in the case of Ireland, given the importance of market access, marketing factors and the nature of the production carried out by foreign owned firms.

We end this section by presenting a summary Table (3.5) which groups firms on a wider basis. Five major sectors; food and drink, textile products, metals and engineering, plastics and chemicals are shown.

Table 3.5 FDI in Five Major Sectors; Number of Live Projects

Sector	SIC Code	Number of Projects	Average Investment (000)s	Coefficient of Variation
Food and Drink	201,202,203,206,207	44	380	0.97
Textile Products	22, 23	94	308	0.99
Metals and Engineering	33,34,35,36,37,38	123	578	2.24
Plastics	282	45	483	2.82
Chemicals and Drugs+	281,283,287,289	25	1142	3.72

Source: As Table 3.4

These five sectors contain 331 live projects or 84% of the total live projects

+ Sectors 284 and 285 are excluded because a separate Irish Census of Production category exists for them and it is desired to make the CIP and SIC classifications comparable.

The degree of heterogeneity of project size increases as we move down the Table. This is because the size of the largest firm in each sector increases. For an explanation we return to the three major influences above: size of parent firm, minimum efficient plant size and the market at which the product is aimed.

(d) Foreign-owned firms which have failed or been taken over.

Firms which have failed amount to 11.7% of the projects which were, or had been operational up to January 1972. The total number of failed projects is 54. Failures by sector and nationality of parent are shown in Table 3.6.

Table 3.6 Foreign owned projects which had failed (to January 1972)

Sector	SIC Code	Number of Failures	Notes
Textiles	22	12	7 German 4 U.K.
Apparel	23	8	5 German
Plastics and Synthetics	282	8	5 U.K. 3 German
Iron Steel, Non Ferrous Products	331,332,339	2	-
Special, General Industrial Machinery	354,356,358	3	-
Household Appliances, Electronic and Communications Equipment	36	6	3 U.K. 2 U.S.
Instruments and Precision Goods	38 minus 384	3	-
Other and Unknown Products	19	4	3"other"

By Nationality: 21 German, 19 U.K., 8 "other nationalities"; 6 U.S., No Dutch failures. Total 54.

Source: Author's calculations from IDA data.

Apart from the industries shown in the Table, no other sector has had more than one failure. There are several characteristics which help to explain this industrial pattern of failures (1) Ease of entry into four industries in terms of small minimum size; this applies to sectors (22,23,282 and 19). In almost every case the project was a small one and also the parent firm was small. (2) A corollory of the small parent size is lack of management capability, which is particularly necessary in dealing with an alien economic environment. The IDA attributes most failures to poor management and given the substantial amount of assistance from the IDA and other state bodies this must be a major part of the explanation for failure in many cases. (3) Bad selection of projects particularly in the early period of the incentive programme when the screening procedure was not as thorough as it now is. (4) The termination of tariff protection also helps to account for failures in those sectors where projects were established to service the home market. Sectors 22,23 and some areas of the metal industry (notably sector 36) were indeed affected by the removal of tariff barriers and clearly some of the projects were unable to withstand increased competition from imports.

The number of German owned firms which failed, in relation to total applications, is remarkable. The sectoral factors above clearly are relevant - twelve of the German firms which failed were in the textile sectors. In addition, the parent firm size is smaller in the case of

German projects than for other nationalities. Thus financial backing and managerial resources may have been lacking.

To add to these failures, a number of foreign firms have been taken over by other concerns. All of these projects were in difficulty when they were taken over. Table 3.7 shows the breakdown of takeovers.

Again plastics and textile firms are the most prone to failure (as are UK owned firms in sector 36). The two US firms which failed in the food sector are exceptions to the rule of stability in that sector. These two firms illustrate the difficulties of control and differences in organisation (particularly in labour matters) between parent and subsidiary.

Table 3.7 Foreign firms taken over before failing

Sector	SIC Code	Number of Projects	Notes
Food Sector	201-7	2	Both US
Textiles	22	3	-
Industrial Chemicals	281	2	-
Plastics and Synthetics	282	4	2 UK 2 German
Household Appliances, Electronic and Communications Equipment	36	2	Both UK

By Nationality: 5 U.K., 4 German, 3 U.S., 1 Dutch

Total 13

Source: Author's calculations from IDA data.

(c) Projects "pending" (January 1972)

Projects pending are those which have been accepted for a grant from the IDA but had not come into production by January 1972. Some of these projects will be operational at the time of writing.

Table 3.8 shows that the industrial pattern of such projects was very similar to that of "live" firms. By nationality however, UK applications were much less important. This was largely because of the trouble in Northern Ireland. The expected upsurge in Japanese investment in Ireland had not materialised at this time although many enquiries were being made by Japanese firms and their importance can be expected to grow over the next quinquennium. There was also a tendency towards the attraction of larger scale projects.

Table 3.8 Projects pending (January 1972)

Sector	SIC Code	Number	Notes
Dairy Products	202	3	
Canned Food, Grain Mill, Bakery Products	203,206, 207	3	
Textiles	22	3)	4 U.K.
Apparel	23	3)	
Industrial Chemicals	281	3	
Plastics	282	5	
Soaps and Cosmetics,Paint	284,285	3	
Iron and Steel,Non Ferrous	331	5	3 German
Instruments and Precision Goods	38 minus 384	5	3 U.S.

By nationality: 22 US, 10 German, 9 "Other", 7 UK, 1 Dutch. Total 49

Source: Author's calculations from IDA data.

(f) "Extension" Projects

Any grant aided firm which expands its production facilities is eligable for a further grant to enable it to do so. Such expansions are termed "extension projects" by the IDA. Extension grants are available on the same basis and at the same rates as for new firms.

Of the 396 live projects, 69 are extensions, accounting for 17.4% of the total. Fifty-two firms have expanded, 15 firms having undertaken two grant aided expansions and one firm has expanded three times. The importance of extensions declines if we express investment in extensions as a percentage of total grant aided FDI. Total investment in extensions at full production is £ 26.8 millions from a total investment of £ 192.9 millions; 13.9% of total investment. It follows that average investment in extensions is less than the average for all projects - it is £ 389,000 against the overall £ 487,000. In addition to the 69 live extension projects, there were four extensions by firms which subsequently failed and there were extensions pending in January 1972.

The sectoral distribution of extensions and average investment in extension projects is shown in Table 3.9.

Table 3.9 Sectoral dispersion of extension projects

Sector	SIC Code	Number of Extension Projects	Total Number of Projects in Sector	Average (000s) Investment in Extn.	Average (000s) Investment in all projects
Textiles	22	11	54	448	335
Apparel	23	4	40	433	271
Plastics and Synthetics	282	10	45	295	483
Iron, Steel, Non ferrous products	339,331,332	5	22	194	724
Smelted Metal, Other Non-ferrous	333,334,335	4	9	124	592
Household Appliances, Electronic and Communication Equipment	36	6	22	179	346
Instruments and Precision Goods	38 minus 384	35	22	103	228
All Sectors +		69	396	389	487

+ Apart from the sectors listed, no other sector has more than 3 extensions.

Source: Author's calculations from IDA data.

In only two sectors, textiles and apparel is the average size of extension projects larger than the average size of projects as a whole. Both sectors are characterised by a large number of small firms.

The re-investment process at work in foreign owned firms in Ireland can be further examined by considering the time profile of extensions - Table 3.10.

The increase in the number of extensions carried out in the period 1967-1970 is a testimony to the satisfaction of foreign firms with the success of their operations in Ireland. Clearly, the number of firms achieving profitable operation increased. The importance of re-investment (and therefore of extension grants) is likely to surpass the present figure of 14% of total investment as more projects become firmly established.

Table 3.10 Extension Projects - Year of Grant Approved

Year	Number of Extension Grants Approved	Year	Number of Extension Grants Approved
1961	1	1967	10
1962	1	1968	6
1963	3	1969	15
1964	3	1970	20
1965	2	1971	4 (+ 3 pending)+
1966	4		

+ Figure for 1971 may be incomplete

Source: as Table 3.9

(g) Joint Ventures

It is a widely held view that joint ventures of domestic interests with foreign firms are inherently preferable to wholly-owned foreign subsidiaries. An element of domestic ownership is felt to give some local control over operations, confer on the host country a larger share of the benefits and to ensure greater stability. The acknowledged disadvantages (in addition to greater resource costs for the host) are conflicts of interest between the partners and, from the foreign parent's viewpoint, a loss of speedy adaptability. Joint ventures account for 107 of the 648 grant applications in Table 3.4. The breakdown by status of joint ventures is shown in Table 3.11.

Table 3.11 Joint Ventures by Status

	Status	Number of Projects
1	Live	60
2	Pending	8
3	Failed	11
4	Taken over before failure	1
5	Refused grant by IDA	7
6	Applicant did not take up grant	11
7	Firm withdrew Application	9
	Total Joint Ventures	107

Source: Author's calculations from IDA data

Joint ventures have had a below-average success rate. The proportion of failures amongst joint ventures which become operational (categories 1,3 and 4) is 15.2% - greater than the overall failure rate of 11.7%. If taken-over firms are included, the failure rate for joint ventures is 16.7% against 14.5% overall.

Management problems and difficulties peculiar to particular industries account for this higher rate. Management problems, the most important single reason, arise because of control difficulties and the conflicting interest of the parties. The overall commitment in terms of capital is less for the foreign partner than in a wholly-owned firm. Consequently the commitment of complementary inputs such as technology and management may have been less than wholly-owned subsidiaries. In addition, it is natural that joint ventures should be more numerous in those sectors where Irish interests are stronger - textiles, metals trades and some branches of engineering (not greatly in the food sector however). These sectors have been declining, particularly because of the reduction in tariff protection. Some joint ventures may have been entered into when the domestic part of the partnership was in decline, or indeed in danger of failure. Despite the below-average success rate, joint ventures are likely to become a larger share of the total number of accepted projects. Irish firms will begin to look for partners from whom to acquire technology and the IDA policy of obtaining equity participation in foreign projects will also have this effect.

There are however serious problems to overcome in successfully creating joint ownership of projects.

(h) The location of foreign-owned projects

One major aim of Irish economic policy is to reduce the severe regional imbalance from which the economy suffers. To this end, higher rates of grant aid are available in the "designated areas" (DAs) which means roughly the Western half of the country. It is often argued that foreign owned projects are more footloose than domestically owned ones because they are less tied to domestic institutions and suppliers and are prepared to train labour. Consequently the encouragement of foreign investment is seen as a major tool to ease the regional disparity.

Several factors can be expected to be important influences on the location of foreign owned projects. Nearness of markets and reduction of transport costs, access to raw materials and labour inputs and the availability of social and economic infrastructure are some of the important factors. In addition, Government policies designed to influence location, like differential grants, the provision of industrial estates and other inducements are also important. The corporate perception of locational advantages may differ between different nationalities of parent firm and may be also significant.

The market at which the production of foreign owned plant is aimed is an important locational factor. U.K. firms are clustered round Dublin because they mainly supply the U.K. and Irish markets. U.S. firms are clustered at Shannon Airport because this reduces transport costs of inputs from the United States and output can be air-freighted easily to Europe or back to the United States. German subsidiaries prefer locations in small towns in the West of Ireland taking advantage of higher grants, abundant labour and the social advantages of being the centrepiece of a local community.[12] Clearly the location is influenced by the major inputs which the project needs - for instance, the richer agricultural land of the East has attracted industry based on raw material inputs.

A recent analysis of the location practices of foreign owned firms in Ireland, by a geographer,[13] found little evidence of "physical agglomeration" by nationalities of ownership, except for American owned plants (largely explained by clustering at Shannon Airport). There was also little evidence of diffusion over time i.e. no evidence of concentric circles of foreign owned plants with older established plants at the centre. The present study reiterates those findings although certain locational tendencies (rather than concentrations of investments) by nationality can be brought out viz. German plants prefer the DAs, although not industrial estates, American firms strongly favour industrial estates and U.K.

firms eschew both in favour of the East, particularly Dublin. The most important locational factors thus are - final market, transport cost differences and differences in the perception of locational advantages, which appears to be closely related to the type of product. A good example of the last point is that many of the U.S. plants favouring Shannon are fabricating plants.

Government policy (through the IDA) has been aimed at attracting projects to the West in the face of the "natural" advantages of the East and particularly of the major cities, Dublin, Cork and Waterford. Dublin, the capital, accounts for 20% of the population of the Republic and is also the most important port. The second city and second port is Cork, which has the additional advantage that the DA/NDA boundary divides County Cork, so that the higher (DA) rates of grant apply in close proximity to the city. Waterford is a major East coast port with the added advantage of an IDA industrial estate. The success of the IDA policy can be judged initially by the numbers of foreign owned projects which are attracted to the less developed regions. Table 3.12 shows location according to the DA/NDA division and Table 3.13 shows location by county.

Table 3.12 Location of foreign owned projects-DAs versus Non DA

Status of Project	Non DAs	DAs	Total
1 Live	253(41)	143(28)	396(69)
3 Failed	30	24	54
4 Taken over before failing	8	5	13
2 Pending	27(1)	14(2)	59+(3)

Extension projects are shown in brackets.
+ Includes 9 'NONE' of Table 3.13.

Source: Author's calculations from IDA data.

Judged by numbers of projects only, the policy has been reasonably successful - over 36% of foreign owned projects are located in DAs. (Table 3.12). In terms of attracting new projects, the Shannon-Limerick area has been successful as a counter-magnet to Dublin. Table 3.13 shows that up to January 1972, 60 live projects had been attracted to counties Clare and Limerick. The transport incentives of the Free Airport together with the special incentives there attracted £13.9 millions of investment by foreign owned firms - of which £8.9 millions was of U.S. origin.[14] In addition, counties Kerry and Galway have attracted a large number of foreign projects - both are particularly favoured by German investors.

However, several counties have attracted very few foreign owned projects notably Carlow (NDA), Kilkenny (NDA), Laios (NDA), Leitrim (DA), Meath (NDA), Roscommon (DA) and Westmeath (NDA). A new problem thus arises - disparities within the DA/NDA classification. Most of the listed counties, by virtue of their Eastern location, fall into the NDA classification and thus do not benefit from the higher rates of grant aid. Infrastructure and transport facilities are lacking. In the main, these counties have little in the way of scenic attractions or rich agricultural materials to counterbalance their difficulties. Under the present system of grant allocation, the IDA is at liberty to give a higher rate of grant than it would otherwise do, to a project located in a particular needy area. It may be however, if regional disparities are to be really tackle, that the rate

of grant aid must be tied to the per capita income or unemployment rate of the immediate area. Despite the higher grant aid available, most projects have preferred to locate in NDAs. This testifies to the strength of external economies and lower transport costs. A further factor is the desire, on the part of foreign subsidiaries, for trained labour - or at least labour with industrial experience. This is lacking in DAs, although the activities of AnCo should reduce this factor as a locational influence.

The contribution of foreign firms to allieviating the regional disparities may be summed up as follows. Over 36% of live foreign owned projects are located in the DAs. This represents an important policy achievement, bringing approximately 14,000 new jobs to the DAs (calculated from the figures given in Table 3.20). However, within the DAs, this is unevenly spread and there is sufficient evidence to argue that the most needy areas of all have been entirely neglected by foreign investors. The "middle development areas" have benefitted from FDI but not the poorest areas of all. A greater element of regional selectivity is needed and perhaps a start can be made by creating temporary "priority areas" and downgrading those areas which are now still designated although they have reached as high a level of per capita income and employment levels as the NDAs.

Before leaving location, it is worthwhile to examine the policy in terms of failure rates and reinvestment ratios

Table 3.13 Location by County of Foreign Projects

County	Live Projects (1)	Failures (3)	Projects Taken Over Before Failing (4)	Projects Pending (2)
CARLOW	2	-	-	-
CAVAN	13 (3)	-	1	1
CLARE(inc.S.F.A.)	44 (10)	12	4	6
CORK	43 (2)	6	1	7
DONEGAL	15 (1)	3	-	2
DUBLIN	83 (19)	4	-	2
GALWAY	23 (6)	9	1	4
KERRY	21 (5)	4	-	2 (2)
KILDARE	14 (1)	1	-	1 (1)
KILKENNY	4	-	-	-
LAIOS	3	1	-	-
LEITRIM	1	-	1	-
LIMERICK	16 (1)	1	1	6
LONGFORD	6 (2)	-	-	-
LOUTH	18 (6)	2	1	-
MAYO	8 (2)	1	2	1
MEATH	1	-	-	-
MONAGHAN	13 (2)	3	-	-
OFFALY	5 (1)	2	-	1
ROSCOMMON	3 (1)	1	-	-
SLIGO	15 (6)	-	-	-
TIPPERARY	7 (1)	-	-	-
WATERFORD	21	3	1	3
WESTMEATH	2	-	-	4
WEXFORD	8	-	-	-
WICKLOW	7	1	-	1
NONE	-	-	-	8
TOTAL	396 (69)	54	13	49 (3)

Figures in brackets: extensions. NONE applies only to projects pending. Source: Author's calculations from IDA data.

in DAs versus non DAs. The failure rate (Table 3.12 categories 3 and 4 as % of 1,3 and 4) has been 13.1% in Non DAs and 16.8% in DAs. The reinvestment ratio - extension projects as a percentage of live projects - has been 16.2% in Non DAs but 19.6% in DAs. Despite a higher failure rate, there has been a more pronounced tendency for foreign firms to expand in DAs. This suggests that once the initial problems of setting up a project in less developed areas can be overcome, the opportunites for profitable operation are equal to, if not better than those in more industrially advanced regions of Ireland.

(i) The financial structure of foreign owned projects

Tables 3.14 and 3.15 show the projected sources of finance for foreign owned projects in Ireland, for all firms and U.S. firms respectively. The categories are self-explanatory, but it should be noted that 'Grant' is capital grant only and excludes any training grants and subsidies to rent and interest which may have been disbursed to the project. Coverage of live projects is incomplete - no information is available on the excluded 14 live projects. One anomaly is the fact that the figure for projected finance exceeds the projected investment aggregate - this arises because of the need for classifying provisions and reserves.

Table 3.14 Projected sources of finance: all live firms

Source of Finance	Number of Projects	Total Amount Projected (£M)	Percentage of Total Projected Finance
1 Long Term Irish Debt	87	13.7	6.23
2 Current Debt (Bank Overdraft)	246	32.5	14.76
3 Foreign Debt (Overseas borrowing, loans from parent)	103	38.5	17.46
4 Grant	357	65.3	29.62
5 IDA Equity Participation	5	0.3	1.19
6 Equity + Preference Shares	368	67.8	30.74
TOTAL	382+	220.4	100.00

+ Coverage of 396 firms incomplete

Source: Author's calculations from confidential IDA data.

Table 3.15 Projected sources of finance: live U.S. companies

Source of Finance	Number of Projects	Total Amount Projected (£M)	Percentage of Total Projected Finance
1 Long Term Irish Debt	21	3.8	4.23
2 Current Debt (Bank Overdraft)	60	10.6	11.74
3 Foreign Debt (Overseas borrowing, loans from parent)	43	19.4	21.43
4 Grant	93	32.7	36.10
5 IDA Equity Participation	1	0.1	0.00
6 Equity + Preference Shares	97	23.9	26.41
TOTAL	102+	90.5	100.00

+ Coverage of 107 firms incomplete

Source: As Table 2.18

The most important sources of finance for foreign owned firms taken as a whole are debt (38.5%), equity and preference shares (30.7%) and grant aid (29.6%) U.S. firms have a different orientation: debt (37.4%), grant aid (36.1%) and equity and preference shares (26.4%). U.S. firms receive larger grants in both proportionate and absolute terms than firms of other nationalities. (U.S. average grant aid £351,000 - overall average grant £183,000). It is noticeable also that U.S. firms commit less equity funds per project.

High gearing is a feature of foreign investment. High gearing reduces the parent firm's capital commitment and allows (tax-free) profits to be used to pay off the debt - thus leaving a capital gain for the parent company.[15] There are several projects which have no equity funds involved - these are extension projects financed from debt and grant aid, thus necessitating no direct inflow of funds from the parent company. A further common practice is to match the capital grant with equity funds and raise the remainder by debt financing. Surprisingly, perhaps, U.S. firms rely on Irish debt to a lesser extent than do other nationalities. This may be due to the difficulties which the Irish capital market presents in raising funds on a large scale.

The recently promoted IDA drive to acquire equity participation had not produced much response at the time at which the data was collected (January 1972). Only a

small number of large companies - chiefly of European origin - had entered this type of agreement. Only one U.S. firm allowed IDA equity participation, reflecting the widespread tendency of U.S. foreign investment to be 100% subsidiaries with no attendant interference by minority shareholders.

This section on finance has shown that 48.1% of total investment under the control of foreign subsidiaries comes from outside Ireland (although some current debt is funded by foreign banks, some of whom have been attracted to Ireland because of the inflow of FDI). This figure is almost the same for U.S. firms (47.8% of total investment is from non Irish sources). U.S. firms also get a higher proportion of investment financed by grant aid. This is partly because of extra bargaining power and also because it is felt by the IDA that special benefits accrue from U.S. investment which are of the nature of external economies. It can be expected therefore that the foreign exchange inflow accompanying a new foreign investment will be of the order of magnitude of roughly half the total investment. This is a useful rule of thumb for future policy making and prediction.

Section 3: The Economic Functions carried out by the Irish Subsidiaries of Foreign Firms

The data in this section are taken from the An Foras Forbartha survey of grant aided industry conducted by Padraig O'Huggin.[16] Responses were received from 377 firms

of which 276 (73%) were foreign owned. (Joint ventures were allocated according to majority (51%) ownership).

The first point of interest is the range of types of organisational structure within the foreign group. The Irish unit may be a wholly-owned subsidiary of a multi-national company, a more loosely-controlled offshoot of a foreign firm, a joint venture or an autonomous investment owned by a group of foreign firms or individuals. This variance in organisation is reflected in the proportion of foreign-owned firms in the sample which claim to be "independent self-contained establishments". Such firms number 102 (37% of the total foreign group) as against 174 foreign projects which are "part of a larger industrial organisation". Such firms are later referred to as "autonomous investments". This section provides part of the background to section 4 of the following chapter which analyses the contribution of FDI to the emergence of a dualistic framework in Irish industry.

The survey investigated the functions performed by the head office (or other units of the organisation). An analysis of the functions performed outside Ireland by the foreign group not only gives an insight into the nature of foreign firms but also is indicative of the degree of cross-national integration within the foreign group. Table 3.16 presents an analysis of the functions performed by the "non-autonomous" group of foreign firms. (Autonomous firms, by definition, do not farm out functions).

Table 3.16 Functions performed abroad by non-autonomous foreign firms

[1]Description of function	[2]Number of firms performing function abroad	[3]% of non-autonomous firms performing function abroad	[4]Ranking of number of firms performing abroad
1 Purchases components and materials for plant	55	32%	3
2 Manufacturers components and materials for plant	49	28%	4
3 Processes further the goods produced by plant	27	16%	8
4 Markets the goods produced by plant	84	48%	2
5 Looks after accounts and finance of plant	30	17%	7
6 Exercises regular managerial control and supervision	46	26%	5
7 Provides Research and Development backing for plant	106	61%	1
8 Provides other services	39	22%	6
Total number of Non Autonomous Firms	174		

Source: Author's calculations from An Foras Forbartha Survey under Padraig O'Huggin.

The function most frequently carried out abroad is Research and Development activity. The overwhelming majority of firms who perform any R & D do so outside the Republic. This finding is supported by the fact that the firms who do not perform R & D abroad fall very largely into the non-research intensive sectors. Fifty of the 106 firms listed as relying on R & D from abroad fall into the metals, electrical and engineering sectors (Irish Census of Production categories 35 - 38). This situation has been recognised by the IDA who are trying to counteract it by the establishment of the Research Park at Naas, with special incentives for research projects.

Almost half of the non-autonomous firms carry out the marketing function abroad. This is partly the result of the high export proportion in their total sales. The number of firms in this category would probably be greater were it not for the activities of Coras Trachtala (the Irish Export Board).

The number of firms which carry out function 1 (purchasing of inputs) and 2 (provision of components for the Irish plant) help to explain the allegedly low linkage effects between the foreign sector and the rest of the economy.[17] A foreign unit purchases components and materials for the Irish plant in the case of 55 firms. Such materials will be from traditional (foreign) suppliers. Twenty-five firms carry out both functions 1 and 2 abroad and will therefore have very high import propensities. Sectoral clustering is again apparent - 12 such firms are from sectors 35 - 38.

In only nine firms are both functions 2 and 3 performed outside Ireland. A complete integration of processes across national frontiers is evident in such firms. Of these firms, four are in the metal trades industry (ICIP 35) and two in the manufacture of electrical machinery. These six firms are large multi-national companies.

Despite the above findings, in many cases it does appear that foreign owned firms are given managerial autonomy. In only 46 firms is regular management control of the plant exercised from outside.(However what constitutes "regular control" may vary between organisations). Therefore, in at least operational decisions, 230 of the 276 foreign firms claim to be independent.

The total number of different functions provided for the Irish establishment by foreign associates is shown in Table 3.17. Twenty-six firms which form part of a larger organisation claim to have none of the listed functions provided for them whilst only two state that all eight functions, including a number of other services, are carried out abroad. The median number for the associated group is two functions and the mean number of functions provided is 2.5.

Table 3.17 Number of functions performed abroad for the Irish establishment

Number of functions Performed Abroad	Number of firms
0	26 (+102 autonomous firms) = 123
1	39
2	34
3	27
4	16
5	15
6	12
7	3
8	2

Source: Author's calculations from AFF Survey data.

This section has shown that foreign owned firms differ greatly in the division of functions between the Irish subsidiary and those performed for the subsidiary by units of the firm outside Ireland. This is a reflection of differences of organisation within the foreign sector. Foreign owned units in Ireland range from subsidiaries of large multinational companies, which are closely integrated across national frontiers, to small private firms, loosely connected to the parent company. In the extreme case, the parent is a loosely linked group of foreign individuals and the Irish unit can be considered as an autonomous investment.

Section 4: The Importance of the Foreign Owned Grant Aided Sector of Irish Industry.

The importance of the foreign owned grant aided sector is best considered by examination of its contribution to several key economic magnitudes; to output and exports, to employment creation, its effect on the economic structure and its impact on industrialisation and growth.

Table 3.18 shows the contribution to transportable goods output and to exports made by foreign owned, grant aided firms in 1970. Column 2 of the Table is derived from data on the actual output and exports of 277 foreign owned firms from an An Foras Forbartha (AFF) Survey together with IDA data on output projections for all firms. Actual output of foreign firms not included in the Survey was estimated in the following way. The proportion of projected output actually realised in each industry was calculated for all firms in that industry included in the AFF Survey. This proportion was then applied to the projected output of all foreign firms not included in the AFF sample. In this way estimates were made of the output and exports of all foreign owned firms for 1970.

The IDA estimates that 76% of grant aided investment has come from foreign owned projects.[18] The output of foreign owned firms accounted for over 13% of the total output of the transportable goods industries in 1970 (Table 3.18). This proportion is increasing secularly.

Table 3.1 illustrated the increase in FDI over the years and many of the firms now in production have not yet reached their full potential output.

Table 3.18 The Foreign Owned Grant Aided Sector of Irish Industry (1970).

Item	1 All Firms £ million	2 Foreign Grant Aided Firms £ million	3 Foreign Share of total (1)÷(2) %
1. Output of the Transportable Goods Industry	1137.5	150.7	13.3%
2. Transportable Goods Output minus Food and Drink	767.9	132.6	17.4%
3. Total Exports	416.4	122.7	29.5%
4. Exports excluding Food, Drink and Tobacco	223.3	102.8	46.1%

Source: Column 1, lines 1 and 2: Review of 1971 and Outlook for 1972, Prl 2357, Stationery Office, Dublin.
Column 1, line 3 and 4: External Trade Statistics 1970 CSO Dublin, Prl. 2012.
Column 2, Author's estimates from confidential IDA data and AFF Survey (see note 4) see text.

Lines 3 and 4 illustrate again the importance of foreign owned firms in the Irish export drive. Almost one third of Irish exports are from foreign owned firms - this increases to 46% when food, drink and tobacco exports are excluded. The difference in the proportion of output and

and exports controlled by foreign owned firms shows the commitment to exports of foreign owned projects.

Table 3.19 shows the sectoral distribution of the output of foreign owned firms. The degree of foreign control varies from sector to sector but the large share of the chemicals sector in foreign hands is noteworthy. Other sectors with considerable foreign ownership are wood and furniture, metals and emgineering and other manufacturing. Only a small proportion of the food, drink and tobacco industries is in foreign hands. The inflow of FDI has clearly altered the sectoral composition of Irish manufacturing industry.

Employment in foreign owned projects is perhaps the most difficult "impact effect" to estimate either from official figures or from the confidential IDA and AFF data. Table 3.20 gives official figures for employment in New Industry projects.

Table 3.19 The Sectoral Output of the Foreign Owned Grant Aided Sector of Irish Industry 1970

Sector	1 Total Gross Output 1970 £m	2 Estimated Output of Foreign Owned Firms 1970 £m	3 Foreign Share (2)/(1) %
1. Food	407.3	18.1	4.5
2. Drink and Tobacco	121.9	-	-
3. Textiles	92.0	15.6	17.0
4. Clothing and Footwear	52.6	9.7	16.5
5. Wood and Furniture	26.1	6.6	25.3
6. Paper and Printing	61.5	4.4	7.2
7. Chemicals	61.6	37.4	62.3
8. Structural Clay and Cement	34.5	1.4	4.1
9. Metals and Engineering	181.6	35.6	20.0
10. Other Manufacturing +	94.0	21.9	23.3
11. Mining and Turf	42.1	na	-
Total Manufacturing	1095.4	150.7	13.3

+ Not strictly comparable-foreign sector includes "unknown" products

Source: Column 1 Review of 1971 and Outlook for 1972, Prl.2357. CSO Dublin
Column 2 Author's calculations from IDA data.

Table 3.20 Employment in New Industry Projects

(New Firms and Major Expansions)

Date	Numbers actually employed
31.3.67	16,100
31.3.71	38,100
31.3.72	44,800
31.3.72+	48,400

+ Including employment at Shannon Free Airport.

Source: IDA: Annual Report 1971/72

Table 3.20 shows the amount of employment created by foreign owned firms. The IDA suggests that over 80% of these jobs are in foreign owned projects. Job creation by foreign owned firms is thus over 39,000. The author's own calculations, using projected employment from the IDA figures and actual employment from the AFF Survey to construct "achievement ratios" gives an estimate of just over 40,000. It can be assumed that the latter figure represents an approximation to the number employed in foreign owned firms at the beginning of 1972.

The creation of 40,000 new industrial jobs over a period of just over 15 years represents a major policy success. This however, begs the question of alternative methods of job creation using similar amounts of Irish resources. A full cost benefit analysis of resource use is required, including other effects and we return to this theme in Chapter VII.

Section 5: Conclusion

The policies outlined in Chapter II have resulted in a rapid increase in FDI in the manufacturing sector of the economy. The characteristics and industrial structure of this investment were examined in detail.

This Chapter has shown the importance of FDI in terms of its contribution to Gross Domestic Capital Formation, manufacturing output, exports, employment and to the sectoral distribution of the manufacturing sector.

The importance of Government policy is clearly illustrated by the success of Ireland in reducing emigration through the establishment of new employment creating, outward looking industries. The costs and side-effects of this policy should not be ignored. In the main, it is the success of this policy which has been emphasised here. However, this should not lead to a neglect of the domestic sector into which foreign investment should be seen as an essential input (perhaps temporarily) rather than as an alternative. The following Chapter looks explicitly at the differences between the domestic and the foreign owned sector in addition to an examination of the external trade relationships of the foreign sector.

Chapter III. Notes and References.

1. Survey of Grant Aided Industry. Stationery Office, Dublin, October 1967 (Prl.117) pp. 29-31.
2. Dermot McAleese (1972) "Capital Inflows and Direct Foreign Investment in Ireland 1947-70". Journal of the Statistical and Social Inquiry Society of Ireland, Vol XXII, Part IV 1971-72.
3. McAleese (1972) op.cit.
4. The data was collected by Mr. John Teeling which with IDA permission, he passed on to the author. I would like to thank John Teeling for access to this material.
5. These theories of FDI are reviewed in the Introduction.
6. See inter alia C.P. Kindleberger (1969) American Business Abroad. Yale U.P.
7. K.J. Lancaster (1966) "A new approach to consumer theory". Journal of Political Economy 1966.
8. See Peter J. Buckley and John H. Dunning (1974) "The Industrial Structure of U.S. Direct Investment in the U.K." University of Reading Discussion Papers in International Investment and Business Studies No. 12 March 1974.
9. John H. Dunning and R.D. Pearce (1970) "The World's Largest Enterprises: A Statistical Profile." Business Ratios Issue Three.
   The criterion is over 2% of total sales accounted for by R & D expenditure or where the number of scientists and engineers employed in R & D is 1% of total employment.

10. Raymond Vernon (1966) "International Investment and International Trade in the Product Cycle." Quarterly Journal of Economics Vol 80, 1966.

11. Richard E. Caves (1971) "International Corporation: The Industries Economics of Foreign Investment" Economica Vol. 38, 1971.

12. See Lorraine Donaldson (1966) Development Planning in Ireland, Praeger: New York.

13. A Blackburn (1972) "The Location of Foreign-Owned Manufacturing Plants in the Republic of Ireland". Tijdschrift voor Economisce en Sociale Geographie LXIII No. 6. Nov/Dec. 1972. The analysis refers to 1958 - 1964.

14. Source: Letter from SFAD Co. Information Officer. Dated 15th May 1972.

15. McAleese (1972) op. cit.

16. An Foras Forbartha (1972) Regional Development and Industrial Location in Ireland. Volume 1: Locational Decisions and Experience of New Industrial Establishments 1960-70. by Padraig O'Huggin AFF April 1972. The author would like to convey his thanks to Mr. O'Huggin for allowing him access to the Survey, also to the staff of An Foras Forbartha for their valuable help and assistance.

17. See Survey of Grant Aided Industry (1967) op.cit. and Chapter 4.

18. Industrial Development Authority, Dublin, Annual Report 1971 - 2, Page 11.

Chapter IV: The Trade Pattern of Foreign Owned Firms and the Emergence of a Dualistic Structure in Irish Industry.

Chapter III outlined the magnitude and structure of Foreign Direct Investment in Ireland. This Chapter builds on that base and analyses the interrelations between the trade flows of Ireland, the domestic economic framework and the pattern of FDI. Throughout this Chapter, the analysis is conducted in market prices. Chapter VI on the Balance of Payment proceeds from this by valuing all goods, services and inputs at "world prices".

In Chapter I, Ireland was characterised as a small open economy by reference to the foreign trade ratio -FTR (total exports plus total imports including current income on capital to G.N.P.) Heavy dependence on external trade, however, is not the only facet of openness which the Irish economy exhibits. International flows of primary factors; capital and labour, also tend to be high in the Irish case. Besides direct investment, state borrowing from abroad, portfolio capital inflows and "other items" (changes in the external position of the commercial banks, hire purchase agreements and foreign acceptances by banks) also figure significantly as Table 4.1 shows.

Table 4.1 Distribution of Net Capital Inflow to Ireland 1961-1970.[2]

	1 Net Governmental Borrowing	2 Net Borrowing by State Sponsored Bodies	3 Net Direct Investment	4 Net Portfolio Investment	5 Other Items	6 Total
Total (£m)	51.3	76.1	113.2	7.7	94.9	343.2
%	14.9	22.2	33.0	2.2	27.7	100.0

Source: Dermot McAleese (1972) "Capital Inflows and Direct Foreign Investment in Ireland 1947-70"

In comparison to other European countries, the magnitude of these capital inflows is large relative to Gross Domestic Capital Formation and official foreign currency reserves.[3]

International flows of labour figure prominently in Irish economic policy as Chapters I and II demonstrated. Reduction of the labour outflow from Ireland has been a major policy target. In addition, Ireland has a number of unusual external links. The Irish labour market is closely linked with that of the U.K., cheque payments between the two countries obtain and in addition Ireland has unique cultural and kinship ties with the U.K., U.S.A., Canada, Australia and New Zealand. These trade flows and flows of primary factors both contribute to the open nature of the Irish economy.

The openness of the economy has important implications for development policy. The economy is sensitive to external shocks, transmitted by the trade sector. Injections in the form of exports and leakages in the form of imports, dominate real income changes to a far larger extent than would be the case in a more closed self-sufficient economy. The foreign trade sector could thus be an important source of instability. Moreover, some of the conventional policy tools for the correction of such disequilibria are not available to the Irish Government. Monetary policy is constrained by the circulation of the British £ sterling in the Republic, The Irish £ has conventionally been tied to sterling and so devaluation or revaluation unilaterally is not feasible. Instability in the face of an incomplete range of corrective policy tools constitutes a severe constraint on the choice of development paths.

An economy with a high FTR and a fairly low level of development must have a low degree of internal structural interdependence. Domestic input-output links are small. The import content of manufactures is high and domestic activity approximates to a fabricating economy in which imported inputs are processed and re-exported. The need for imported intermediate goods necessitates a high level of export earnings. The vicious circle of dependence on the world economy can be eased only by domestic economic growth and the establishment of an integrated production processes. The contribution of FDI to this development is analysed in this Chapter. There are, of course, substantial benefits

from international trade and these too should be illuminated. The Chapter thus examines the strong and pervasive links between international flows of factors and of goods.

Section I FDI and Trade Flows: An Examination of Trends

The traditional "comparative cost" theory of international trade made, in general, a rather forced dichotomy between trade and factor flows. The growth and recognition) of the phenomenon of direct investment and the increasing importance of the "international firm" made the assumption of independence of the two flows an inadequate basis for a complete theory of international trade. Many recent contributions to international trade theory have attempted to integrate the international flow of factors and the flow of goods within a single framework.[4] Recognition of the importance of international firms in world trade necessitates abandoning several of the usual assumptions of traditional trade theory. These are:

(1) that all firms are price takers,

(2) that knowledge is a free good and therefore that production functions are identical in all countries,

(3) that completely free movement of goods and complete immobility of factors of production is the norm in international trade.

The existence of the international firm means that the following factors must be recognised:

(1) The organisation of industries internationally often means that oligopolistic behaviour must be given explicit recognition.
(2) The control of knowledge and other income-creating assets within the international firm means that such firms can influence the "comparative advantage" of nation-states by their location and production decisions.
(3) Control of the flows of capital and goods internationally within the same decision taking unit has both shifted attention away from the nation to the individual firm and has made the assumption of independence of the two flows untenable.

The decisions of international firms about location and sources of supply have become crucial to the prediction of trade flows. Trade and location theory must therefore be combined.[5] The international firm can choose between exporting and production abroad as a means of servicing a foreign market. (Licensing may be a third means of increasing the return on a firm-specific income-creating asset). Several tests of the nature of this choice have been carried out, notably by Horst and by Buckley and Dunning.[6]

Consideration is given first to trade flows of Ireland in the aggregate. The figures of the inflow of FDI, imports and exports are set out in Tables 4.2 and 4.3. Underlying the increase in exports is a rapid expansion of industrial exports (Table 4.2 Column 3) which increased

from 20% of total exports in 1956 to over 58% in 1970. Table 4.4 which presents annual growth rates of the major series shows that in all years (except 1960 - 62), the growth of industrial exports was over 13% and that the average annual growth rate was 19.1%. In contrast, the growth of total exports has been unsteady despite the 9.8% average annual growth. The connection between FDI and industrial exports will be amplified later in this Chapter.

Table 4.2 FDI and Exports 1956-1970 (£000s)

Year	1. Foreign Direct Investment	2. Total Exports	3. Industrial Exports+	4. Industrial Exports as % total exports (3/2)
1956	82	100,127	22,000	20.3
1957	1,800	131,341	28,000	21.3
1958	1,677	131,293	33,000	25.1
1959	2,662	130,607	41,000	31.4
1960	5,072	152,703	53,000	34.7
1961	3,694	180,473	56,000	31.0
1962	3,636	174,390	59,000	33.8
1963	5,337	196,539	68,000	34.6
1964	2,985	222,004	91,000	41,0
1965	10,135	220,811	104,000	47.1
1966	7,806	244,323	127,000	52.0
1967	9,869	285,086	147,000	51.6
1968	23,884	332,475	184,000	55.3
1969	29,066	371,441	214,000	57.6
1970	36,424	431,618	251,000	58.2

Source: Column 1. As Table 2.8

Column 2. External Trade Statistics 1971.

Column 3. IDA Annual Report 1969/70. Figures for 1956 and 1957 from Trade and Shipping Statistics (various) and for 1970 from Review of 1971 Outlook for 1972 (Prl.2357)

+ As defined in Appendix II of The Second Programme for Economic Expansion Part II.

Over the period 1956 - 70, the growth of imports has corresponded to that of exports, annual average growth of imports being 9.7% (Table 4.4). It is helpful to divide imports by use in order to establish whether increased earnings of foreign exchange from the increased export receipts have been spent on consumption goods, intermediate goods or capital goods. In fact Table 4.3 shows that producers' capital goods have increased as a proportion of the total import bill, consumption goods have retained a constant share and the share of imported intermediate goods has declined. This suggests that domestic value added (at market prices) has increased and this was borne out in Chapter I. The trend is towards importing capital goods and increasing the share of the production process carried out in Ireland. FDI may have contributed to this - clearly an inflow of foreign capital will involve increased imports of capital goods and should expand the productive capacity of the domestic economy. We must however retain reservations on this issue until the output is valued at true opportunity cost, or world prices.

Table 4.3 FDI, Total Imports and Imports by Use 1956-1970 (£000s)

Year	1. FDI	2. Total Imports	3. Imports of Producers' Capital Goods		4. Imports of Materials for Further Production		5. Imports of Consumption goods for use	
				% of total imports		% total imports		% total imports
1956	82	182,849	23,700	13.0	111,200	60.8	41,000	22.4
1957	1800	184,172	20,100	10.9	114,200	61.9	41,600	22.6
1958	1677	198,957	23,000	11.6	121,900	61.2	44,000	22.1
1959	2662	212,647	25,200	11.8	131,400	62.2	45,000	21.2
1960	5072	226,228	25,300	11.2	142,800	63.1	46,400	20.5
1961	3694	261,403	34,900	13.3	161,100	61.2	52,800	20.2
1962	3636	273,724	39,400	14.4	165,600	60.5	57,400	21.0
1963	5337	307,684	47,300	15.4	181,200	58.9	65,200	21.2
1964	2985	349,318	52,200	14.9	212,000	60.7	71,200	20.4
1965	10135	371,846	60,300	16.2	219,000	59.1	80,000	21.5
1966	7806	372,567	57,900	15.5	219,000	58.8	84,200	22.6
1967	9869	392,260	58,800	14.9	234,500	59.7	87,900	22.4
1968	23884	496,093	72,700	14.6	296,100	59.6	15,900	23.3
1969	29066	589,753	112,300	19.0	332,600	56.3	34,900	22.8
1970	36424	653,607	114,900	17.5	371,500	56.8	53,300	23.4

Source: Column 1 as Table 2.8. Column 2 External Trade Statistics 1970.

Columns 3,4 and 5 D. McAleese (1970) A Study of Demand Elasticities for Irish Imports ESRI Paper No. 53 and External Trade Statistics 1970.

The rates of growth of imports and exports are both greater than the average rate of growth of GNP which was 8.1% 1956-70 (see Table A1.1). Ireland is thus becoming more 'open' - more dependent on the trade sector.

Table 4.4 The rate of growth of FDI, exports, industrial exports and imports 1956 - 1970.

Year	1. Annual % FDI Increase	2. Annual % Increase Total Exports	3. Annual % Increase Industrial Exports	4. Annual % Increase Imports
1956-57	2095	21.5	27.3	+0.0
1957-58	-6.8	-0.0	17.9	8.0
1958-59	58.7	+0.0	24.2	6.9
1959-60	90.5	16.9	29.3	6.4
1960-61	-27.0	18.2	5.7	15.5
1961-62	-1.6	-3.4	5.1	4.7
1962-63	46.8	12.7	13.2	12.4
1963-64	-44.1	13.0	33.8	13.5
1964-65	239.5	-0.0	14.3	6.4
1965-66	-23.0	+0.0	22.1	+0.0
1966-67	26.4	14.3	15.7	5.3
1967-68	142.0	16.6	25.4	26.5
1968-69	21.7	11.7	15.4	18.9
1969-70	25.3	16.2	18.1	10.8
Annual Average Growth	-	9.8	19.1	9.7

Source: As Table 4.2 and Table 4.3.

The influence of FDI is most pronounced on Irish industrial exports. The industrial export performance of Ireland is very creditable when set against the growth of world markets. Table 4.5 shows the rate of growth of Irish industrial exports and of the markets for such products. Line 1 shows the growth of world trade in non-agricultural products weighted by the commodity and geographical pattern of Irish exports in the base year. The second line shows the growth of Irish exports of non-agricultural products (the definition differs from that utilised in Tables 4.2 and 4.4 - it is a broader definition. In every year between 1965 and 1970 the rate of growth of Irish exports was in general greater than that of the markets which suggests that some changes in the supply side as well as increased demand have occured. This is additional evidence of the change in Irish domestic economic structure brought about at least in part by FDI (Table 4.7 shows that 34% of Irish exports came from foreign owned grant aided firms). Foreign capital flows mainly into the exporting sectors of Irish industry - indeed it creates such sectors. Foreign firms are encouraged to export by the system of industrial incentives, in particular by the tax concessions on profits earned from exports and the removal of duty on imports embodied in export production, as explained in Chapter II.

Table 4.5 Irish export performance 1965 - 70

Year	1965	'66	'67	'68	'69	'70
1. Growth of Irish Markets %	3¾	8¼	12½	12½	11	12¼
2. Growth of Irish Exports %	9½	11½	22½	13	15	27
3. Export Performance (2 minus 1) %	5½	3¼	10	¼	4	15¼

Source: OECD (1972) Economic Survey: Ireland

These considerations suggest that there are mechanisms which make for a higher level of importing by foreign owned firms than by comparable Irish ones. Thus an increase in FDI may be expected to lead to a larger quantum of trade both into and out of the economy.

Some secondary causal links may re-inforce this tendency. An inflow of foreign capital combined with subsequent receipts from export provides the foreign exchange to finance increases in imports. The imports themselves may relieve a constraint on exporting - particularly where producer's capital goods and certain intermediate inputs are not available locally.[7] Spillovers from the foreign firms may raise the exporting capabilities of domestically owned firms. External effects in a more general sense (creation of an industrial ethos, reduction of search costs for profitable opportunites and the spur of increased competition) may also improve export performance. Indeed foreign capital may be regarded as a specific and separate input in the production function of the exporting sector. The inflow of FDI which embodies technological expertise, management skills and the ability to gain access to markets may have been an essential prerequisite for a successful attempt to increase exports.[8] The fact that Ireland has become more competitive in world markets (Table 4.5) is a phenomenon which merits examination in relation to FDI inflows.

Table 4.6 A Cross-section analysis of the Exports of Foreign Owned Grant Aided Industry(1970)

1 Sector	2 SIC Number	3 Exports of foreign owned Grant Aided Firms (£m)	4 Total Irish Exports (£m)	5 % Foreign (3) as % (4)
Food (excluding live animals)	201-7	14.8	236.3	6
Textiles	22	12.1	27.5	48
Apparel	23	8.9	22.1	40
Wood and Furniture	24	4.8	5.0	96
Paper and Paperboard, Boxes	264-5	2.6	4.8	53
Printed Matter	27	1.0	2.6	40
Chemicals, Plastics, Drugs	281-7	23.8	25.9	92
Tyres and Rubber Products	30/301	5.7	6.1	94
Glass, Stone, Clay and Concrete	321-4	0.6	7.2	8
Iron, Steel, Non-ferrous Metals	33	4.5	10.0	45
Household Appliances, Heating Apparatus	34,36	10.1	16.2	62
Special Industrial Machinery	35	8.5	9.3	92
Motor Vehicles and Parts	37	1.1	5.0	22
Instruments and Precision Goods	38	8.4	10.3	81
Other and Unknown	19	12.7	-	-
Total Industrial Exports		117.0	251.0	46
TOTAL EXPORTS		122.6	416.4	34

Sources: Column 3 Author's calculations from confidential IDA and AFF data (see Table). Column 4 Derived from External Trade Statistics

A Cross-section Analysis of FDI and Exports

Table 4.6 shows the exports of the foreign-owned firms by industry. The division into industry groups is by the SIC classification and some re-classifying had to be carried out. The sectors not included in Table 4.6 contain little or no exports from grant aided foreign firms - some sectors would have slightly increases figures if non-grant aided FDI were included but such investment is mainly directed at supplying the home market. +

The estimates show that 34% of all exports is accounted for by the exports of grant aided foreign owned firms and that this share rises to 47% when only industrial exports are considered. The foreign firms proportion of exports varies widely between sectors even in the industrial groupings. Some sector's exports are completely dominated by the exports of foreign firms. In four sectors; wood and furniture, chemicals, plastics and drugs, tyres, rubber and special industrial machinery, over 90% of exports come from foreign owned firms. In some cases, one or two large foreign firms account for almost all of the foreign share of exports. Often the bulk of the exports of a widely defined sector in fact originate within one or two narrow product groups. Such products are usually typical of the output of the sector as a whole - an example of this exists in the wood products sector.(Bowling alley equipment).

+ See section 3 below.

The low proportion of food exports accounted for by foreign owned firms is worthy of notice, because this is one of the sectors where Irish raw materials could be exploited. (This can be accounted for by the high export orientation of the domestic food sector). The Table shows that foreign capital has entered mainly the technology intensive sectors viz. chemicals, plastics and drugs, rubber products, machinery and precision goods.[9] The industrial distribution of foreign owned firms is again shown to differ from that of domestic firms. The entrance of foreign firms into the exporting sector has broadened the range of Irish export products.

The Terms of Trade

The final point above leads into a discussion of the effect of the inflow of FDI on the Terms of Trade in Ireland. The Commodity Terms of Trade (T of T) relate the price of a country's exports to the price of its imports. $\left(\frac{Px}{Pm}\right)$

The standard theory of growth and trade suggests that, when a country is receiving foreign capital, its terms of trade will tend to improve if its imports are relatively capital intensive and to worsen if its exports are capital intensive (with the extreme case being "immiserising growth"). The possibility of an optimum tax on international capital flows parallel to the optimum tariff on trade flows has been developed. Similarly, technical progress in the export industry will tend to turn a

country's terms of trade against it. Consequently one needs to combine these two effects to arrive at the theoretical prediction on the T of T. A particularly interesting article by Max Corden extends this possibility by considering the "foreign owned sector" as analagous to a foreign state, thereby multiplying the possibilities of intervention in goods and capital flows.[10]

It is unlikely however, as Johnson points out, that national policies are influenced by considerations such as those contained in the last paragraph.[11] Of more interest to the Governments is the ability to finance an increasing import bill and to expand the range of exports to this end. Table 4.7 shows volume and price indices of Irish imports and exports and presents two measures of the T of T defined as follows.

1. The Commodity T of T (C_t) are defined as a price index of exports divided by a price index of imports i.e.

$$C_t = \frac{P_{E1}}{P_{EO}} \div \frac{P_{M1}}{P_{MO}}$$

where p = price index, and the subscripts E,M,1,O indicate exports, imports, current year value and base year value respectively. An increase (or "favourable movement") of such an index is not necessarily of benefit to the country - it is the movement in the underlying supply and demand conditions for imports and exports which determine gains and losses. It is <u>value</u> and not price alone which matters.

(2) The Income T of T (Y_t) are defined as the Commodity T of T multiplied by a volume index i.e.

$$Y_t = C_t \left(\frac{Q_{E1}}{Q_{E0}} \right)$$

where Q = volume index. This index illustrates the ability of the economy to purchase imports. Alternatively, the index shows the purchasing power of a unit increase in exports.

Table 4.7 shows that both the import and export price indices have been increasing over the period. In recent years however (post 1966) the export price index has been rising faster. The income T of T have improved since 1962. The increase in the volume of exports has been a major factor here and the contribution of FDI to this is important. These issues are dealt with at greater length in the context of a formal analysis of the Balance of Payments (Chapter VI).

Table 4.7 Volume and Price Indices of External Trade and the Terms of Trade of Ireland 1956-1970

Year	1.Volume of Imports (1968=100)	2.Volume of Exports (1968=100)	3.Price Index Imports (1968=100)	4.Price Index Domestic Exports (1968=100)	5.Commodity Term of Trade (C_t)	6.Income Term of Trade (Y_t)
1956	42.2	40.9	87.3	72.9	83.5	34.2
1957	40.3	48.8	92.1	80.6	87.5	42.7
1958	45.5	47.7	88.1	82.6	93.8	44.7
1959	49.8	45.7	86.2	85.9	99.7	45.6
1960	52.0	54.4	87.7	84.4	96.2	52.3
1961	59.4	65.0	88.7	84.4	95.2	61.9
1962	62.3	62.2	88.6	84.1	94.9	59.0
1963	68.8	68.9	90.1	85.8	95.2	65.6
1964	77.0(77.5) x	73.7(71.1) x	90.9(90.5) x	90.5(90.5) x	99.6	73.4
1965	80.8	72.4	92.9	91.6	98.6	71.4
1966	82.7	80.7	92.9	93.2	100.3	80.9
1967	87.0	92.8	92.4	93.2	100.9	93.6
1968	100.0	100.0	100.0	100.0	100.0	100.0
1969	114.3	104.9	104.0	106.1	102.0	106.8
1970	118.0	113.5	111.1	113.1	101.8	111.4

x DATA for 1964 and subsequent years include the external trade of Shannon Free Airport.

Figures in brackets are those under the old system.

Source: Column 1-4 External Trade Statistics (1971) CSO Dublin (Pr 13047)

Section 2 The Market Pattern of Exports from Foreign Owned Firms in Ireland.

It was shown earlier that Irish exports have increased much faster than the growth of their principal markets. It is, therefore, pertinent to analyse the market distribution pattern of foreign owned firms in Ireland, which appear to have significantly contributed to the growth of Irish exports. Such an analysis also sheds light on the interrelationship between capital flows and trade flows. This interrelationship has been ignored in traditional trade theory. Capital flows were usually placed in the ambit of capital theory, which regarded international differentials in interest as the major factor influencing international capital flows. However, the Hecksher-Onlin theory of international trade explicitly assumed the immobility of factors of production between countries.

The advent of the "international" firm in recent years has dealt a telling blow to the false dichotomy between factor and trade flows assumed by traditional theory. The international firm is able to service a foreign market by exporting or by investing in and producing within the country (it may also have the choice of licensing any advantage it possesses to a host country firm). The attention is thus shifted away from the country to the firm as an independent decision taking unit.[12] Therefore we need to analyse the market distribution pattern of the exports of foreign firms in Ireland. Because of the autonomous decision taking nature of international firms, we must also pay attention to their location and "sourcing" policies.

Location theory becomes important in this new context and it meshes well with the theory of the firm. Cost and market factors are clearly major influences on the firms when the firm is faced with a foreign investment versus exporting decision. The market at which the foreign investor is aiming (and the extent to which the investor can increase demand by being present in a market) are clearly major influences on the investment decision.

In the case of Ireland, we must consider a further area of theory - customs union theory. The "host country" market for many foreign investors may be the EEC or they may be aiming at the AIFTA (Ireland and U.K.). Consequently the elimination of tariffs between the union members, the harmonization of economic and social policies and the extent to which the firm is already represented in the EEC markets, by exports and production, become relevant decision variables when a firm considers production in Ireland. Firms whose head office is outside the union may have plants in more than one union country and rationalisation or specialisation may take place. New non-union entrants may wish to service the whole union from one plant within the union rather than from exports. The removal of tariffs and larger market may also affect the production location decision of firms whose head office is within the union. These issues are considered at length in an excellent pioneering paper by Dunning.[13] Empirical testing of the effect of the formation of customs unions on flows of investment has been largely unsuccessful and the use of

instrumental variables has clouded the issue.[14] The approach adopted here is to examine first the direction of overall trade flows from Ireland over the period 1959-1971 and then to look at the market distribution pattern of foreign owned firms in Ireland.

Irish exports by destination 1959-71

Table 4.8 shows that, even before Ireland entered the EEC, the six nations of the EEC were becoming a major destination for Irish exports.

Table 4.8 Irish Manufactured Exports by Area of Destination 1959-1971

Area of Destination	£(m) Current					Percentage Distribution				
	1959	1963	1966	1970	1971	1959	1963	1966	1970	1971
U.K.	19.7	29.6	43.1	95.4	115.4	83.3	71.4	63.9	63.0	63.1
Other EFTA	0.4	0.7	1.5	4.5	4.7	1.7	1.9	2.2	3.0	2.6
EEC	0.8	4.0	7.7	18.9	22.8	3.5	9.6	11.4	12.5	12.4
Other OECD (exc. Japan)	1.2	3.8	6.3	20.7	25.5	5.0	9.4	9.4	13.7	13.8
All other Areas	1.6	3.2	8.8	11.8	14.7	6.5	7.7	13.1	7.8	8.1
Total	23.7	41.3	67.4	151.3	183.6	100	100	100	100	100

Notes: Manufactured exports SITC sections 5 - 8. Shannon excluded. 1971 Figures Provisional

Source: D. McAleese and J. Martin (1973) "Ireland's Manufactured Exports to the EEC and the Common External Tariff". Economic and Social Review (1973) p.616.

McAleese and Martin have estimated the effects of the removal of the common external tariff of the EEC (following Irish membership) on Irish exports to the community to be around 25% - 40%, implying an increase of between £6 - £10 million at 1971 prices.[15] It is, however, to be noted that one factor explicitly left out of the McAleese and Martin analysis is the extent to which the existence of other subsidiaries of international firms in the EEC will prevent foreign owned Irish subsidiaries from increasing exports.

The Market Distribution Pattern of Foreign Owned Firms in Ireland.

The data presented in this section are aggregated from the individual foreign subsidiary level. They are aggregates of the firm's estimated level of output for each major market. The information therefore relates to the intended distribution of output. The data show ex ante intentions. Such data are ideal for our present purpose because they show the markets which the foreign subsidiaries were expecting to service from Ireland when they applied for a grant. Actual exports did not reach the intended level because some firms have not reached full production, others did not achieve their stated export targets and some may have deliberately overstated their export proportion.

The information from each firm has been aggregated on the basis of nationality of ownership. Thus it is

possible to see the market orientation of the firms of the various investing countries. Table 4.9 is aggregated from the firm level to total exports on a simple average basis - thus it shows the average percentage of output which was intended to be exported to the major markets. Table 4.10 gives weighted averages; the weights being the output of each firm. Table 4.10 thus shows the proportion of total output of the firms aimed at each of the major markets.

Nationality of ownership and the number of firms of this nationality is shown vertically. These are classified as U.K., U.S.A., Europe (in practice the EEC of the Six excluding Germany, but including one or two Swedish firms) Germany and "Other" (mainly South Africa and Canada plus Japan). The horizontal dimension shows the major markets for exports; U.K., U.S.A., Europe, Germany (this category applies only to German firms and in the case of other than German firms, Germany is included in "Europe"), "other" refers to the rest of the world, and Ireland to the domestic market of the Republic. The two tables present information on 372 of 396 "live" firms.

Table 4.9 Destination of the Output of Foreign Firms - % of Total Output to each major Market - simple average.

Ownership and Number of firms	1 UK Market	2 USA Market	3 European Market	4 German Market	5 Other Markets	6 Ireland	7 Total
a UK firms (119)	66.6	4.3	9.4	-	4.3	16.2	100
b US firms (99)	29.1	24.8	28.7	-	9.1	8.8	100
c European firms (55)	30.4	5.1	36.2	-	6.1	20.4	100
d German firms (78)	24.9	10.3	25.5	28.1	5.3	6.3	100
e Other nationalities (21)	26.0	16.2	23.6	-	28.6	5.7	100

Source: Author's calculations from confidential IDA data.

Table 4.10 Destination of Output of Foreign Firms - % of Output to each Major Market - weighted average

Ownership and Number of firms	1 UK Market	2 USA Market	3 European Market	4 German Market	5 Other	6 Ireland	7 Total
f UK firms (119)	72.8	2.6	11.9	-	4.2	8.5	100
g USA firms (99)	30.8	17.0	41.7	-	7.8	1.8	100
h European firms (55)	17.0	4.7	65.3	-	4.4	8.6	100
i German firms (78)	38.1	13.5	21.8	16.7	4.8	5.1	100
j Other nationalities (21)	31.6	32.8	14.7	-	19.8	1.3	100
k Overall (372)	36.7	13.0	38.4+	-	7.0	4.4	100

+ Includes figure for Germany (German firms)

Source: Author's calculations from IDA data.

Table 4.10 shows the proportion of output of the firms aimed at each market. The final line shows that foreign firms as a whole aim mainly at the European and UK market which together attract over 75% of production. The markets of the USA, Other markets and Ireland in declining order of importance were intended to take up the remaining 25%. In actual fact the proportion of the foreign firms' output actually exported was 81% rather than the 95% (100% minus box k6) that these projections would suggest. (See Table 3.18). The reasons for this are that firms have not yet reached full production, they may have underestimated the problems of exporting, in some cases they have discovered a larger than expected Irish market and the fact that tariff reductions (particularly by the EEC countries) had not been completed when the export proportions were calculated. The importance of the UK and EEC markets (anticipating tariff reductions) is the first clear finding.

The difference between the two tables is information because it shows the influence of the size of firm on the intended market distribution of production. In general, firms engaged in production for the Irish market are smaller than average as the decline in the percentages in Column 6 from Table 4.9 to Table 4.10 shows. The larger firms are more orientated towards the UK and Europe, exceptions being European firms servicing the UK market and other nationalities serving Europe. In the case of the firms serving the U.S.A. market, these are smaller

than average for their nationality in the case of U.K., U.S.A. and European firms but larger than average for German and Other Nationalities.

The projections are now examined (1) by major market and (2) by nationality of investor.

(1) By Major Market

The importance of the U.K. Market, both to Irish trade in general and to foreign investors is frequently alluded to. The provisions of the AIFTA mean the creation of a common market of the U.K. and Ireland before the complete equalisation of tariffs within the EEC of the nine. In fact the projections of the firms attach less weight to the U.K. market than to the old 6-country EEC as a market outlet (k1 versus k3). U.K. firms intended to export 73% of output back to the U.K. whilst approximately one third of the output of U.S., German and "other" projects was intended for the U.K. but the figure is only 17% for European firms. It may be that European firms prefer to locate in the U.K. to supply that market whilst U.S.A. and "other" firms prefer Ireland (particularly Shannon Free Airport) for transport and cost reasons. German firms appear to prefer Ireland as a base for both cost-reducing (incentives, cheap and homogeneous labour) and non-economic reasons.+

+ See Chapter VI.

The attraction of the European market (in the tables the EEC of the six) is clearly a strong one - particularly for European owned firms (65.3%) and U.S. firms (41.7%). Foreign industrialists and Irish officials correctly predicted the entry of Ireland into the EEC. The largest share of the output of U.S. firms was projected to go to Europe. Taking the U.K. and the old EEC to represent the new EEC (outside Ireland) the proportion of output projected to go to this market is as follows for each nationality; U.K. firms 84.6%, U.S.A. firms 72.4%, European firms 82.3%, German firms 76.6% and other firms 46.3%. This market is clearly of paramount importance for all firms except "other nationalities".

This conclusion is little altered by the addition of the domestic Irish Market. In all cases the proportion of output projected by the firms to be sold on this market is less than 9%. (European and U.K. firms have the highest proportion of output for the domestic market). When we add projected import substitution (remembering that the actual proportion of output sold on the Irish Market is nearly 19%) the totals for Europe of the nine from each nationality is U.K. firms 93.1%,U.S.A. 74.2%, Europe 90.9%, Germany 81.7% and "other" 47.6%.

The U.S.A. market is important for U.S.firms (17% output) German firms (13.5%) and in particular for "other" nationalities (32.8%). This market is largely served from Shannon Free Airport and the trade consists

largely of high value/low weight goods in order to overcome the transport cost barrier. Ireland is nearer to the U.S. than the source country for some investors - this is particularly true for South African firms, which constitute a large share of output of "other" nationalities.

One trait worthy of investigation is "reverse flow trade" - exports back to the country of origin of the investment. This is the type of investment that some sections of the source country, particularly labour groups, find most objectionable - it is sometimes referred to as "exporting jobs". The importance of such trade can be ascertained by examining boxes, f1, g2, h3, i^4, and j5 in Table 4.10. Such trade is 73% for the U.K. and 65% for Europe but is comparatively small in the cases of the U.S.A. (17%) and Germany (17%). A surprisingly large amount of reverse flow trade occurs in the other nationalities group (20%) where distance and therefore transport costs, are very high. This can be explained mainly in terms of product characteristics in that such firms produce goods in the high value, low weight category, for instance diamond processing. Air freight costs are low in relation to finished value and Ireland's tax free export profits and other incentives are sufficient to overcome these transport costs.

(2) The firm's projections by country of origin

As indicated, U.K. projects are largely orientated towards the home (U.K.) market. The practice of establishing a plant over the border from Northern Ireland to take advantage of grants and labour (before development grants in the North assumed their present importance) was established in the late 'fifties. Abundant agricultural raw materials (particularly milk) have attracted firms from the U.K. to supply Britain. Older and smaller U.K. firms exist to supply the previously highly protected Irish Market.

U.S. projects are mainly aimed at the European and U.K. markets with the larger projects very much Europe orientated. U.S. reverse flow exports emanate largely from Shannon Airport. A recent United States Chamber of Commerce survey of U.S. firms in Ireland (sample replies numbered 55) showed that 38% of the production of U.S. firms went to the EEC (the Six) and 15% to the U.S.[16] The similarity of these figures with Table 4.10 (41.7% and 17%) suggests that the intended export destination of foreign firms (U.S. firms at least) are reasonably close to those actually achieved.

German firms export a much larger proportion of output to the U.S.A. than that achieved by British and other European firms. The different industrial distribution of German firms (more concentrated in the metal

trades, consumer durables, particularly household goods) may be part of the explanation. The proportion of the output of German owned firms intended for the U.K. market is the highest apart from U.K. firms. German firms clearly regard Ireland as a good location from which to service the U.K. market. German exports differ from the other European owned projects in the lower proportion of reverse flow trade and greater share to the Anglo-Saxon nations.

The final category "other" consists mainly of South African, Canadian and Japanese projects. The impact of Japanese foreign investment had hardly been felt at the time the data was compiled (January 1972). The U.S. market is much more prominent in the projections of this disparate group than for any of the other nationalities. This group presents the best illustration of the finding that the type of product has a large influence on the market distribution pattern. The bulk of the output of this group is in the high value: low weight group (diamond processing figures prominently) and location at Shannon Free Airport often applies. Also in terms of location, Ireland is mid-way between South Africa and the U.S.A., with the special incentives of Shannon to recomment it. After the U.S. market, the U.K. is of next importance with Europe surprisingly low. Indeed, "reverse flow" trade, with large distances to travel, rates much higher than exports to Europe. Import substitution is almost zero.

Summary

This section has attempted to overcome problems, both in theory and practice, of isolating the destination of production from foreign owned firms in Ireland. The data presented was the firms own preductions as to the market distribution pattern of their exports. The outstanding fact is the importance of the EEC as the prime destination of the exports of foreign firms. "Reverse flow trade" was found to be important for U.K. and European firms but not especially so for U.S. firms - an important finding in view of the pressure to decrease U.S. outward FDI from the "export of jobs" lobby. The benefits of lessened trade dependence on the U.K. for stability of Irish export earnings and for growth prospects are obvious.

The inflow of FDI and the exports from foreign owned firms are an important factor underlying the McAleese and Martin finding that the EEC is assuming a most important position as a destination for Ireland's manufactured exports.

Section 3 The Relationship of Tariffs to FDI

The previous Sections have concentrated on the link between FDI and exports. It was shown that the decision of foreign firms to locate in Ireland may have been significantly influenced by the export opportunites it provides. There is however, a large body of theory which emphasises the role of tariffs in influencing the location decision. This Section explores the possible effects of

tariffs in Ireland. It would be in order to briefly review the theory before analysing the Irish case.

Theoretical perspectives

A potential foreign investor must possess some firm specific income creating asset which gives the firm an advantage such that it can overcome the costs of producing in an alien environment. Given this situation, the firm can choose between supplying the foreign market either by exports or by foreign investment and production in the host market. Such is the basis of the "oligopolistic advantage" theory of international investment. Caves has gone on to say that the advantage may be reducable to the knowledge of how to service a market.[17] The view of foreign investment taken by Dunning incorporates centrally the concept of barriers to entry.[18] The advantages possessed by the international firm prevent entry into the industry by local firms (on whom certain other constraints, such as lack of capital, may also be operative) and barriers to international trade (tariffs) force the international firm to service the market by investment rather than by exports.

The link to the theory of protection is provided by the importance of the market to the above theory. A tariff-protected home market is often adduced to present an additional incentive for FDI. Tariffs reduce or prevent competition from the exports of other countries and raise

incentives to production for the home market. But tariffs discourage exporting in two ways; by making greater rewards available for production for the domestic market and by increasing the cost of imported inputs.

Tariffs thus affect FDI in two major ways. Firstly by increasing the profitability of operations in the protected market and secondly by their effect on the choice open to the multinational firm, either to service the market by exports or of investing in the market. A recent development in tariff theory is the concept of the effective rate of protection (ERP). In analysing the effects of tariffs on FDI, it may be advisable to talk in terms of ERP rather than nominal tariffs. Nominal tariffs show the degree of protection which a tariff affords to <u>products</u>. But a more interesting aspect of the tariff structure is the degree of protection afforded to <u>activities</u>. The concept of ERP is designed to show this effect. The ERP of an activity may be defined as the excess of domestic value added in that activity under protection above value added at international prices, expressed as a percentage of the latter.

$$\left(ERP \equiv \frac{v'j - vj}{vj}\right.$$, where $v'j$ = value added per unit of j in activity j made possible by tariffs

vj = value added per unit of j in activity j in the absence of tariffs) [19]

The ERP theory thus draws attention to the incentives to production for the home market created by the tariff system by showing the amount of value added which is "due to" the tariff structure.

Therefore the ERP shows the increase in the activity price induced by the tariff system. The increase in the activity price shows the increased factor rewards from protection. These incentives, together with the production response coefficients of the various factors to the increased rewards, determine the expansion of the domestic industry resulting from protection. The response of foreign owned capital to protection may well depend on the policy of foreign owned firms and on the size of the domestic market.

The advantage possessed by an international investor consists of a firm specific income creating asset which can be transferred within the firm in combination with capital or skilled labour (including managerial expertise). These sectors where such intra firm knowledge is available and exploitable by FDI will be the ones where foreign investment takes place in the largest quantities.[20] The elasticity of supply of foreign capital to tariff-induced incentives will be a function of the incidence of the ERP on activities exhibiting such features and on one other crucial parameter - the size of the protected market. [It is normal to consider the incentives of the tariff to both capital and labour, but where it is safe to assume unlimited

supplies of labour, the incentive effects may be derived for capital alone by including labour as a non-traded input. There is a strong case for applying this formulation where the incentives to FDI are the centre of investigation. _7

The importance of the size of the domestic market arises because tariff protection incentives apply to the market only. Protection may raise the return to factors per unit of output but the quantum of output is ruled by the home market size and by the degree of competitiveness therein. Exports are discouraged and input costs raised under a regime of protection. In such a regime the rewards from the domestic market for the foreign investor must be sufficient to cover the increased risk and problems of operating in an alien environment. If the market is large then the likelihood is that quasi-monopoly gains can be made to offset such disadvantages. Also the risk factor declines in importance. This conclusion is strengthened by the fact that FDI tends to occur in industries where there is not only a large minimum size of firm but also where substantial economies at plant level are available.

The strategy of the international firm in response to tariff protected markets should be mentioned. Although the high risk factor exists for the first entrant into a market, there is evidence to suggest that the risk factor becomes less of a deterrent to subsequent investment.

Oligopolistic behaviour often complies with a "leader and follower" situation. This leads to defensive investment to protect an established market position - a position which may have been built up by exports from the source country. Kindleberger defines investment as "investment that produces a less than average return, but where the difference between the gross return plus and the loss that would have resulted from exclsuion gives the necessary rate of return, on a marginal basis."[21] The strength of the demonstration effect of the first entrant can be such that the market becomes populated with sub-optimal size firms.

A synthesis of the theory of protection with the theory of international investment is attempted by Horst.[22] The setting is at firm level and the firm is considering whether to service the host market by exports or by establishing a subsidiary (licensing is implicitly ruled out). The theory as constructed, using decision rules based on the reaction of the marginal cost and revenue curves of the firm to tariffs, has only one unequivocal result - that tariffs will bias the firm in the direction of investing rather than exporting. Exporting from the host will be discouraged by an increase in the tariff but whether investment in the host will increase depends on the relative shifts of the marginal cost and revenue curves. The shifts of the marginal revenue curve will be dependent on market size. Now the introduction of factor costs, particularly wage rates offset tariff induced differentials. Investment

in the host will then be determined by the costs of capacity adjustment in the host country - in Baldwin's terms the relative cost of transferring factors rather than goods.[23] The time horizon of the firm - its rate of discount for future profits - will determine the rate of investment which will again depend on the size of the host market, and particularly on the rate of growth of the market.

Tariffs can thus affect both the quantity and the (industrial) compositon of FDI. We now examine the relevance of the above theory to the case of Ireland.

Relevance to Ireland

Section 2 of this Chapter showed that the intention of the investing firms in Ireland was that the vast majority of their output should be exported from Ireland. In fact 19% of the output of foreign owned grant aided firms is for the Irish market. This is due mainly to non fulfilment of targets by the foreign firms. However import substitution by grant aided foreign owned firms is not of major importance and will decline as a proportion of output as foreign owned firms achieve full production and as Irish tariffs decline under the provisions of the AIFTA and the terms of entry into the EEC.

In the past however, tariffs have been significant and may have encouraged FDI. In 1966 the average nominal tariff of Ireland was 25% compared to U.K. 15% and EEC 12% -

converted to EPRs this was 79% compared to 28% and 19% respectively.[24] The policy of high protection overlapped in time with the policy of encouraging export orientated FDI. The high tariff barriers had to be offset by the provision of duty free inputs for FDI in order to encourage foreign investment and to allow the new firms to compete with exports of countries with freer trade policies. Many of the foreign owned firms were established before the present free trade policies were adopted. There has been a tradition of British investment in the Republic. The following sections identify and analyse foreign owned firms producing mainly for the Irish market.

The main analytical sections of this thesis are concerned with grant aided FDI. However, from the time that the first grants were disbursed in 1955, there has been a small inflow of non grant aided foreign investment, serving the home market almost exclusively. These firms are now examined before we turn to grant aided foreign investors engaged in import substitution.

Information about non grant aided foreign investment can be quickly summarised as it is severely limited. Such investment is almost entirely import substituting - only an estimated 18% of total output was exported in 1966[25] as against the present author's estimate of over 81% (1970) for grant aided foreign firms. Between 1955 and 1966, 55 such projects were established with information and advice from the IDA; 36 were of British origin and eight

from the U.S.A. Total output was estimated at £16.8 million and employment at 3,840 (1966)[26]. However, eight projects accounted for £4.5 million of turnover and 1,500 employees.

The influences of tariffs on non grant aided foreign investment may be seen by investigating the industrial structure of these projects. They are concentrated in cosmetics, oil refining, textiles and the automobile industry. In 1966, these industries had nominal and effective tariffs of 32% and 100% (medicaments/soap), 10% and 53% (rubber and petroleum), 46% and 90% (clothing) and 32% and 142% (road vehicles)[27]. All these areas thus received very high protection. Three of these sectors, cosmetics, petroleum and automobiles are organised internationally on the kind of oligopolistic lines which would lead us to expect foreign investment to take place. They also depend heavily on product differentiation and technical advance as means of competition which would strengthen this belief.[28] Government persuasion and quotas on finished cars have led to assembly operations in the automobile industry. Several firms of sub-optimum size service the home market after some defensive investment in the face of threats to an established, though small market. Tariffs and quotas appear to have been major factors in attracting this (small amount of) foreign investment. To some extent the non grant aided investment accounted for here represents only a small portion of the total because British firms have

been entering the Irish market for years, chiefly through takeovers of existing Irish firms. No attempt to trace this long-standing investment is made here.

When we turn to grant aided import substituting firms, two arbitrary measures of import substitution are suggested (1) a strict definition - firms exporting 1% or less of output (2) a much wider definition, adopted because of the small market size and export orientation of grant aided firms - this is less than 60% of output exported. Two categories of grant aided FDI engaged in production for the home market can then be isolated. - (1) "Intentionally" import substituting firms (these are projects where the original submission to the IDA for a grant indicated that the project would, in the main, service the home market) (2) Import substituting firms "by default" (firms where, contrary to the grant submission, export sales have not materialised as quickly as home market sales or where the home market has expanded, with the result that 40% or more of production is for the Irish market).

Within the 396 "live" grant aided foreign projects only 21 firms (projects) aimed to be fully import substituting in their submission to the IDA. On the wider (40% home production) definition the number increases to 48 projects, (45 firms, three extensions including one extension project to a 99% exporting plant). The firms are spread across many sectors. Only two sectors, plastics

(SIC 282) and Textiles (SIC 22) have more than one project - five and three respectively. Table 4.11 shows that firms servicing the Irish Market are much smaller than exporting firms in the same sector.

Table 4.11 Grant Aided Foreign Owned Projects Engaged in Import Substitution compared with All Grant Aided FDI

	Average Investment at Full Production(£000s)		
Sector and SIC Number	I.S.Firms (40%)	I.S.Firms(99%)	All live firms
282 Plastics	364	-	483
22 Textiles	146	-	335
All Firms	245	227	487

Source: Author's calculations from confidential IDA data.

Import substituting firms have an older establishment date than the bulk of grant aided projects - 19 of the 45 firms (on the wide definition) were established before 1965 including seven of the "over-99%" category.

The relevance of tariffs to the decision to invest is examined with the aid of the Appendix Table below. The Table shows the year of establishment, nominal tariffs for 1966 and 1972, and McAleese's calculation of the relevant ERP for 1966. For some firms tariffs appear to be of importance in the decision to invest, however this is by no means clear cut. Only two of the projects fall into the highest range of protection (ERP over 200%)[29]. Several entered the market after the decision to move to free trade.

Tariffs cannot be adduced to be the major factor in the investment decision of most firms in the Appendix Table.

One final area of import substituting FDI is worthy of investigation - "temporary import substituting firms". These are live firms who have not achieved their export projections as contained in their grant submission to the IDA. The number of firms whose actual export performance falls so far below projected that 40% of output is directed to the Irish market, is only twelve. However, as mentioned above overall non fulfilment of targets is an important phenomenon - the overall export proportion is 81% (1970) [author's estimate] but the projections given to the IDA suggest that this should be over 90% [Table 4.10]. There are several explanations for this shortfall. Many firms have not reached full production and find it easier to supply the host market first because of closeness of contact, better information and lower transport costs. Other firms have discovered that the Irish market is larger than they anticipate, particularly in view of recent rapid rates of growth. Also in times of a slump in demand in traditional markets, the foreign owned firm may divert production to the Irish market (one firm surveyed in Chapter V changed the nature of its output considerably and supplied the Irish market with this product during a slump in the world market for its more usual output. The firm normally exports 96% of output but during the slump almost 40% of output was for the Irish market). A further reason for supplying the home market was given by a successful German firm included in the

author's survey; the firm supplies a small proportion of its total output (5%) to the Irish market in the interests of worker satisfaction. It is felt that their workers derive pleasure from seeing the results of their efforts in the local shops. Finally some firms may have artificially increased their expected export proportion when submitting their projects for IDA grant approval in the hope of securing a grant - thus the projections may not always fully reflect the real expectations of the firms.

Summary

Ireland is not a good test case for the relevant theory relating to the effect of tariffs on FDI. In the early stages of Irish policy making, tariffs may have been a deterrent to foreign investment because of the small size of the Irish market. However, some foreign investors chose to set up (both with and without grants) to service the domestic market. The above investigation showed such projects to be much smaller than average foreign owned projects and concentrated in a few consumer goods sectors. In the case of the automobile industry, special persuasion had to be applied to foreign producers in order to get them to establish assembly operations in Ireland. Section 2 of this Chapter provided eloquent testimony to the importance of a large market to prospective foreign investors. Without such a large market, we can conclude that tariffs have little influence in attracting inward FDI.

After the establishment of the AIFTA and Ireland's entry into the EEC, together with the special incentives for foreign owned projects (particularly duty free imports for exporting firms) Irish tariffs become irrelevant to foreign investors. It will be interesting to examine foreign projects in the light of the Common External Tariff structure of the EEC in order to provide a better test case for the above theory.

Section 4 Has Foreign Investment led to a Dualistic Structure in Irish Industry ?

Economic dualism may be defined, following Myint, as the continuing coexistence of a 'modern' sector and a 'traditional' sector within the domestic economic framework.[30] Myint interprets dualism as a manifestation of distortion in the allocation of resources arising from the unequal terms on which economic resources (such as capital, foreign exchange and public economic services) are available to the two sectors. One particular form of dualism, that existing between the foreign owned manufacturing sector and the domestic sector, has been identified by Hans Singer.[31] Singer suggested that the contribution of FDI to the host country will be minimal unless the foreign sector is absorbed fully into the domestic economy. The extent of absorption is to be judged by the strength of the linkage effects created by the foreign sector. Where dualism is evident, the secondary effects are transferred by the modern sector to the investing country rather than benefiting the host economy.

In view of the importance of the foreign owned sector to the Irish economy, an analysis of the above aspects of dualism is imperative. Attention has already been drawn to the marked differences in exporting behaviour between foreign owned and domestic industry. The change of policy from protection to freer trade together with encouragement of FDI meant that a new outward-looking form of economic activity was grafted onto the older industries which relied on the continuing protection of the home market. This new division cuts across industry differences and has been described by McAleese as intra-industry dualism.[32] The present section extends this analysis of dualism by considering import propensities and other linkage effects in addition to export behaviour.

The data in this section of the paper are taken from the An Foras Forbartha survey of grant aided industry conducted by Padraig O'Huggin. All analysis and comments refer to that sample alone, though it is reasonable to suggest that the results are typical of the population from which they are drawn. The sample covers 377 firms, of which 276 (73%) were foreign owned:- joint ventures were apportioned into foreign or domestically owned on the basis of majority (51%) ownership.

The AFF survey investigated the number of functions which other units of the organisation performed for the foreign owned Irish unit. The previous section showed

that, in many cases, the Irish subsidiary did not itself perform a full range of functions (for instance, 61% of firms carried out Research and Development abroad). The investigation lent support to Hymer's hypothesis that the international firm centralises the 'higher order activities' (those requiring specialised capital and skilled labour inputs) and disperses less crucial activities.[33] The social consequences are serious, for the extension of this practice can leave a host country denuded of high level activities and therefore of skilled manpower. This situation has not yet come to pass in Ireland because of the loosely organsied nature of some corporations and the existence of near autonomous foreign investments. There are signs that this phenomenon will become a policy issue in the future and preventive measures have already been taken by the IDA (for example, the establishment of the Research Park at Naas). However, there are strong forces within the multinational firm making for the centralisation of high level activities which policy measures will have difficulty in counteracting.

These factors within the group of foreign owned firms present a background to the analysis of dualism. The first stage of the analysis is to present the results of foreign and domestic firms as regards (1) the proportion of output which is exported (2) the proportion of material inputs purchased from Irish sources and (3) the proportion of service inputs purchased from Irish sources.

(1) Table 4.12 shows a clear difference in exporting behaviour between the foreign and domestically owned Irish firms in the sample. Foreign firms are concentrated in the two highest export categories (over 90% exported). Irish firms are dispersed over the whole spectrum, but the statistical mode of the Irish distribution occurs in the 100% import substitution category. This obvious difference in behaviour is confirmed by a chi-square test.[34]

Table 4.12 Classification of Irish and Foreign Grant Aided Firms by the proportion of total output which is exported.

1 % of total output exported	2 Number of foreign firms in each class	3 Number of Irish firms in each class	4 % of each class represented by foreign firms $\left(\frac{2}{2+3}\right) \times 100$
0	19	25	43
1-9	12	6	66
10-19	14	8	64
20-29	11	6	65
30-39	8	6	57
40-49	3	7	30
50-59	8	4	66
60-69	10	3	77
70-79	9	6	60
80-89	12	9	57
90-99	70	11	86
100	100	9	92
Unclassified	-	1	-
Total	276	101	73

Source: Author's calculation from AFT survey.

(2) Table 4.13 classifies the firms according to the percentage of material inputs which they obtain from Irish sources. It is evident from the Table that foreign firms purchase their material inputs preponderantly from abroad - more than 76% of foreign firms purchase less than 50% of their material input requirements from Irish sources. Again the difference in behaviour is obvious and this is confirmed by a chi-square test.[35]

Table 4.13 Classification of Foreign and Irish Firms by the proportion of material inputs obtained from Irish sources

1 % of total material inputs purchased from Irish sources	2 Number of foreign firms in each class	3 Number of Irish firms in class	4 % of each class represented by foreign firms $(\frac{2}{2+3}) \times 100$
0	48	3	94
1-9	41	10	80
10-19	50	7	88
20-29	39	9	81
30-39	16	2	89
40-49	8	1	89
50-59	10	8	56
60-69	5	3	63
70-79	8	5	61
80-89	9	5	64
90-99	22	14	61
100	20	33	38
Unclassified	-	1	-
Total	276	101	73

Source: Author's calculation from AFF survey.

(3) The evidence on the propensity of the two groups to import service inputs such as maintenance, accounts, repairs is shown in Table 4.14. Little difference in the proportions is apparent from the Table and chi-square tests confirm this belief.[36]

However, it has been shown above that some of the functions which may be included in service inputs (R & D, purchasing marketing) are not performed in Ireland at all by some subsidiaries. Further, the firms may not consider the use of their parent's knowledge on these issues as "importing services" (often no payment is made).[37] It would be unwise to rely on the ostensible conclusion that there is no difference in service input purchasing behaviour. It can arise because of the different nature of foreign firms in terms of the range of functions performed.

Table 4.14 Classification of Foreign and Irish firms by the proportion of service inputs obtained from Irish sources.

1 % of total service inputs obtained from Irish sources	2 Number of foreign firms in class	3 Number of Irish firms in class	4 % of each class represented by foreign firms $(\frac{2}{2+3}) \times 100$
0	2	4	33
1-9	1	-	100
10-19	4	1	80
20-29	4	3	57
30-39	3	3	50
40-49	-	1	-
50-59	14	0	100
60-69	5	4	56
70-79	15	4	79
80-89	23	5	82
90-99	61	21	74
100	144	54	73
Unclassified	-	1	-
Total	276	101	73

Source: Author's calculation from AFF survey.

It may be suggested that the differences in exporting and input purchasing behaviour are due to (1) the difference in the industrial mix of the two groups (2) differences in firm size (3) inherent differences due to foreigness per se (a dualistic division). These possibilities are now examined.

The influence of the industrial mix.

(a) Exports. The industrial distribution of the sample is shown in Table 4.15. Four major sectors are identified, covering 274 firms in the sample.

Table 4.15 AFF Sample. Number of firms in four major sectors.

Sector	Number of Foreign Firms	Number of Irish Firms
1. Food and Drink (03,07,10-13,16)	36	33
2. Textiles and Clothing (18-22)	59	28
3. Metals, Engineering, Electrical (35-41)	89	8
4. Plastics (44)	21	4
Total (Four Sector)	201	73

An examination of exporting behaviour in these (rather broad) industrial groupings show that foreign firms export a greater proportion of output than Irish firms within each grouping. (Table 4.16) It is also apparent that the exporting performance of Irish grant aided firms is superior to that of Irish industry

in general.

Table 4.16 Sectoral Exporting Performance

Sector	AFF Sample Average % output exported		3.Total Exports of Sector - total output of sector 1970
	1.Foreign Firm	2.Irish Firm	
1. Food and Drink	79.0	56.2	31.0
2. Textiles and Clothing	74.0	53.7	28.4
3. Metals, Engineering, Electrical	78.5	48.8	21.6
4. Plastics	62.9	16.8	40.9+
Four Sector Average	76.4	51.6	29.6
"Adjusted" export Proportion of Foreign Firms	48.0		

Source: Columns 1 and 2 AFF data. Column 3 External Trade Statistics 1970.

\+ Figure for Miscellaneous Manufacturing.

A technique which can be used to separate out the influence of sectoral composition on the overall average proportion of exports is "shift and share analysis".[38] The overall disparity in the proportion of output exported between groups is 24.8%. This is divided into two parts by using the "adjusted export percentage" of foreign firms. The adjusted figure shows the proportion of output which foreign firms would have exported if their

export pattern had been the same as that of the Irish firms within the same sector. The adjusted figure is calculated to be 48.0%. Now the "intra-sectoral effect", caused by the superior exporting performance within each sector is shown by the difference between the actual and the adjusted foreign export percentages. The intra sectoral effect accounts for a difference of 28.4% (76.4 minus 48.0). The inter industry figure appears as a negative factor of 3.6%. This result means that if foreign firms had the same industrial composition as the Irish firm, then the foreign firm's average export proportion would increase by 3.6%! This phenomenon is explicable by examination of Tables 4.15 and 4.16 in conjunction. The Irish firms in the sample are almost entirely concentrated in sectors 1 and 2 which have above average export ratios. Almost half of the total Irish firms are in the food and drink sector which has the highest export proportion for both groups of firms. The group with the lowest export proportion - plastics, is hardly represented at all in the Irish group.

Aside from the use of the broad industrial groups and the factor of size, both of which are considered below, there are three sets of factors which help to account for the difference in behaviour within industries. (1) The provision that foreign firms in receipt of grant aid must be non-competitive with existing Irish firms on the domestic market. Export orientated firms are therefore attracted and are rewarded with exemption from taxation on export profits.

(2) The foreign owned firms have close contact with their home market. They have access to better information, sales and marketing facilities than do Irish firms. Foreign firms also may be more efficient and are geared to the production of "export products".

(3) The small size of the Irish market in conjunction with past Irish policy is also a factor. Under the protectionist regime of Irish policy which ran from the middle 1930s until the 1960s, Irish firms became geared to supplying the home market behind high tariff walls. Consequently they were unable to take immediate advantage of the free trade policies and export advantages that now prevail.

The process of re-orientation of production towards export markets is a gradual and difficult one. The performance of Irish firms must be seen in this historical context. Foreign firms are not bound by the constraints of such a background.

(b) Import propensity. A similar procedure can be adopted to investigate the effect of sectoral difference on the purchase of Irish inputs. Table 4.17 presents the evidence on the sectoral breakdown of imported input proportions.

Table 4.17 Percentage of total material inputs purchased from Irish sources

Sector	Average % of total material inputs purchased from Irish sources	
	1 Foreign Firms	2 Irish Firms
1. Food and Drink	82.1	85.0
2. Textiles and Clothing	24.6	49.9
3. Metals, Engineering, Electrical	23.4	38.8
4. Plastics	13.1	6.8
Four sector Average	31.5	68.3
Adjusted average % Irish inputs used by foreign firms	46.1	

Source: Author's calculations from AFF survey.

Only in the food and drink sector do foreign firms purchase most of their material input needs from Irish sources. The cheap and plentiful supplies of Irish agricultural produce explain this high figure. Indeed, the availability of Irish inputs is often the raison d'être of foreign investment in this sector. However, in the technology intensive fields of activity, where foreign firms are concentrated, they depend mainly on imported inputs. This difference in behaviour is not surprising. Foreign owned firms are prone to rely on their parent firms for the supply of sophisticated materials and components which may not be available from the Irish sources. In fact,

an often cited reason for the efficient performance of foreign relative to domestic rivals is their access to better quality inputs and technical know-how. Such inputs are available duty free to exporting firms. The foreign owned firms import bill will also tend to be raised by knowledge of traditional suppliers and goodwill towards them. Fifty-five firms in the sample perform the purchasing functions abroad. This situation is compounded by quality and price differentials between imported and Irish inputs. The survey of Grant Aided Industry (1966) noted complaints by foreign firms on slowness of delivery of inputs from Irish sources: there also appears to have been a reluctance amongst Irish firms to seek out business from new foreign enterprises. (Metric standard requirements, scale factors and different modes of operating may have been a deterrent. +

The effects of sectoral distribution are separated by the calculation of an "adjusted import coefficient" for foreign firms which works out to be 46.1%. The difference between the observed amount of Irish inputs

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+ Plastics firms appear to be the exception to the above, as foreign plastics firms appear to purchase a greater share of Irish inputs than local ones. The reasons for this are in the internal structure of the industry (which includes both importers and processors of raw polymer and finishers of a substantially completed product). Also the small number of Irish firms in the sample does not allow proper comparison.

purchased and this adjusted figure measures the inter-sectoral effect. (22.8% of the overall difference). The remainder of 14.6% accounts for the intra sectoral effects.

It can be deduced from the above procedure that the shortfall in the proportion of domestic material inputs purchased by foreign firms is due not only to differences in the industrial mix of the two groups but also arises from the different nature of foreign firms within the same sector. Myint's view that a fundamental cause of dualism is the fact that the two groups have unequal access to economic resources thus gains some plausibility in the Irish context. Specialised, high quality inputs embodying patented knowledge or technical know-how are available to foreign subsidiaries from other branches of the firm. Inputs may be available at discretionary prices below ruling world prices, enabling foreign firms to make profits in tax free Ireland. Exporting firms are allowed duty free inputs and this drives a further wedge between the input prices faced by the two groups.

The effect of the different industrial mix of the two groups can be summarised as follows. The difference in exporting behaviour is due entirely to intra industry factors - the superior exporting performance of foreign firms within each sector. Sectoral differences account for a considerable part of the overall disparity in

purchases of domestic inputs but a large part is still unaccounted for. However, several important caveats must be added. (1) The IDA disburse grants on the basis that new firms do not offer competition to indigenous producers on the home market. The comparability of the two groups is thus reduced. (2) The sectoral categories used are extremely broad and a much finer industrial breakdown is necessary to establish dualism with any force. The limited nature of the Irish industrial sector makes this all the more forcible. (3) Foreign firms, although they would fall into the finest industrial division with Irish firms, are often producing dissimilar products. A narrow range of export products may account for a large proportion of such a sector's output - emanating almost entirely from foreign firms.[39] The specialised inputs available to foreign firms account in large part for the advantage of foreign firms in such fields. It may be argued that the fact alone distinguishes them from their closest Irish rival in product category items. (4) A further factor, to which we now turn, may be the influence of size.

The influence of scale factors

It is a plausible a priori belief that the reported disparity in exporting and in the purchasing of Irish inputs may be due to scale factors. Irish firms may be smaller and thus face difficulties in exporting. It may also be easier for Irish firms to supply the input needs

of smaller firms. Table 4.18 shows the results when all firms employing less than 100 people in Ireland are eliminated.

Table 4.18 The Performance of large firms

	Number		Export % of Output		% Material inputs obtained in Ireland	
	Irish	Foreign	Irish	Foreign	Irish	Foreign
Agriculture based firms (ICIP 01-15)	12	13	53.0	56.1	83.5	75.9
Non Agriculture based firms	17	78	47.3	83.6	24.7	20.6
Total	29	91	49.7	79.7	49.0	28.5

Source: Author's calculations from AFF survey.

The size factor does not appear to alter the exporting coefficients to any considerable extent (compare Table 4.16). The larger foreign firms are slightly more export orientated and the larger Irish firms slightly less so than their respective groups as a whole. The size factor is clearly of major importance with regard to purchases of Irish material inputs. The proportion of goods which the largest 29 Irish firms obtain from domestic sources is 49.0% compared to the 68.3% figure of the whole sample. By contrast the figure for foreign firms changes little (28.5% for large firms as against the overall 31.5%) Scale is clearly a factor in the pattern of input purchases. The tendency of Irish firms not to seek out business from foreign firms may in large part be due to inability to

service the needs of larger corporations because of lack of capacity in the domestic sector.

The influence of other linkage effects

A further set of factors which reduce the force of the dualism hypothesis are those concerning the linkage effects crossing the ownership division. Spin-off from the domestic sector can occur by other means than the purchase of domestically produced inputs in ways which reduce the dichotomy. Taxes paid on wages and other fiscal contributions are used to foster industrial development as a whole. The fact of foreign firms employing skilled labour (and keeping labour within Ireland rather than emigrant) creates gains, not all of which can be appropriated by the foreign investor; for labour mobility within Ireland means that some return from the training will accrue to the domestic sector. The demonstration effect of new techniques introduced by the foreign sector may help improve productivity throughout the economy. The reinforcement of the industrial sector by new foreign firms helps to create an industrial ethos, bolstering hopes for future industrial development. Finally, perhaps the most beneficial long run influence reducing the division is the creation within Ireland of a pool of skilled management. The interchange of such management and the effect of new management techniques is of great long run importance for the development of the domestic sector. An additional benefit is the attraction back

to Ireland of emigrant managers. The entry of new firms is also felt to have the effect of a salutary "jolt" on somnolent domestic firms.

The following section takes a wider look at the contributions of the output of foreign firms to the Irish economy.

Section 5 The Retained Value of Foreign Firm's Operations in Ireland.

One rather crude method of estimating the proportion of output which may be considered beneficial to Ireland is the calculation of "retained value" (RV). RV is the proportion of output which is spent in Ireland or which accrues to Irish factors. First round effects only are considered; multiplier effects are excluded together with indirect taxes, re-investment and depreciation (the latter two must be considered as accruing to the capitalist, largely foreign).

Ideally RV should be calculated for two periods, the investment period and the operating period. However, because of data deficiencies, only the operating period can be considered. In the operating period, retained value is estimated according to equation 4.1.

$$RV = W_I + P_I + L + T_I \qquad (4.1)$$

(4.1) where W_I = wages paid to Irish labour

P_I = profits accruing to Irish capitalists or state bodies

L = first round linkage effects; purchase of Irish inputs

T_I = direct taxes on foreign operations.

The calculation of RVs was carried out on five major sections for the year 1971 using IDA and AFF data. The sample of firms used to provide the estimate covered 194 foreign firms in the food, textiles, engineering/metals/ electrical, plastics and chemicals sectors. Although these sectors are very broad, they serve to illustrate difference in RV between sectors and they provide a large enough sample to remove minor distortions. The results of the exercise are set out in Table 4.19.

On this rather crude estimate an overall RV for the first five sectors suggests that 33% of the gross output remains in Ireland after first round payments. There is a great deal of sectoral variability round this figure with the food sector having by far the highest RV of 54% and plastics returning a very low proportion of 21%. The factor of wages carries most weight except for food where the linkage effects are high and chemicals which also has a larger share of linkage effects than wages in gross output. As pointed out above, linkage effects are very low except for the food sector where Irish raw materials are much in evidence. Irish taxes and the Irish share of the

profits are extremely low because of the tax free export incentive provision and the preference of foreign firms for wholly owned subsidiaries. Indirect taxes alter this picture little because of export orientation of foreign firms and the duty free imported inputs provision for exporting firms.

Table 4.19 Retained Value as a percentage of the output of foreign firms in five major sectors (1971)

Sector	Number of Foreign Firms	W I	+ P I	+ L	+ T I	= RV
Food	23	RV_f=0.11	+ :	+ 0.42	+ :	= 0.54
Textiles	54	RV_t=0.22	+ 0.02	+ 0.13	+ 0.01	= 0.38
Metals and Engineering	76	RV_m=0.21	+ 0.01	+ 0.08	+ 0.01	= 0.31
Plastics	30	RV_p=0.14	+ :	+ 0.05	+ 0.02	= 0.21
Chemicals	11	RV_c=0.12	+ :	+ 0.14	+ :	= 0.26
Overall Five Sectors	194	RV_o=0.18	+ :	+ 0.13	+ 0.01	= 0.33

Source: Author's calculations from confidential IDA data and An Foras Forbartha survey.

: = less than 0.01%

Ways to increase RV

There are several policy measures which could be implemented with the aim of retaining a higher share of gross output in Ireland. All of these measures are likely to reduce the inflow of FDI into Ireland and so the benefits of increased RV must be weighed against a diminished inflow of investment.

These means are: (1) stipulate employment of Irish labour in foreign firms thus raising W_I. This however, has been ruled out because it was felt to encourage inefficiency. Labour intensive techniques are not usually employed by foreign firms and a move in this direction may damage the inflow because of the high cost of adapting to labour intensive techniques. (2) Encourage the establishment of joint ventures. Many foreign firms do not welcome minority mode of operations and U.S. firms in particular prefer to operate wholly owned subsidiaries. The IDA attempt to gain equity participation has so far produced very minor results. There is a further drawback in that joint ventures have proved more unstable than wholly foreign owned firms.[40] (3) Increase the tax rate on foreign firms. Such a move would obviously cause a decrease in the inflow of foreign investment. It would also conflict with the objective of encouraging exports as the tax relief on export profits would be nullified. (4) Increase linkages by special tax relief linked to purchases of Irish inputs. Such a policy would be either expensive if the tax relief were higher than now or detrimental to the inflow if it fell below current relief. In addition, it would be of uncertain impact because in many cases, the specialised high quality inputs are available only from outside Ireland (often only from other units of the international firm).

Given the elasticity of the supply of foreign capital +

+ The high elasticity of foreign capital to changes in domestic incentives was shown in Chapter II.

and in particular the elasticity in the supply of foreign capital in the high technologically intensive sectors, a rapid fall in the inflow of FDI may be expected from the implementation of any of the above measures. This decline may be greater in terms of the loss of benefits to Ireland (employment, balance of payments effect) than the benefit from the increased RV which appears to be inelastic given the characteristics of FDI (capital intensity, high technology input, export orientation) and of the Irish economy's difficulties in supplying the kind of inputs needed by foreign firms.

Two further measures may be suggested which may not affect the supply of foreign capital in this way (5) sectoral differentiation of grants (6) attempt to divert higher order functions to Ireland. The first of these two measures is conceptually sound but again is likely to decrease capital inflow because high linkages exist in the sectors where the world's sector specific stock of foreign investment funds is low. This policy is therefore likely to decrease the FDI inflow. An attempt to encourage higher order functions has begun with the establishment of a Research Park at Naas. Again such a policy will be expensive in terms of grant aid because such incentives must overcome the strong centralisation tendencies for such activities which exist within the modern corporation. The gains are uncertain and the cost is likely to be high.

There are however, reasons to believe that RV will be increasing over time. The opportunities for indigenous enterprises to supply foreign firms will be siezed as familiarity increases and foreign firms will seek out domestic suppliers as they adjust to the Irish environment. Some foreign firms will become more vertically integrated as profits increase and reinvestment takes place. The IDA policy of encouraging joint ventures and taking an equity share of new foreign firms will raise RV (in those cases where foreign firms welcome domestic partners). Finally, providing the permanence of foreign firms is proved, the reduction and eventual ending of tax relief will also increase RV.

Conclusions

This Chapter has shown that inward FDI in Ireland has increased trade flows in both directions. The case of Ireland is a good sample of the theoretical proposition that trade and investment flows should be considered within a single theoretical framework.[41] Almost half of Ireland's Industrial Exports come from foreign owned firms and this proportion is increasing as foreign projects reach full production. The Chapter also showed that foreign projects have a higher propensity to import inputs than that of Irish firms. The implications for the Irish balance of payments are discussed in the context of a formal model in Chapter VI.

The consequences of this finding may be expressed by the benefits of increased exports and the spin-off from a dynamic sector on the one hand against the costs of greater reliance on the world market and in terms of the distribution of gains between the domestic and foreign sectors on the other. The exports of foreign owned firms are reducing dependence on Ireland's traditional markets and directing trade much more towards the EEC markets. Import substitution by foreign owned grant aided firms was found to be of a small order of magnitude, although the small non grant aided foreign owned sectors have remained in existence even after the change of policy towards freer trade.

The section on dualism showed that despite the useful insights which the concept affords, it cannot be applied uncritically in the Irish context. The foreign/domestic ownership division is not sufficient, by itself, to explain differences in exporting and input purchasing behaviour, though it is clearly a necessary part of such an explanation. The consideration of exporting must also invoke scale factors. Other influences on the difference in exporting behaviour are historical factors such as protectionism, the superior efficiency of foreign firms and the inherent advantages of foreign firms in terms of access to home markets, high level functions and specialised high quality inputs. The discussion of the importance of imported inputs is of interest as regards the Cooper and Whelan argument that foreign firms do not procure as

much locally as they might.[42] The present analysis showed the importance of scale (and of the industrial mix of the two groups). Large Irish owned firms purchase much less in Ireland than do smaller Irish firms. This suggests that the lack of capacity amongst Irish suppliers may be a constraint on any attempt to increase linkage effects. The reported unwillingness of Irish firms to approach foreign owned firms is a further barrier. In addition, certain provisions of the Irish tax system, in particular the duty free allowance on imports for exporters and export tax relief force Irish intermediate goods producers to compete on equal terms with imports. Finally, the unavailability of many of the high quality specialised inputs required by foreign firms helps to account for the difference. It is not sufficient therefore to focus on the fact of foreign ownership as a complete explanation for the disparity, as Government policy and inadequancy of the domestic industrial framework are also important. A dualistic structure appears to be a concomitant of a large foreign owned sector in any host country[43] largely because of the inevitable inequality of access to real resources between foreign owned and domestic firms. FDI has therefore contributed to the emergence of a dualistic structure in Irish industry.

The examination of the "Retained Value" of foreign firms is not presented as a complete cost-benefit analysis. It does not value benefits except at market prices, does

not relate benefit to cost (in particular it does not express benefits per unit of Government investment) nor does it completely encompass benefits - balance of payments effects, external economies and the opportunity cost of grants are all omitted. However RV helps to identify and quantify the areas of benefit to the economy and to ascertain the distribution of gains between the host country and the investing firms. A complete cost benefit analysis is carried out in Chapter VII.

The discussion of RV is of interest with regard to the Cooper and Whelan view that grants should be more closely related to value added in Ireland.[44] RV is a stricter condition that this because RV measures returns to Irish-owned factors plus the secondary stimulus to production within Ireland. Section 5 illustrated that increasing RV (or attracting only those foreign firms which can be expected to have a high RV) also has drawbacks in that the total inflow of FDI would be reduced and presumably job creation would suffer. It may also be a valid criticism of the Cooper and Whelan position that low returns in RV are an inevitable cost of the restructuring of the old industrial framework and the establishment of new outward looking industry. This argument is more forcible in the early stages of industrialisation, given the inadequacy of existing industry to carry out this task. It should therefore not be overlooked that a policy attempting to raise RV may have substantial negative

effects on the inflow of new FDI. This trade-off should be carefully investigated before the Cooper and Whelan view if accepted.

Chapter 1V. Appendix

Import substituting grant aided FDI and Tariff levels 1966 and 1972

Firm number	1. Year Established	2. Nominal Tariff % 1966	3. ERP % 1966	4. Nominal Tariff % 1972
1	1960	62	218	15
2	1961	29	120	6
3	1968	Free	19	Free
4	1968+	26	87	Free
5	1967	Free	-	Free
6	1968+	Free	-	Free
7	1968	36	153	8
8	1968+	26	120	Free
9	1954	19	56	
10	1970+	31	120	?
11	1959+	Mainly services-no tariff		
12	1966+	18	131	Free
13	1967+	Nature of Product-no tariff		
14	1960	49	90	22
15	1968	40	181	Free
16	1952	50	218	Free (?)
17	1959+	26	120	Free
18	1960	19	120	18
19	1960+	31	120	Free
20	1961	11	120	11
21	1963	Free	-	Free
22	1963+	18	-	?
23	1964	?	100	24

Firm number	1. Year Established	2. Nominal Tariff % 1966	3. ERP % 1966	4. Nominal Tariff % 1972
24	1963+	24	131	-
25	1965+	18	-	-
26	1967+	Nature of product-no tariff		
27	1967	50	90	27
28	1967	Free	-	Free
29	1967	12	-	Free
30	1968	39	87	?
31	1970+	Food products-support system		
32	1968	6	-	Free
33	1967	Free	-	Free
34	1971+	18	40	10
35	1971+	24	131	Free
36	1966+	11	47	Free
37	1962	18	40	18
38	1967	28	88	5
39	1962	42	168	19
40	1961	24	118	10
41	1967+	23	78	8
42	1966+	23	78	8
43	1963	24	131	Free
44	1966	24	131	?
45	1966+	29	75	7

Source: Column 1. Confidential IDA data
Column 2. Customs and Excise Tariff of Ireland (1966)
Crude average nominal origin:UK and EEC
Column 3. McAleese (1971) op.cit.pp 19-21(By industry)
Column 4. Customs and Excise Tariff of Ireland (1972)
Crude average nominal origin:UK and EEC

\+ Indicates 99 - 100% output for domestic market.

Notes and References

1. See Chapter 1.
2. Column 5 is a residual i.e. Column 6 minus (1-4).
3. See Dermot McAleese (1972) "Capital Flows and Direct Foreign Investment in Ireland 1947-1970" Journal of the Statistical and Social Inquiry Society of Ireland Vol. XXII Part IV 1971-2.
4. Notably R.E. Baldwin (1970) "International Trade in Inputs and Outputs" American Economic Review Vol.60 No. 2 pp 430-4.
   R. Vernon (1966) "International Investment and International Trade in the Product Cycle" Quarterly Journal of Economics Vol.80 pp.190-207.
   W.M. Corden (1974) "The Multinational Corporation and International Trade Theory" in J.H. Dunning (Ed) The Multinational Corporation and Economic Analysis Allen and Unwin, London.
5. See John H. Dunning (1972) The Location of International Firms in an Enlarged EEC. An exploratory Paper Manchester Statistical Society and Peter J. Buckley and John H. Dunning (1974) "The Industrial Structure of U.S. Direct Investment in the U.K. "University of Reading Discussion Papers in Economics No. 12.
6. Buckley and Dunning (1974) op.cit. T.O. Horst (1970) "A theoretical and empirical analysis of American exports and direct investments" Unpublished doctoral dissertation. University of Rochester.

7. Supporting evidence on this point comes from Central Statistics Office (1967) Survey of Grant Aided Industry (Prl 117)

8. Survey of Grant Aided Industry (1967) op.cit. Calculated from Table 4, page 90 shows that the time to achieve profitability was three years or less for 79% of grant aided projects - 52% achieving this target in two years or less.

9. For an "objective" definition of high technology industries based on a definite criterion see J.H. Dunning and R.D. Pearce "The World's Largest Firms" Business Ratios Issue Three.

10. See R.W. Jones (1967) "International capital movements and the theory of tariffs and trade" Quarterly Journal of Economics Vol.81 pp 1-38.
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11. H.G. Johnson (1970) "The Efficiency and Welfare Implications of the International Corporation" in C.P. Kindleberger (Ed) The International Corporation MIT Press.

12. See J.H. Dunning (1973) "The Determinants of International Production Oxford Economic Papers Vol.25 No. 3 November 1973.

13. J.H. Dunning (1972) The Location of International Firms in an Enlarged EEC An Exploratory Paper Manchester Statistical Society.

14. R. D'Arge (1969) "Note on Customs Union and Direct Foreign Investment" Economic Journal June 1969, also R. D'Arge (1971) Customs Unions and Direct Foreign Investment: A Correction and Further Thoughts and "A Reply" to A. Scaperlanda and E. Raling (1971) "A comment on a note on Customs Unions and Direct Foreign Investment. All in Economic Journal June 1971.

15. D. McAleese and J. Martin (1973) "Irelands Manufactured Exports to the EEC and the Common External Tariff" Economic and Social Review 1973 pp.615-631.

16. Letter (and Press Release) from R.P. Chalker, Executive Director U.S. Chamber of Commerce in Ireland dated 23rd August 1973.

17. Richard E. Caves (1971) "International Corporations: the industiral economics of foreign investment" Economica Vol. 38 pp 1-27.

18. Dunning (1973) op. cit.

19. A Seminal Article is W.M. Corden (1966) "The structure of a tariff system and the effective protective rate" Journal of Political Economy Vol.74 pp.221-37.

20. See Buckley and Dunning (1974) op.cit. for proof of this in the case of U.S. investment in the U.K.

21. Charles P. Kindleberger (1969) American Business Abroad Yale University Press, New Haven and London. See also F.T. Knickerbocker (1973) Oligopolistic Reaction and Multinational Enterprise. Harvard UP Boston.
22. Horst (1970) op.cit.
23. Baldwin (1970) op.cit.
24. Source: Dermot McAleese (1971) Effective Tariffs and the Structure of Industrial Protection in Ireland Economic and Social Research Institute Paper No. 62 Dublin.
25. Survey of Grant Aided Industry (1967) op.cit. Calculated from Table 2.6 page 30.
26. Ibid. page 30.
27. McAleese (1971) op. cit. 19-21
28. See Buckley and Dunning (1974) op. cit.
29. McAleese (1971) loc cit.
30. Hla Myint "Dualism and the Internal Integration of the Underdeveloped Economies" Banca Nazionale del Lavoro Quarterly Review No. 93 June 1970.
31. Hans Singer "The Distribution of Gains between Investing and Borrowing Countries" American Economic Review May 1950 and "Dualism Revised: A New Approach to the Problems of the Dual Society in Developing Countries" Journal of Development Studies Vol 7 No. 1 October 1970.
32. Dermot McAleese "Effective Tariffs and the Structure of Industrial Protection in Ireland" Economic and Social Research Institute Paper No. 62, Dublin, June 1971.

33. Stephen H. Hymer, "The Multinational Corporation and the Law of Uneven Development" in J.N. Bagwhati (Ed) Economics and World Order. World Law Fund 1970.

34. Calculated X^2 63.92. A value as great as 26.80 has only a one in 200 chance of occuring if the classifications are independent (11 degrees of freedom). The hypothesis that the proportion of exports is independent of the foreign/Irish classification can be safely rejected.

35. Calculated X^2 61.54 (11 degrees of freedom) See Note 18.

36. Calculated X^2 19.37 (11 degrees of freedom). Critical values are 17.28 at 90% level of significance and 19.68 at 95% level. Assuming the latter confidence level to be satisfactory, the hypothesis that the behaviour of the two groups is significantly different can be rejected.

37. Source: Author's own research by interview and questionnaire.

38. J. H. Dunning "Studies in Direct Investment" p. 308 George Allen & Unwin, London 1970.

39. See McAleese (1971) op. cit. p. 30

40. See Section 2(g) of this Chapter.

41. See H.G. Johnson Comparative Cost and Commercial Policy Theory for a Developing World Economy Wicksell Lectures 1968 Almquist and Wiksell, Stockholm.

42. Charles Cooper and Noel Whelan (1972) "Science, Technology and Industry in Ireland - A Diagnosis and Some Policy Proposals." Paper presented to the National Science Council, Dublin, March 1972.

43. Singer (1970) op. cit. Singer (1950) op. cit.
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44. Cooper and Whelan (1972) op. cit.

Chapter V: The Efficiency of Foreign Subsidiaries in Ireland - A comparative Analysis with their Irish Competitors.

The aim of this thesis is to isolate the impact of FDI on the Irish economy and to identify the mechanisms by which the impact is transmitted throughout the economy. The present chapter contributes to this aim by assessing the efficiency (in the broad sense) of foreign firms as compared to Irish owned firms. Hence the consequences of foreign ownership and the meaning of this in terms of economic performance are thrown into a clearer perspective. Several case studies of foreign owned projects are included in the Appendix.

Section 1 Methodology.

An attempt to assess economic efficiency is a difficult task under any circumstances. The use of different definitions of productive efficiency complicates this issue. Efficiency is defined in different ways,but usually depends on the relationship and ratio of inputs to outputs. Assuming normal maximising behaviour, the goal of the firm will be to maximise profits and it may be suggested that the most efficient firm will be the most profitable one. However when efficiency is seen from a social point of view, it is value added; the returns to both capital and labour, which is used as the indicator of efficiency in most cases. Refinements of these concepts to remove distortions and include social valuations are also necessary.

Measures of Efficiency

Efficiency is a relative concept. Therefore the problem of which yardstick to use arises when assessing the efficiency of foreign owned firms in Ireland. There are three such yardsticks by which their relative efficiency can be assessed. Each one poses problems in data availability and in methodology.

The first way of measuring efficiency is by a comparison of the subsidiary with the parent organisation or some other branch of the firm. Extensive data is required, which can only be obtained from the firm itself and which is generally regarded as confidential. The internal organisation of the firm may be such as to render such comparisons meaningless. The firm may be organised on an activity basis with each activity located in the country with the cheapest appropriate inputs so as to minimise worldwide costs. In such a case, the production of different components in different locations will result in techniques, outputs and inputs being vastly different between units. Even if such a complete integration of processes is not the case, the allocation of functions within the firm to specific locations may alter the internal input-output relationships. The movement of funds and transfer pricing within the firm will bias measures of efficiency. Conditions external to the firm will also affect its observed behaviour - Government intervention through tariffs, taxes and controls is a major distorting factor. Finally the response of the

various units to the different economic environments in which they exist cannot be standardised.

The second way of measuring efficiency is to compare the Irish unit with subsidiaries in another country which has a similar level of development. Such a comparison, like the one above, requires data from another country. The paramount problems here are those of identifying a similar economic structure and locating firms with equivalent operations to the Irish units. There is no economy similar enough to Ireland to remove differences in the level of development, sectoral make up and particularly Government policy (especially with regard to incentives for industrial production). These difficulties are compounded by the likely differences in the internal policies of the firms in response to differing host country conditions.

The third method available is comparison of foreign subsidiaries with Irish owned firms in the same industry. The major problem here is the identification of such "pairs" of firms, given the differences in sectoral distribution and intra-sectoral behaviour analysed in Chapter II as a form of dualism. Such pairs of firms must be producing the same product and other factors must be, as far as possible, standardised. A related obstacle is that this approach is limited to those sectors and product lines in which foreign and Irish owned firms coexist, although these firms may be atypical of the population of foreign owned firms.

Given this set of alternatives, the best choice is the last method: comparison of foreign subsidiaries with Irish owned firms. The data problems of the first two methods are intractable and the operation is made meaningless by the allocation of activities within the firm and by the response which even equivalent units would have to the environment of an economy other than Ireland. Evidence from earlier studies has shown the importance of the influence of the host economy on the performance of foreign subsidiaries.[1] There are still severe problems with the chosen approach, but attempts can be made to minimise these as the remainder of the chapter shows.

Measures of efficiency employed.

The methodology of this chapter is based on ratio analysis - the assessment of economic performance by the construction and comparison of indices of economic efficiency.[2] The "pairing" of firms must be carefully undertaken - the firms must be in the same product group and should undertake roughly the same stages of production or activities, e.g. an assembly industry must not be compared with one which manufactures the product from basic raw materials. Material inputs must therefore correspond in degree of "finish". Apart from these factors the firms will differ in technique, scale and markets served. It is the task of the analysis to determine how far the factor of foreign ownership contributes to these differences.

The analysis proceeds in three major stages. First "primary" ratios are calculated. These are:- profits+per unit of assets ($\frac{\text{Profit}}{\text{Assets}}$), profits per unit of sales ($\frac{\text{Profit}}{\text{Sales}}$) and sales per unit of assets ($\frac{\text{Sales}}{\text{Assets}}$). In the second stage, attention is focused on factor inputs separately and collectively. Partial productivity indices for both capital and labour are calculated together with the firms $\frac{\text{Capital}}{\text{Labour}}$ ratio. Overall efficiency indices relating total factor inputs to net output are constructed and compared. Finally, the determinants of these ratios are investigated by an analysis of the role of scale factor, research and development, management and degree of foreign control and sales efforts.

The type of analysis carried out is thus mid way between a case study approach and a full sampling method. However, it does have some of the best features of both, allowing close examination of the firms and suggesting tentative inferences about the population of foreign firms.

Section 2 The Data.

(a) Method of Collection.

The enquiry was restricted to three major sectors of Irish industry: plastics and pharmaceuticals, metal trades and electrical (machinery and appliances). The

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+ Gross profits are used here.

starting point was lists of addresses from the Committee on Industrial Progress reports on the Metal Trades and the Electrical Industry and the Institute for Industrial Research and Standards "Survey of the Irish Plastics Industry", supplemented by IDA lists of Grant Aided Industry.[3] Requests were made to 121 firms in these sectors for permission to interview an executive of the firm.[4] Twenty five interviews were carried out in March - April 1973. A questionnaire was mailed to respondent firms with whom no interview could be arranged and thirteen completed questionnaires were received.

The main thrust of the data collection both through interview and questionnaire concerned figures on the sales, net assets, pre-tax profit, labour force, payroll, proportion of workers with skills, grants received, exports and degree of foreign control of the firms. Information was also requested on research and development (R & D) expenditure, sales effort, reliance on foreign parent if applicable, the expertise of management, multiple shift working, labour turnover and general comments on the Irish economic environment. With one or two exceptions the interviews and completed questionnaires were entirely fruitful in obtaining this information. Whenever possible the information given was checked against IDA Annual Reports (for information on grants recieved), the An Foras Forbartha survey and IDA data. Except where stated the data refer to the financial year 1972. If the figures for this year were atypical an average of past

figures and projections for 1973 were used. This was not an important factor however.

(b) The "Pairing" of Firms.

The information available on 38 firms allowed 11 pairs of comparable Irish and foreign firms to be created.[5] Of the 11 pairs, four are in plastics and pharmaceuticals, four in the metal trades sector, two in the electrical industry and one pair is outside these fields. In each pair the firms produce substantially the same product - in two pairs one of the firms named the other as a competitor though this was not asked as a direct question. In all cases the firms take in their raw materials in much the same degree of "finish"; thus the same activities are performed. Techniques, scale and markets served often differ. The extent to which such factors are independent of ownership is discussed below.

The range of the enquiry was restricted by the discontinuity in the cross sectoral coverage of the two groups. There are many trades and product groups where there are foreign firms but no comparable domestically owned ones. This is to be expected because of the control of proprietry technology held within a restricted group of international firms. The exclusion of Irish firms is particularly noticeable in the sectors where foreign firms export 100% of their output. This type

of FDI is therefore not represented in the comparisons here and the sample is thus biased. The coverage by nationality of foreign partner is as follows: 5 U.K., 2 U.S.A., 1 German and three firms from other parts of the EEC.

(c) The role of "Transfer Pricing".

Any firm with a production process which involves transporting semi-finished goods, components or raw materials from one plant to another must, for accounting purposes, set the price at which these goods are transferred. The prices may be set on the basis of costs of productions, or at the going market price ("arms length price" or what a third party outside the firm would pay) or such prices may be "arbitrarily" determined by the firm on due basis of its internal objectives. When the units are incorporated in different countries, several extraneous factors will bear on this decision. Amongst these factors will be, different tax treatment in the countries, varying competition, rate of inflation, customs duties and attitudes of Government. The firm may wish to concentrate profit for nationalistic reasons, or to disperse it in order to avoid criticism or to spread risk. This extra degree of freedom to set internal prices and to move funds, which is open to international firms, is referred to as the use of transfer pricing.

Several channels are available for the purpose of moving funds. The pricing of goods and services transferred internally is an obvious one but also interest charges on debt to the parent, the pricing of royalties and fees, for which there is no "market price" and the allocation of joint overheads are others. Further avenues are the practice of "leading and lagging" payments and the extreme case of smuggling. This problem of transfer pricing is a serious one to contend with when conducting comparisons on the basis of subsidiary unit data. In an extreme case, the figures of a single subsidiary unit become meaningless except in the context of global company policy.

There are three sets of reasons however, which suggest that the setting of transfer prices will not have a serious distortionary effect when applied to the sample of foreign firms used in this enquiry. Firstly, there is the evidence of the firms themselves on this issue. Flows of intermediate products from the parent were of importance to only four firms (foreign firms 1, 6, 9, 10 in Table 5.1) but machinery was obtained from the parent in all but two cases (F5 and F11)+. Little information could be obtained on pricing formulas, most firms when asked stated that market prices were used. Use of overcharging for R & D and technical services was found in three cases (including both U.S. owned firms) - F4, 9, 10. In one case the Irish unit said it was undercharged for services (F5).

There is evidence from other sources that transfer prices are set on cost of production or arms length prices. A survey by Rook of 300 British companies found that in all cases such criteria were used and that none of the firms fixed prices for "profit sharing purposes".[6] A recent investigation of U.S. companies also shows that international firms are much more conservative in the use of transfer pricing than was previously thought to be the case.[7] One good reason for the use of arms length prices is the difficulty of assessing the performance of the individual units if arbitrary prices are used. An additional factor is the bad effect on the morale of management of units from which profits are diverted. Consequently the practice may not be as widespread as was thought.

Secondly, tax and reinvestment considerations make it unlikely that this practice is widely used. Five firms in the sample substantially benefit from export tax relief (F1, F4, F7, F8, F9). Remittance of profit from Ireland is unimpeded and so source country tax laws will have an important influence. European firms will have little difficulty in transferring profits because of double taxation avoidance agreements. U.S. firms may have problems because income for which tax

+ Throughout the chapter firms are referred to by the number of the pair in Table 5.1 with a letter F(= foreign) or I (= Irish) owned.

relief is allowed in Ireland (export income) may not be recognised as having been taxed when returned to the U.S.A. One U.S. firm in the sample could transfer income to another unit in Europe, should this be desired. A tax minimising strategy for exporting firms would lead to as much profit being made in Ireland as possible so this may boost profit figures. Most of the firms are engaged in expanding Irish operations and reinvestment of profits is an important source of funds. Any effect transfer pricing has is therefore likely to be small but insofar as it has an effect, this will be to increase profits in Ireland.

Thirdly if nationalism is a factor in the distribution of profits it is unlikely that Ireland will be damaged. Four firms are joint ventures (F2, F3, F4, F5) and Irish shareholders thus have an important influence in running the company. In these firms plus six others, the board of directors contains at least one Irishman. All management personnel are Irish in six foreign owned firms and in three others a majority is Irish. In only two firms is the bulk of the top management foreign (in one U.S. firm it is entirely so). If nationalism is a factor in company policy therefore it is unlikely to damage Ireland.

In the analysis that follows, where transfer pricing is identified, allowance is made for its effects. It is possible that this influence has not been completely

removed and that distortions have resulted. The above factors do not eliminate this likelihood, but they considerably reduce it.

Section 3 The Finding of the Analysis

(a) Primary Ratios.

Table 5.1 shows the evidence on the three "primary ratios" which are as follows: Table 5.1a $\frac{\text{Profits}}{\text{Net Assets}}$, which shows how successfully a company is utilising its capital, Table 5.1b $\frac{\text{Profits}}{\text{Sales}}$ which assesses the ratio of income to expenditure and shows how successful the firm is in keeping costs down, and the $\frac{\text{Sales}}{\text{Net Assets}}$ which shows how intensively capital is being used (it also helps to explain $\frac{\text{Profits}}{\text{Net Assets}}$). The final column of each table shows the "score" - the number of times that the best result in each pair was achieved by an Irish or a foreign owned firm. In all three ratios of course, the higher the ratio, the better is the performance of the firm.

It will be seen that foreign firms gain a better rating on each criterion than do Irish firms.

The superior profit rate $\left(\frac{\text{Profit}}{\text{Net Assets}}\right)$ is explained both by a more effective use of capital $\left(\frac{\text{Sales}}{\text{Net Assets}}\right)$ and by increasing profit on sales $\left(\frac{\text{Profit}}{\text{Sales}}\right)$. It must be borne in mind however that this may reflect market structure. It is in the last indicator $\left(\frac{P}{S}\right)$ that foreign firms achieve the best rating suggesting that further investigation should look at input costs.

Table 5.1 Comparison of 3 Primary Ratios of Paired Irish and Foreign Owned Firms

a: Profits/Net Assets

Pair Number	1	2	3	4	5	6	7	8	9	10	11	Score
P/NA Irish Firm	4.0	20.0	3.8	5.5	6.2	9.1	1.3	10.0	8.8	12.5	15.8	3
P/NA Foreign Firm	9.8	10.5	5.7	19.9	54.1	15.0	-8.3 Loss	23.8	13.3	7.3	19.2	8

b: Profits/Sales

Pair Number	1	2	3	4	5	6	7	8	9	10	11	Score
P/S Irish Firm	5.0	15.3	2.0	3.1	6.0	9.6	2.0	10.0	7.4	12.5	17.8	3
P/S Foreign Firm	7.0	23.2	8.0	9.2	45.0	10.0	-3.3 Loss	12.4	11.6	7.3	8.0	8

c: Sales/Net Assets

Pair Number	1	2	3	4	5	6	7	8	9	10	11	Score
S/NA Irish Firm	80.0	130.7	216.0	179.0	100.0	95.0	62.5	100.0	119.8	99.8	89.0	2
S/NA Foreign Firm	130.0	221.0	140.0	218.0	140.5	150.0	40.0	192.3	120.0	100.0	240.0	9

Source: Author's calculations from interview and questionnaire data.

To derive sectoral results from such a small sample is perhaps dangerous but it is necessary to assess the possibility that all the superior foreign results are concentrated in one area. Sectoral scores are derived in Table 5.2. Pairs of firms 1 - 4 are plastics and pharmaceuticals, 5 - 8 are metal trades, 9 - 10 electrical and pair 11 is outside these fields.

Table 5.2 Primary Ratios : Sectoral "Scores".

Sector	P/NA		P/S		P/NA	
	Irish	Foreign	Irish	Foreign	Irish	Foreign
1 Plastics/ Pharmaceuticals	1	3	0	4	1	3
2 Metals	1	3	1	3	1	3
3 Electrical	1	1	1	1	0	2

Source: Table 5.1

Table shows the number of case in which the Irish or Foreign owned firms have the "better" performance.

The results are fairly uniform across the three sectors, which it should be noted, are sectors mainly dependent upon modern technology.

A final point to note is that the results in Table 5.1 were checked for stability over time. Only firm F10 suggested that the quoted results was atypical - it was attributed to a large fall in demand from the

firm's main customer, who was in a near monopsony situation. This made the profit figure unusually low for the period covered. No adjustment was made to this figure because the firm was undergoing reorganisation and could make no firm forecast of future profits due to several uncertain factors. The loss maker was in this position in 1971 also and expected losses to continue through 1973. This firm was a new one.

The primary ratios provide only a starting point for the analysis. They are incomplete indicators of efficiency. P/NA is a partial ratio reflecting only the input of capital and the returns to that factor. The P/NA ratio however, is the most important indicator of private profitability for it measures the incentive to invest and the rewards for doing so. It is an interesting starting point, that foreign firms record superior performance on this and the two other primary ratios. The analysis now continues to look for the reasons behind these results and to look for better measures of efficiency.

(b) Capital/Labour ratios

The valuation of capital is always a problem in studies of efficiency. Capital is throughout this chapter valued in replacement value terms as estimated from the firm's insurance valuations. Capital is defined as fixed assets plus inventories plus "other current" assets. Capital/Labour ratios are then expressed on this basis.

Capital is valued in £000s and labour in numbers employed. The results are shown in Table 5.3.

A priori expectations would suggest that foreign firms will utilise more capital intensive techniques and overall this is so. In seven cases out of 11 the foreign firm is more capital intensive than its Irish counterpart. A difficulty encountered here is that of separating out working capital. In most cases this causes little distortion in the comparisons. However firm F6 carries a very high level of inventories and it appears that the major role of this firm is that of an importing agency for goods from the parent firm. In this firm the manufacturing role is secondary. Removal of inventories from the capital valuation is difficult in this case, but it is clear that the firm is, on its manufacturing operations alone, much more capital intensive than its Irish rival. This firm was not a recipient of IDA grant aid.

Sectoral differences appear to be important with respect to capital intensity as Table 5.4 shows. In the plastics and pharmaceuticals industry, two Irish firms are more capital intensive than their foreign rivals. The relative newness of the firms (two of the Irish firms in this sector are under four years old) and the technology which is new and therefore more flexible are important determinants of this situation.

Table 5.3 Capital/Labour Ratios.

Pair Number	1	2	3	4	5	6	7	8	9	10	11	Highest K/L
K/L Irish Firm	7.81	6.81	2.32	7.16	2.96	2.37	4.00	4.25	2.30	3.19	5.47	4
K/L Foreign Firm	6.66	3.47	2.85	10.71	7.50	62.50+	8.57	2.46	4.34	4.57	3.71	7

Source: Author's calculations from interview and questionnaire. + See Text.

Table 5.4 Sectoral Capital/Labour Ratios.

Sector	Highest K/L Irish	Foreign
1 Plastics,Pharmaceuticals	2	2
2 Metals	1	3
3 Electrical	0	2

Source: Table 5.3.

Capital in general will be available on easier terms to the foreign firms, as outlined in Chapter IV. The subsidiary has the resources of the parent to fall back on and has the parent's support in raising debt on easy terms. However there are several counter-balancing factors in that foreign investors have a desire to minimise their capital outlay, not least because of the higher imputed risks attached to foreign ventures.[8] One other factor is the role of the grants scheme, which clearly eases the capital constraint, which it is hypothesised will be more severe for domestic firms. It does not seem that the grants scheme has had a differential effect on foreign and Irish firms from the evidence of this sample. In most "pairs" the type of grant received and the rate of grant was the same for the Irish firms as for the foreign firm (Table 5.5).

The grants system is not designed to discriminate between Irish and foreign owned firms because of the differences in the availability of capital to the two groups and clearly does not do so. The capital intensity issue is clearly of some importance to the role of FDI in the Irish economy in view of the concern for job creation and the subject is now investigated on a more general level. The finding from this sample is that foreign firms tend to be more capital intensive but that this is not necessarily the case as examples from plastics and pharmaceuticals show.

Table 5.5 Grants Received - Type and Rate (% Fixed Capital).

Pair	Irish Firm (N.I.G.)	Foreign Firm
1	New Industry Grant 25%	N.I.G. 20%
2	Small Industry Grant 25%	N.I.G. 25%
3	-	-
4	N.I.G. 25%	N.I.G. 33%
5	Adaption Grant 8.3%	Adaption Grant 12%
6	N.I.G. 15.2%	Anco only
7	N.I.G. 14.6%	N.I.G. 25.2%
8	N.I.G. 39.6%	N.I.G. 12.5%
9	N.I.G. 9.3%	N.I.G. 25%
10	Adaption 12%	N.I.G. 25%
11	-	Requipment 4%

Source: Interview and questionnaire data.

The Capital Intensity Issue - a wider Perspective.

In countries with surplus labour which play host to foreign direct investment, foreign projects are often accused of being over capital intensive. Capital intensity is judged in this situation relative to the host country's resource endowment. Where labour is unemployed and underemployed and capital is scarce, the best use of available resources is achieved by labour intensive techniques. Foreign firms do not employ such techniques for two main reasons; firstly imperfections in the pricing system (rigidity in wages, unrealistic interest rates) and the perception of prices by firms, secondly limitations in existing technology and in the structure of demand.[9]

The perception of the relative prices of factors faced by foreign firms may differ from domestic firms. Foreign owned firms have a wider perspective resulting from the fact that they operate in more than one country. They may find difficulty in adjusting to a new set of factor prices and may apply the cultural norms of the source country (with regard to such concepts as "a living wage"). Factor prices may be distorted by unrealistic interest rates and by imperfections in the labour market - particular groups in the labour force may restrict entry and induce capital for labour substitution.

Where the foreign owned firms have been operating in conditions of capital abundance - such firms may continue to regard labour as a scarce factor and to economise on its use. The technology that the foreign owned firms use may not be amenable to adoption of techniques to changed conditions of factor scarcity.[10] The amount of flexibility in substituting labour for capital will vary according to the particular process under consideration and how adaptable the demand for the product is.

A further perspective on the problem arises from consideration of the distribution of the benefit from FDI. The "internal" gains to the host country arise only from that part of net output which is paid (ultimately) to domestic factors. This is what was termed "Retained Value"(RV) in Chapter IV. As Chapter IV showed, a large part of RV is labour remuneration. The payment to capital is mainly to foreign owners. Consequently more labour intensive production means a larger domestic share of net output - increased RV.

In the particular case of Ireland, the factor intensity issue has attracted more attention because of the supposed effect of the incentive scheme on factor proportions. It has been suggested that tieing grants to the amount of fixed capital investment encourages greater capital intensity. This hypothesis may be cast either as (1) capital intensive industries

are attracted to Ireland, or (2) the firms which are established employ more capital intensive techniques than they would have done if other forms of inducement had been available. It is the second hypothesis which is more usually put forward. The first hypothesis requires many assumptions amongst which is the view that only capital or even mainly capital is the resource transfer and that only returns to capital enter the decision variables of the foreign investor. The second, more restricted, hypothesis is tested below, albeit in a partial way. Before this however, it is worthwhile to consider if there is anything to be said in favour of attracting capital intensive projects.

The first point in favour of capital intensity is that the only alternative to such a project may be no project at all. The particular production function may be totally rigid and may not allow for any labour for capital substitution. (This is not, however, an argument for increasing the capital intensity of projects). Secondly, the more labour intensive are new projects, the more vulnerable they are to failure because of rising labour costs.[11] Indeed a stated objective of Irish policy is to close the wages differential which exists between Ireland and the U.K. Thirdly when indirect usage of labour is accounted for, capital intensive projects may have as great an employment effect as those which appear to be albour intensive. This however is not a persuasive argument in Ireland because

of the generally low value of linkage effects. Fourthly, it is usually the case that capital intensive projects are more skilled labour intensive and therefore if it is desired to raise the level of employment then such projects have a definite benefit. We now turn to some empirical examination of these issues.

Ideally, investigation of the capital intensity of foreign owned projects should compare capital: labour ratios in the foreign owned sector with those of the domestic sector of the same industry. In Ireland, however, this is not practicable because of the complete absence of information on the capital stock of Irish industry at anything approaching the industry level.[12] Even if adequate data were available, such comparisons could be very misleading because of the fundamental differences between Irish owned manufacturing industry and foreign owned projects. The non comparability in product groups and in other factors is documented in Chapter IV and in this chapter.

The result of the small matched sample used in this chapter is that, where Irish and foreign firms coexist in product groups, the presumption is that foreign firms will employ more capital per man, but this is by no means necessarily the case. It is dangerous to extrapolate from these results to a general statement on capital intensity because the bulk of foreign projects are in product groups where no comparable Irish investment

exists. (Also, there is no basis for believing that Irish firms have an optimal capital : labour ratio but the presumption would be that domestic firms will have a lower capital : labour ratio because of better adjustment to domestic factor prices).+

Some partial evidence can be invoked on the question of whether the capital grant induces foreign projects to be more capital intensive than they would otherwise have been. The practice of giving higher grants, other things being equal, in the Designated Areas allows a comparison within the foreign sector of high grant areas with Non-Designated Areas.

At an overall level, the past record of capital grant per job created (both measured in terms of the projections of foreign firms) is shown in Table A2.2 Over the years 1952-1970, there has been a lower grant per job created in the Designated Areas than in the Non-Designated Areas. This is true a fortiori for 1970-1971 where the grant per job (projected) in the Designated Areas was roughly half of the figure for Non-Designated Areas. (1969-1970 is the exception to the rule). However as such comparisons completely miss the effect of the different industrial mix in the two areas, this comparison is not of great value (see also McAleese[13]).

+ This could be nullified if the domestic sector substitutes capital for scarce skilled labour.

An attempt was made to refine this test by comparing foreign projects not only in the same industry but also within broadly similar product groups. A thirteen industry comparison was made for the year 1971. The comparison is really between product groups because it was felt that large variations existed within the SIC classification which would affect the comparison. The data are derived from the IDA figures and from the An Foras Forbartha sample. The sample covers 13 sub-sectors and 101 firms and the results are presented in Table 5.6.

Table 5.6 Comparison of capital : labour ratios in certain subsectors of foreign owned industry - Designated Areas versus Non-Designated Areas (1971)

Subsector in SIC Group	Designated Areas No. of Firms	Designated Areas Overall Capital Labour Ratio	Designated Areas $K/_L$ Excl. Working Capital	Non-Designated Areas No. of Firms	Non-Designated Areas Overall $K/_L$	Non-Designated Areas $K/_L$ Excl. Working Capital
Dairy Products (202)	2	4.41	3.84	6	6.44	4.49
Textiles (22)	10	5.29	4.85	3	1.70	1.40
Apparel (23)	10	1.44	1.30	5	1.31	1.09
Wood & Furniture (24)	2	3.06	2.59	3	1.56	1.23
Industrial Chemicals (281)	1	4.83	3.16	3	8.98	8.18
Plastics (282)	6	2.98	1.85	7	4.70	4.29
Pharmaceuticals (283)	1	5.00	3.00	5	6.30	3.48
Glass, Stone, Clay, (321) Concrete (324)	2	1.25	0.96	2	3.60	2.79
Iron and Steel, (331) Non Ferrous (332) (339)	4	6.24	4.46	4	2.48	2.07
Industrial (354) Machinery (356) (358)	2	2.77	2.26	6	1.45	1.39
Household Appliances, Electronics (36)	2	2.45	1.57	5	1.33	0.96
Instruments & Precision Goods (38)	4	1.59	1.30	3	4.67	3.16
Medical Instruments (384)	1	1.53	0.53	1	2.52	1.60
Total	47			54		

"Score" - most capital intensive: Designated Areas 6, Non-Designated Areas 7.
Source: Author's calculation from IDA data and the An Foras Forbartha survey.

The removal of working capital allows a better index of capital intensity to be obtained. After working capital has been removed, the results are inconclusive. In seven subsectors, firms in the Non-Designated Areas are the most capital intensive, whilst in six other groups of firms producing broadly the same products, the firms in the Designated Areas are more capital intensive. It therefore seems to be the case that there are other determinants of capital intensity-determinants which are more important in the choice of techniques than is the level of grant. It would indeed be expected on a priori grounds that a short term factor subsidy cannot alter factor proportions in a lasting or significant fashion.

In a situation of imperfect factor and product markets, it is difficult to conclusively assess the effect of a short term subsidy on factor proportions. It appears that the foreign firm's perception of host country factor prices and technological rigidities, which make it difficult to adopt techniques more than slightly in the face of different factor prices, are more important. It is therefore unlikely that an employment subsidy rather than a capital grant would have much effect. Moreover its critics consider that efficiency would be damaged. The fragmentary evidence which is available - that presented here for Ireland and Chisholm's study on U.K. Development Areas[14] has so far returned a verdict of "not proven". There has been a recent call[15]

for a short term labour subsidy to be introduced, in the Designated Areas only, with the object of reducing unemployment, redressing the "current capital bias"[16] of the wage structure and to help with high running costs in the early years of operation. The admittedly crude methods used here suggest that such a measure would have doubtful impact on the capital : labour structure of foreign owned projects. Its effects in the labour market would need further study.

(c) Partial Productivity Indices - Labour.

Labour input may be measured by numbers employed or in efficiency units. Efficiency units are estimated by assuming that each employee is paid a wage equivalent to his marginal value product. This allows firms the option of choosing more productive workers and paying a higher price (wage) for those workers. Therefore on the assumption that the wages of labour are a good approximation to marginal value product, the payroll can be taken as the input of labour in terms of efficiency units.[17] There are many possible exceptions to this rule: trade union power and managerial inefficiency being two, but this measure of labour input appears to be an improvement on the crude indicator of numbers employed.

Three indicators of labour productivity are presented in Table 5.6'. The crudest indicator relates output (in £000s) to labour employed (number of workers); $\frac{\text{Output}}{\text{Labour}}$ Table 5.6a. On this indicator foreign firms appear to

utilise labour much more efficiently than domestic firms. The two Irish "successes" are in the plastics and pharmaceuticals sector. A similar picture emerges from Table 5.6c where Value Added per Unit of Labour is the indicator of labour productivity. However when efficiency units of labour (WL = payroll) are used, foreign superiority is less marked. The conclusion drawn from this is that foreign firms pay relatively higher wages than do Irish firms.

Table 5.6' Partial Productivity Indices - Labour

a. Output per unit of Labour. $\frac{(O)}{(L)}$

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{O}{L}$ Irish Firm	6.25	8.91	5.01	13.1	3.03	2.50	2.50	4.25	2.76	3.27	6.15	2
$\frac{O}{L}$ Foreign Firm	6.46	7.68	4.00	25.0	10.60	41.7+	3.42	4.48	5,20	4.57	9.28	9

b. Output per efficiency unit of Labour.+ $\frac{(O)}{(WL)}$

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{O}{WL}$ Irish Firm	Na	4.90	3.17	3.11	Na	Na	2.50	5.00	2.05	2.90	5.90	3
$\frac{O}{WL}$ Foreign Firm		4.40	2.80	5.91			4.00	4.76	3.33	4.13	7.14	5

c. Value Added per unit of Labour $\frac{(VA)}{(L)}$

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{VA}{L}$ Irish Firm	Na	2.26	1.67	4.75	Na	Na	1.35	1.28	1.54	1.53	1.62	1
$\frac{VA}{L}$ Foreign Firm		2.11	1.86	7.62			1.40	1.70	2.13	1.84	2.00	7

Source: Author's calculations from interview and questionnaire. + See Text.

If our assumption above is correct and wages are a fair reflection of marginal value product, then the higher wages paid by foreign firms will be a measure of higher skill levels in their workforces. The measurement of skills in a workforce is a difficult job, fraught with problems of definition. The measure suggested to the managements of the firms interviewed was that skilled labour should mean training "equivalent to an apprenticeship or above". Additional efforts were made to ensure that within each pair of firms a standardised measure was being used. A crude indicator - the percentage of the direct production workforce with an "apprenticeship-equivalent" level of skills was derived. The result is contained in Table 5.7.

Table 5.7 Skilled Labour (Apprenticeship-Equivalent) as a Percentage of Direct Production Workforce.

Pair	Irish Firm		Foreign Firm
1	23%		25%
2	10%		12%
3	24%		22%
4		Na	
5		Na	
6		Na	
7	25%		27%
8	7%		11%
9	17%		33%
10	4%		9%
11		Na	
"Score"	1		6

Source: Calculated from interview and questionnaire data.

On this crude indicator foreign firms appear to be more skill intensive. This supports a finding by McNamara and Sainsbury that U.S. firms are more skill intensive in the plastics conversion industry than is the average Irish company.[18] The present sample contains no U.S. owned firm in this industry. Two other factors may also affect the higher payroll costs of foreign firms - multiple shift working and the distribution of the workforce between production and other activities - both are examined below.

Labour productivity is a function of the amount of capital which is available to combine with labour. The level of skills is also associated with capital-intensity. The firm with the highest $\frac{\text{Capital}}{\text{Labour}}$ ratio has the superior $\frac{\text{Output}}{\text{Labour}}$ ratio in seven out of eleven cases and the best $\left(\frac{\text{Output}}{\text{Efficiency units of Labour}}\right)$ ratio in six out of eight cases. In general the capital intensity factor favours the foreign firm. Intensity of labour in conjunction with capital may also be a factor here. One way of more effectively using capital is multiple shift working. Three shift working was observed for both firms in pair two and for foreign firms four and ten. In both cases where only the foreign firm is engaged in shift working, all three labour productivity indicators are significantly higher than the Irish counterpart.

In addition to skills and quality of physical capital several other factors may be adduced to affect labour productivity. These are, labour, turnover, labour relations

and general worker's welfare or working conditions. Labour turnover in the sample is low (below 8% per annum in all cases overall), it is however concentrated in particular skill groups and regional locations. Attractions of labour rather than turnover is perhaps a better description of the problem facing one or two firms. The turnover problem is an acute one for Irish firm 7, which could not expand or fulfil all its orders because of a shortage of skilled toolmakers - which the firm itself trains. Several Irish firms felt that trained labour was being bid away from domestic firms to the foreign sector by higher wages (a suspicion supported by the evidence here). This applied particularly to skilled toolmakers. The foreign firm in pair 7 had difficulty in attracting labour, but this related to rather below average wages (unusual for a foreign owned firm). Regionally, turnover was higher in and around Dublin and this presented firm 15 with shortages of female labour.

Labour relations were generally felt to be good by most of the firms - including those surveyed but not included in the paired comparisons. Unions generally were seen as helpful and fair. Only two firms have been affected by industrial disputes in the past five years. Both are foreign owned. One firm (F2) was affected by an inter-union dispute on the manning of machines which did not seriously disrupt production. The other case, however, was a serious unofficial strike over a pay dispute. The management created a graded system of payments according to skill levels.

Although the offer exceeded comparable rates in the area and was in line with the National Wage Agreement, a serious disruption occured. The firm, which is U.S. owned threatened closure and this course of action was seriously contemplated. (See Case Study 1 in Appendix to this chapter). The dispute was settled with union help and production returned to normal, and very profitable levels. An earlier strike also caused the firm some problems but was quickly resolved. There is a feeling amongst some Irish managers and administrators that U.S. owned firms "do not understand" Irish workers and this may be in evidence in this case. It is also noticeable that U.S. managers are less fulsome in their praise of Irish workers than European managers (particularly Germans) though this observations is based on a very small sample.

In terms of the general welfare of workers, it was suggested by an Irish personnel manager of a foreign owned firm that foreign firms treat their workers in a better fashion than do domestic firms. An example of this is that all the foreign owned firms visited had workers' canteens and some extra facilities for workers (social club etc.) whereas it is the exception to find Irish firms providing facilities in these fields. (One Irish firm in the plastic sector is an outstanding exception to the general statement). Casual observations of working conditions bore this out also - several Irish firms were operating in cramped, inadequate premises which were not conducive to good working conditions. Paternalism is

certainly stronger amongst continental European investors.

The effect of these better conditions on labour productivity remains an imponderable. However this, in conjunction with a greater quantity of physical capital to work with, higher skill levels and better rates of pay, contributes to better foreign performance on partial indices of labour productivity.

(d) Partial Productivity Indices - Capital

Indices of capital productivity require a valuation to be put on the services of capital in the period under analysis. Estimates of (1) the gross value of the capital stock and (2) a rate of return measurement of the services of capital are required for such a valuation. In the present analysis, the insurance valuation of the firm's capital (replacement cost) is utilised as the gross value of the capital stock (K). To this figure an opportunity cost rate of return of 15% per annum (p) is applied, on the grounds that this represents the true cost of capital - what it could have earned elsewhere.

Two indices of capital productivity are constructed from this valuation on the services of capital. They are $\frac{\text{Output}}{\text{Opportunity Cost of Capital}}$ $\frac{(O)}{(Kp)}$ and

$\frac{\text{Value Added}}{\text{Opportunity Cost of Capital}}$ $\frac{(VA)}{(Kp)}$ - Table 5.8.

Foreign firms are clearly superior on the first indicator but their superiority declines when value added is used instead of output. This is because their greater capital intensity carries more weight when compared to value added - also the removal of material inputs becomes important and in general the material inputs of the foreign firm are of better quality and specification. In one or two cases where exact equivalence of activities performed by the Irish unit of a foreign firm with the domestically owned firm is not achieved, these inputs will be a closer approximation to the finished article. It was suggested in Chapter II that access to better inputs was a major factor in the better achievements of foreign firms. However this is not such an important factor in these comparisons because efforts have been made to ensure that the firms perform the same activities. Quality of inputs will still be reflected in the price, thus decreasing value added, however. The removal of three pairs of firms because of lack of data probably biases the "score" towards Irish firms.

Productivity of capital is related to the intensity of use of that capital. In this respect, it has been noted that multiple shift working is more prevalent in the foreign group. A further indicator is capacity utilisation. A difficulty here was that firms looked upon full capacity in different ways and so no conclusive results could be obtained. Three firms,all foreign, reported non full capacity working.+ One was the loss maker (F7). Firm F10 was

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+ The definition of full capacity was left to the interviewee.

returning to full capacity working after a slump in demand. Firm F4 was also not at full capacity but this firm performs well on almost every criterion of efficiency. It therefore seems that below full capacity working is not necessarily detrimental to overall good performance (in a relative sense). Full capacity working is plausible for the remainder of the foreign firms and for Irish firms 1, 2, 8 and 11 because they have expansions in progress or expansion plans to be put into effect in the next two years.

A further factor is the age of the capital stock. New machinery and plant will tend to embody improved technology and can therefore be expected to yield better results. In both groups most of the machinery dates from post 1964, the exceptions to this being Irish firms 1, 10 (where the interviewee admitted that some of the machinery was archaic) 15, where modernisation was slowly taking place and 13 where factory reorganisation was in progress. Some old machinery was utilised by both firms in pair 11 but replacement was in both cases taking place. Apart from the last case, the equipment in all the foreign firms could be considered up to date, the bulk of it post 1968. The effect of this new machinery and production techniques is clearly reflected in the results of the foreign firms. The contribution of the technology embodied in the machines is returned to in a later section.

Having considered partial indices of productivity, the next section goes on to attempt to construct general

Table 5.8 Partial Productivity Indices - Capital

a. Output per Opportunity Cost Unit of Capital

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{O}{Kp}$ Irish Firm	5.33	3.15	14.40	11.93	6.70	6.33	4.17	6.67	7.98	6.65	7.50	2
$\frac{O}{Kp}$ Foreign Firm	8.67	3.40	9.33	14.53	9.37	10.00	2.67	12.10	8.00	6.66	16.67	9

b. Value Added per Opportunity Cost Unit of Capital

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{VA}{Kp}$ Irish Firm	Na	0.33	0.70	0.66	Na	Na	0.34	0.30	0.67	0.48	0.33	3
$\frac{VA}{Kp}$ Foreign Firm		0.60	0.65	0.71			0.16	0.70	0.49	0.60	0.54	5

Source: Author's calculation from interview and questionnaire data.

indices of efficiency and to evaluate the firms on these criteria.

(e) Overall Efficiency Indices

Despite the differing formulations of efficiency criteria, it is universally recognised that efficiency relates output to inputs. The numerous formulations of efficiency criteria derive from valuation and definition of these two concepts. The overall efficiency indices presented in Table 5.9 are arranged by degree of sophistication.

Index a (Table 5.9a) relates total gross output to total factor inputs. Factor inputs are measured by payroll plus capital services valued at the 15% opportunity cost rate of return imputed above. This index takes no account of the importance of material inputs. This index suggests that foreign firms in toto are more efficient than their Irish competitors but that exceptions to this rule do exist. (In this, as in the other two overall indices the omission of three pairs of firms is likely to bias the "score" in favour of the Irish firms).

Index b (Table 5.9b) presents net output (value added) per unit of input. The picture is substantially the same. Foreign firms are in the main better performers but this is not overwhelming. In the sample, the proportion of value added by the foreign firms is similar to that of their Irish competitor - this should not be adduced as evidence on the

whole population of foreign firms however as this was a condition of equivalence of the pairs.

The final index, Table 5.9c, may be termed an index of social efficiency. Net output is compared to an opportunity cost valuation of factor inputs. As above, capital services are priced at 15% per rate of return. However labour is now priced at the shadow wage return of £ 850 per annum. This wage is presumed to represent the alternative earnings of employed labour, it is derived in a full cost-benefit framework in Chapter VII. Together $(Kp + W^{*}L)$; where W^{*} is the shadow wage rate, represent the social costs of the factors employed. To be complete, the index should include other social benefits in the numerator and other social costs in the denominator.[19] External economies and diseconomies should thus be included. Because of the difficulties of quantification, such factors have been excluded. However they are brought up again below. On the index actually used, foreign firms perform better than the Irish owned ones; only the loss maker records a lower return per unit of social cost than its Irish counterpart. The higher wages of foreign firms here do not constitute a cost as in the other indices for only the opportunity cost of labour employed is imputed as a cost.

The above sections have shown that foreign firms can be considered more efficient than the closest equivalent Irish firm (in terms of product field and range of activity) on almost any indicator of performance.

Table 5.9 Overall Indices of Efficiency

a. Gross Output per Unit Total Factor Input $\left(\frac{O}{WL+Kp}\right)$.

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{O}{WL+Kp}$ Irish Firm	Na	3.15	2.60	2.49	Na	Na	1.31	2.85	1.63	2.04	3.50	2
$\frac{VA}{WL+Kp}$ Foreign Firm		3.40	2.30	3.53			1.28	3.02	2.35	2.15	5.00	6

b. Value Added per Unit Total Factor Input $\left(\frac{VA}{WL+Kp}\right)$.

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{VA}{WL+Kp}$ Irish Firm	Na	1.12	0.87	0.87	Na	Na	0.71	0.86	0.92	0.84	1.03	2
$\frac{VA}{WL+Kp}$ Foreign Firm		0.93	0.92	1.07			0.52	1.34	0.96	0.86	1.08	6

c. Index of "Social Efficiency" $\left(\frac{VA}{W^{\circ}L+Kp}\right)$

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
$\frac{VA}{W^{\circ}L+Kp}$ Irish Firm	Na	1.20	1.39	2.46	Na	Na	0.93	0.86	1.30	0.95	1.08	1
$\frac{VA}{W^{\circ}L+Kp}$ Foreign Firm		1.54	1.45	2.89			0.66	1.41	1.99	0.98	1.42	7

Source: Author's calculation from interview and questionaire data.

The remainder of this Chapter attempts to locate the reasons for this phenomenon. A number of factors may be responsible for the better showing of foreign firms including access to better technological inputs emanating from greater expenditure on research or reliance on the foreign parent for knowledge, superior managerial inputs or a stronger sales and marketing effort. Alternatively much of the observed differences may be due to the factor of large scale production. Each of these factors is examined in the light of its possible contribution to the differences observed above.

(f) The Role of Scale Factors.

It may be suggested that the findings of the analysis are not the result of factors related to the difference in ownership, foreign or Irish, but to differences in the scale of production of the pair. The role of scale can be examined with the aid of Table 5.10. Row 1 of the table shows which of the firms in the pair is larger - the criterion of assets or sales does not alter the situation in any pair of firms (i= Irish firm, f= Foreign firm). The remainder of the rows show which firm performed best on seven different indicators of efficiency (row 2 - 8) and row 9 shows which firm was the most capital - intensive.

The final column of the table shows the number of times that scale factors would predict "the most efficient firm" on that criterion. The final column of row 9 shows

Table 5.10 Scale and Indicators of Efficiency

Firm Number	1	2	3	4	5	6	7	8	9	10	11	Score
1 Largest Firm i or f	f	i	i	f	i	f	i	f	f	f	f	i = 4 f = 7 Correct prediction
2 Best performer indicator $\frac{P}{NA}$	f	i	f	f	f	f	i	f	f	i	f	8
3 Best performer indicator $\frac{P}{S}$	f	f	f	f	f	f	i	f	f	i	i	6
4 Best performer indicator $\frac{S}{NA}$	f	f	i	f	f	f	i	f	f	f	f	9
5 Best performer indicator $\frac{O}{L}$	f	i	i	f	f	f	f	f	f	f	f	9
6 Best performer indicator $\frac{O}{Kp}$	f	f	i	f	f	f	i	f	f	f	f	9
7 Best performer indicator $\frac{VA}{WL+Kp}$	Na	i	f	f	Na	Na	i	f	f	f	f	(of 8) 7
8 Best performer indicator $\frac{VA}{W^{*}L+Kp}$	Na	f	f	f	Na	Na	i	f	f	f	f	(of 8) 6
9 Most capital intensive $(\frac{K}{L})$	i	i	f	f	f	f	f	i	f	f	i	5

Source: See Previous Tables.

the surprising result that the largest firm in the pair is in six cases out of eleven, the least capital intensive. From the results of this column it is apparent that scale is a good predictor of efficiency.

However, the role of scale factors falls into a better perspective if the table is summarised in the following way. If the scale factor were a perfect indicator of efficiency, the 26 cells in rows 2 to 8 (inclusive) of Table 5.10 should be '1'. That is to say all the indicators in columns 2, 3, 5 and 7 should show a superior efficiency rating for the Irish firm. In fact, of these 26 cells, only 12 display a superior result for the Irish firm. Similarly, all the efficiency indicators in columns 1, 4, 6, 8, 9, 10 and 11 should indicate superior performance by the foreign owned firm. This is 45 cells in all. Forty-two of these cells do contain superior performance by the foreign half of the pair. The role of scale can now clearly be seen to be often outweighted by some other attribute of foreign owned firms (in the cases where the scale advantage lies with the Irish firm) but playing a supporting role in the cases where the foreign owned firm is larger.

As an adjunct to this hypothesis, it should be noted that scale cannot be considered to be independent of the ownership dichotomy. Scale is a function of the availability of factors and technology. The foreign firm has distinct advantages in raising capital; access to

parent's funds, credit worthiness and greater ease in raising equity capital. The availability of know-how may constitute a constraint on domestic firms. Reluctance to expand (because of fear of loss of control or of risk) was noted on the part of the management of more than one Irish firm, but was absent from the foreign group.

In conclusion it may be said that as an independent factor, scale is not of sufficient importance to override differences between foreign and Irish firms though it exercises some influence on efficiency. Other possible sources of such differences are now examined.

(g) Research and Development

Evidence on the amount of expenditure on R & D by Irish firms and the foreign subsidiaries is presented in Table 5.11. As a percentage of turnover, foreign subsidiaries spend more on R & D within Ireland than do the Irish firms. In addition, all of the foreign firms rely to some extent on technical information and know-how from their parent firm - the product of past R & D. The form of this assistance varies - it may be blueprints, formulae, patents or embodied in machinery and intermediate inputs from the parent.

Table 5.11 Research and Development

Pair	R & D in Ireland as a % Sales		Notes on Foreign Firm
	Irish Firm	Foreign Firm	
1	6%	Development 4% Only	Payment to parent for basic research
2	1%	2-3% "	Payment for know-how from parent
3	4%	2% "	"R & D technical & royalty payments"
4	0	1-2%	2% turnover paid for services
5	0	0	R & D from parent - nominal payment
6	1%	0	R & D embodied in inputs from parent
7	0	5%	Payment for technical services
8	2%	8%	Payment for technical information
9	3%	0	Payment for R & D, drawings - 10% sales
10	0	5% Mainly Design	3% sales payment for R & D
11	0	1%	R & D from parent - No overt payment
Score	4	6	NB '0' = less than 1% sales

Source: Interview and questionnaire.

Payment to the parent for R & D is a difficult question to broach because of the difficulty of giving a price to knowledge, which has costs of creation, but once created has the characteristics of a free good.[20] It has been suggested that one source of advantage of a foreign owned subsidiary is that R & D will be available to it at a price equal to the marginal costs of creating the knowledge, whereas an outsider must pay a price equivalent to average costs to obtain the same good. As marginal costs of this type of knowledge are usually low, this will constitute a major advantage for the foreign subsidiary. Also much of the knowledge is "proprietory knowledge", encompassed within a firm but unavailable to units outside the firm - brand names, secret ingredients and special techniques are of this type.[21] A free market price for this kind of knowledge does not exist because of barriers both natural (the knowledge is embodied in a process) and artificially created by the owners. Two criteria possible for the evaluation of the worth of R & D transferred are (1) its cost of production, (2) its economic worth to the recipient (and the latter is necessarily a subjective judgement). As no data were available on the costs of producing the transferred information, the subjective judgement of the recipient firm's executives was used as the measure of the value of the transferred information.

All eleven foreign owned firms rely to some extent on the parent for R & D in addition to the research they carry

out in Ireland. In some cases the transfer represents a subsidy to the Irish unit. In one case (F11) no payment at all is made, intra firm knowledge having the classic characteristics of a free good. Firm F5 pays only a nominal sum which is less than the worth of the knowledge to the firm and may represent an amount equivalent to the marginal costs of the R & D. In three cases, F4, F9, F10, the executive interviewed confirmed that the payment was unrelated to the worth of the transferred know-how and represented an over-payment to the parent. In one case, this was the result of a fixed payment having been agreed at a time when the services were "worth" the amount paid by the subsidiary and this payment was maintained after the expertise had become less important to the Irish unit. The other two explained that this was a method of moving profits within the firm and that the payments were not related at all to any notion of economic worth or costs, whether average or marginal, to the parent.

Despite this reliance on the parent, foreign firms overall appear to carry out a greater amount of R & D in Ireland than do their Irish competitors. The picture of R & D presented here is reflected at national level - research is divided into 82% on development, 15% on applied research and only 3% on basic research (1972).[22] This of course is a reflection of technological dependence, a major feature of which is the large proportion of foreign firms in the high technology sectors of Irish industry. (See the following discussion). The pattern of this small

sample is also repeated with regard to the low R & D spending of Irish firms at national level. If future performance is related to present R & D expenditure, then Irish firms are liable to fall further behind their foreign competitors who have access to ongoing R & D. This discussion of R & D needs to be set within the wider framework of t he overall technological implications of FDI to Ireland.

(h) The technological implications of FDI

The technology factor underlies many parts of the foregoing analysis. This section aims to make the importance of technology more explicit by analysing three major issues in the Irish context. These issues are; (i) the strength of the "technological multiplier", (ii) the phenomenon of technological dependence and (iii) an analysis of Ireland's technological "needs" and a review of the optimal means of obtaining technology.

Technology has been identified as a crucial element in economic growth. Denison, in particular, referred to the importance of growth due not to an increase in the quality of physical factor inputs, but to an improvement in the knowledge content and technique of production (the residual factor in economic growth).[3] The production of technology is an awkward case for welfare economics - the production of knowledge requires large inputs of factors before it can be realised and therefore knowledge producers must receive a prospective reward. However,

once knowledge has been created, optimality requirements are that it should be freely available, because use of it by one producer does not preclude its use by others.[24] In the modern capitalist world, producers of new knowledge are rewarded by a (temporary) monopoly position. Control of technology is thus a vital feature in the world economy, because of this monopoly situation. Because of monopoly rewards, the return to the creator of knowledge is influenced by the size of the market available to him [25] - also because of the large quantity of resources required and the large inherent risks, big firms and organisations are favoured. Hence the dominant position of U.S. firms in knowledge creation derives from the large market (and the importance of Government patronage) and the fact that they can marshall vast quantities of specialised resources.

Dunning has given the name "proprietary technology" to knowledge owned or controlled specifically by particular institutions.[26] Such technology is transmitted almost entirely by FDI or by licensing agreements. Non-proprietary technology is more easily available through technical assistance, invitation, purchases of goods and so on, but it is less important because it is not so closely linked to vital production processes, techniques and managerial control as is proprietary knowledge. It is the closeness of the links between technology, production processes and managerial techniques which provide the unique advantages of international firms. It is also proprietary technology which is the most important feature in technological dependence.

(i) The technological multiplier

The previous chapters have shown that FDI is directed into growth sectors, that it can incorporate several beneficial features such as market access, modern production processes and efficiency and that it has helped to ease certain severe policy problems such as employment creation. Concern is here not with the internal efficiency and growth of the foreign sector but with the transmission of technology to the domestic sector.

In theory the importation of technology through FDI will (1) increase efficiency and productivity throughout those sectors in which it is employed, (2) reduce factor costs for the users of the output, (3) stimulate other innovation and (4) encourage further R & D to maximise the benefits of the innovation. The access of the international subsidiary to the research of the parent firm, frequently at below arms-length prices, (the price for the subsidiary will be equal to the marginal cost of the research rather than average cost which an outsider would have to meet) is an important part of the success of international firms.

However, transmission of this knowledge through the economy has been less successful. Within the same sector, dualism has provided a barrier to improvement of the domestic sector. Domestic and foreign firms do not in many

cases produce the same products and cannot be said to be in direct competition because foreign firms service the export market whereas many domestic firms are engaged in import substituting. Weaknesses in the domestic economy deriving from small scale firms and unresponsiveness to change also inhibits transmission. Transmission of new technology through input-output links is inhibited because of the weakness of such linkage effects. The output of foreign firms is exported and in the main is not in intermediate goods production or producer's capital goods except where these are destined for other units within the firm. These are some examples of Irish firms having to improve standards in order to supply foreign firms,[27] but such examples are few.

Stimulation of domestic research through effects via demonstration, competition, radiation and encouragement have been small because of the small scale of Ireland's research effort, which is in some part a consequence of reliance on FDI. Considering first the private sector R & D in Ireland, Table 5.12 shows that this is mainly development, with basic research in Ireland being limited to the food and drink sectors. This is moreover severely concentrated as the list below shows:

Percentages distribution of total expenditure on R & D (1969)

First 4 companies	41.3%
First 8 companies	51.8%
First 20 companies	69.0%
First 40 companies	81.9% [28]

Table 5.12 Business enterprise sector - expenditures on R & D activity by industry groups 1969 (£000s)

Industry Group	Type of R & D activity (x £1000)			
	Basic Research	Applied Research	Experimental Development	Total
Mining & Peat	-	13.0	82.4	95.4
Electrical, Electronic	-	36.0	296.9	332.9
Chemicals & Drugs	-	61.4	174.6	236.0
Transport Equipment	-	-	104.2	104.2
Fabricated Metal Products	-	-	79.2	79.2
Machinery	-	-	15.8	15.8
Food & Drink	67.0	145.3	400.4	612.7
Textiles	-	5.4	73.5	78.9
Rubber & Plastics	-	10.1	64.1	74.2
Stone, Glass, Clay, Cement	-	14.0	71.9	85.9
Paper & Printing	-	9.0	57.2	66.2
Wood & Furniture	-	-	8.2	8.2
Other Manufactures	-	19.9	113.8	133.7
Utilities	-	49.6	289.4	339.0
Construction	-	-	16.9	16.9
Transport & Storage	-	--	66.2	66.2
Communications	-	5.0	40.0	45.0
TOTAL	67.0	368.7	1,954.7	2,390.4
Per cent (all groups)	2.8	15.4	81.8	100.0

Source: Diarmuid Murphy and D. O'Brolchain "Research and Development in Ireland" 1969. C.S.O. October 1971 Table 5.4 page 35.

Irish industry is heavily dominated by small firms (who cannot command the resources necessary to carry out their own R & D) and by foreign owned firms (who have strong reasons to centralise R & D facilities and therefore perform no basic research in Ireland). Despite the fact that foreign owned firms in general spend more on R & D than their Irish competitors within Ireland this is basically development expenditure as Table 5.12 verifies.

Borrowing of know-how is very important as Table 5.13 shows. How much of this is contracted by foreign firms cannot be ascertained.

Table 5.13 Payments made abroad for R & D technical know-how etc. 1969 (x £1,000)

Industry Group	Payments made to countries					
	UK	West Germany	Other European	USA	Other Countries	Total Payments
Mining, Peat	-	23.0	-	4.0	3.1	30.1
Electrical, Electronic	28.0	5.0	-	338.7	24.0	395.7
Chemicals & Drugs	118.6	-	-	-	93.5	212.1
Machinery	6.1	30.0	-	-	-	36.1
Fabricated Metal Products	3.8	-	6.0	-	-	9.8
Food & Drink	10.9	-	2.0	50.2	-	63.1
Textiles	30.7	-	29.0	1.2	-	60.9
Clothing, Footwear	3.8	-	-	-	-	12.8
Wood & Furniture	0.1	-	-	-	3.0	3.1
Paper & Printing	1.0	-	-	7.8	-	8.8
Glass, Clay, Cement	5.8	-	-	-	6.1	11.9
Utilities	1.1	-	-	-	-	1.1
Construction	3.0	-	-	-	-	3.0
Other Manufactures	10.3	-	-	-	75.2	85.5
TOTAL	223.2	67.0	37.0	401.9	204.9	934.0

Source: Murphy and O'Brolchain op. cit. Table 5.7 p. 38

The reported total of £ 0.934 million was an increase of 73% on the 1967 figure (£0.539m) which shows an increasing Irish deficit on the "balance of technology".[29]

This picture is further strengthened when the Government sector is introduced. Ireland has had little reason to engage in the large scale ultra expensive research that the "superpowers" have undertaken. Nor has the state had occasion to farm out R & D to the private domestic sector.

State R & D has been concentrated mainly in the agricultural sectors as Tables 5.14 and 5.15 show.

Table 5.14 Government Sector - R & D expenditure by fields of activity 1969 and 1967 (x 1000)

Field of R & D activity	R & D expenditure 1969	1967
Agriculture, Forestry, Fisheries	3,100.3(65.7%)	2,240.1(70.6%)
Construction	193.2(4.1%)	101.9(3.2%)
Transport(inc.Meterology)	153.0(3.2%)	71.7(2.3%)
Telecommunications	0.4(-)	0.4(-)
Health	45.8(1.0%)	15.4(0.5%)
Industry	671.6(14.2%)	385.7(12.2%)
Development Areas +	195.2(4.1%)	191.4(6.0%)
Miscellaneous ++	93.5(2.0%)	43.2(1.4%)
Sub Total	4,435.0(94.4%)	3,049.8(96.1%)
Social Sciences	262.5(5.6%)	122.8(3.9%)
TOTAL	4,715.5(100%)	3,172.6(100%)

+ within the state. ++ mainly physical planning (An Foras Forbartha)

Source: Murphy and O'Brolchain (1971) op. cit.

Table 5.15 Government Sector - Total Intramural R & D expenditure by the main agencies (1969) £ million.

Agency	1969 R & D Expenditure	% of Sectoral Total
An Foras Taluntais	2.45*	52.0
Institute for Industrial Research and Standards+	0.73*	15.4
Department of Agriculture and Fisheries	0.72*	15.3
An Foras Forbartha+	0.30	6.4
Forestry Division (Dept. of Lands)	0.12	2.6
Fisheries Division (Dept. of Agriculture & Fisheries)	0.09	1.9
Geological Survey (Dept. of Industry & Commerce)	0.04	0.85
Central Bank	0.035	0.7
Bord Iascaigh Mhara (Sea Fisheries Board)	0.026	0.55
Meteralogical Service (Dept. of Transport & Power)	0.02	0.5

* Figures include all technical work and services (apart from R & D) performed or provided by the respective research institutes.

+ R & D expenditure has increased markedly since 1969 and provisional estimates (by the bodies themselves) for 1972-73 are -

An Foras Taluntais	£ 3.60 million
I.I.R.S.	£ 1.67 million
An Foras Forbartha	£ 0.50 million

Source: National Science Council (1972) "Ireland - background report on Science and Technology". Compiled by Dairmuid Murphy.

The above factors prove the point that the incentive to invest in R & D in Ireland and the ability of the private (and to a lesser extent) the public sector to do this have been very weak. Investment in R & D for the agricultural sector is an exception to this and it may be said that investment in R & D has reflected static comparative advantage. However Ireland is manifestly attempting to break away from this situation by industrialisation. She may be characterised as a society that is technologically dependent in the new fields into which the development strategy is leading. The phenomenon of technological dependence is the next stage in the analysis of technological features of FDI.

(ii) Technological Dependence

The centralisation and concentration of R & D (as well as wealth producing capital, marketing skills and so on) in several advanced national economies has led to a feeling of insecurity amongst the "peripheral" nations; this feeling is expressed as a fear of technological dependence. There is a large element of mere nationalist feeling in this concept. There is also, however, the fear that national economic growth may be inhibited by the control of technology exercised by the international firm. As well as the problem of reliance on "outsiders", concern is also expressed at the barriers to entry in many industries which is the consequence of control of technology. Control of technology is likely to be a major part of the global

competitive strategy of the international firm.[30] As this is linked to global marketing control, most countries fear the imposition of restraints on their freedom to manoeuvre or the necessity to accept "conditions" such as restrictive export licenses. Concern is also expressed as to the price to be paid for the technology; particularly as there are a few guides to what a competitive price, let alone a "just price" should be in this field.

In the case of Ireland, additional and rather more concrete problems also arise. The "brain drain" problem is clearly linked to the small proportion of economic activity requiring high level scientific manpower. A recent survey estimates that about 60% of Irish graduates leave the country permanently.[31] Such a loss of human capital, with no counter-balancing inflow of income represents a severe economic, as well as social, loss to the country. It is a direct result of the increasing spatial inequality in the distribution of productive resources, in particular of production requiring high level skills.[32] This problem is a major factor requiring attention in Ireland's development strategy, in particular with regard to means of obtaining technology.

The second concomitant problem is that technology derived from advanced nations embodies a reaction to their factor price structure, and therefore is usually too capital intensive in relation to the factor endowment of the recipient. This problem has been reviewed above.

(iii) Ways of obtaining technology

Several strategies can be suggested towards technology:- (1) a country can perform its own R & D and technology, (2) licensing of technology from foreign producers either by state or private firms can be encouraged, (3) FDI with a technological background can be accepted, (4) goods can be imported and (5) the country can go without technological advances. Each of the above courses has its own implications and costs and each may in some circumstances be the appropriate course to follow.

The last course of action (5) above is ruled out for many countries because of the close connection felt to exist between growth and technological advance (the view that much of this growth is spurious or undesirable must not be allowed to obscure the belief of many countries and policy makers in this connection).[33] The problem thus becomes transmognified into the question of how to obtain technology rather than whether or not to obtain it. Dunning correctly puts the view that it is not the production of technology but the way the know-how is used which determines economic development.[34] This however is to abstract too much from the problems of control and the political implications of economic development. Economic development is not a one-dimensional concept and self-control of the country's development strategy is an important facet.

A second course could be the importation of goods embodying technological advance, in particular capital goods. This is not a feasible method of obtaining proprietary technology, as such knowledge cannot often be embodied in capital goods. It is more frequently expressed in forms such as blueprints, formulae or contained within a caucus of skilled personnel. However this presents a relatively cheap method of obtaining technology in those fields where it can be found. These fields tend to be those with stable fixed techniques which are not the fastest growing sectors or those where international competition is limited (sectors such as textiles, metal smelting, wood and apparel).

In the advanced technology fields the choice is thus threefold: to carry out R & D, to license know-how from foreign owners and thus retain national control of its application or to encourage FDI. The costs of each method are crucial. In many fields the costs of domestic R & D, even if funded by the state, are prohibitive (nuclear power, computers for small states). Competition with the U.S., across the whole range of scientific know-how is impossible for any single state in the West. Consequently if this means is to be followed it must be concentrated in a small area. The question of exactly where this research comparative advantage "lies" is an extremely difficult one to answer.

Licensing is frequently felt to be as expensive as receiving FDI in terms of returns to the foreign owner

and in addition licensing requires complementary domestic factors; management and marketing skill. Many domestic Irish firms have licensing agreements with foreign firms as this chapter and Table 5.13 demonstrates. Unfortunately, a full scale comparison of costs of licenses with FDI cannot be undertaken here because of the lack of information. The type of knowledge transferred may also be of a different nature. Where a domestic firm is established in a particular field, licensing may be a good means of maintaining that firm's advantage and payment for the license should reflect its worth to the licensee and assuming on approximation to competitive conditions, to the recipient country also. An important advance in this field may be modelled on Nitrigin Eireann Teoranta (NET) - the state owned nitrogenous fertiliser industry. NET received licensed technology from abroad and established a plant to supply the domestic market. It may well be that with state finance and bargaining power backing advantageous terms were forced. This form of solution may be a good model where a stable home demand is present. However the risks and lack of marketing experience and know-how and lack of overseas distribution facilities, as well as management skill, may limit the applicability of this model.

The encouragement and acceptance of FDI will often be the only means available of gaining access to new technology. Control of technology and marketing outlets are two key factors in the international company's strategy.[35]

Because these are significant entry barriers, loss of control means increased competition, loss of markets and the loss of the opportunity to achieve returns on past investment in R & D. The choice must often be either to do without advanced technology industries or to accept FDI.

To return to the specific Irish science policy, or the search for an area of research comparative advantage, sectoral reviews are being undertaken and the area of microbial fermentation is under special analysis.[36] It is clearly impossible at this stage to suggest exactly where the alternative (to FDI) strategy should begin by implementing Irish R & D but several pointers can be derived. Agriculture based research is clearly important and an extension into food technology is a logical step which is being encouraged. Other areas must clearly be of a footloose nature as no other large natural resource base is extant in Ireland (mineral technology may be attracted by the recent discoveries but this is an area of fairly stable technology). This policy of search should be continued as in the long term the possibility of research based industry (probably with extensive state support) in one area presents a possibility of reducing the brain drain.[37]

In most areas however, Ireland will continue to rely on foreign technology. Both the form of the acquisition of know-how and the terms on which it is obtained will

continue to be important. As the domestic industrial sector develops and as new areas of home demand become apparent, the trend will be from FDI towards licensing, with the role of the state being very important. As the EEC pulls closer together, pooling of European resources in R & D may lead to more reliance on EEC projects (with some Irish inputs and presumably benefits for Ireland). However, despite the search for selective areas of technological advantage there will remain many areas where the chief assimilation of technology into Ireland will remain through FDI.

(j) Management and Control Factors

It is frequently suggested that foreign owned firms owe their superior performance over domestic firms largely to better management. Servan-Schreiber suggested that the superiority of U.S. corporation in Europe was due to organisational skill.[38] Caves modified this suggestion and made it more relevant to productive enterprises by describing the foreign firms' advantage as being knowledge about how to serve a market or differentiate a product.[39] The existence of such knowledge within the management body means that the advantage becomes transportable across national frontiers whilst remaining within the firm.

In contrast, the Committee on Industrial Progress "General Report" (1973) criticises managers of Irish firms as being unadventurous, over-orientated to production and

constrained by directors who resist change of factor prices.[40] The quality of management is a very difficult concept to measure. Educational attainments are a very poor proxy for management ability and management techniques are difficult to compare and evaluate unless a vast amount of information is available.

Casual observation shows that managers of foreign firms are better qualified, and although some of the Irish firms employed young and well qualified managers, these were a minority. Management techniques, organisation charts, training schemes for managers, market research and so on were only just gaining acceptance in the Irish group, whereas such techniques were an integral part of all the foreign firms' operations. Two instances were encountered of over-conservative directors inhibiting the expansion of Irish firms. One case of outright hostility to any modern management techniques was also met in the Irish group. Beyond such observations no attempt was made to compare management techniques because of the problems above and because of confidentiality problems.

However within the foreign group, an attempt was made to discover if profitability could be related to the degree of foreign control. Two proxy variables were used to measure the closeness of control of the parent over the Irish unit. These are (1) the percentage of the directors of the subsidiary who are non-Irish nationality, (2) the percentage of equity of the Irish unit held by the foreign

parent (or parents). The sample was extended to 14 by the addition of three firms not included in the "paired" comparisons.

Table 5.16 Profitability related to the Percentage of Foreign Directors

1 % of Foreign Directors	2 Number of Firms	3 Weighted Average Profitability+	4 Average % Exports
0-25	1	5.7	0
26-50	6	14.2	22.1
51-75	3	11.4	38.3
76-100	4	14.6	86.5
Total	14	14.1	

+ $\frac{\text{Total Profits}}{\text{Sum of Net Assets}} = \frac{\sum_{L=1}^{14} Pi}{\sum_{L=1}^{14} NAi}$

Where i is the firm in question (L= 1,2, ...14)

Source: Author's calculation from interview and questionnaire.

As Table 5.16 shows the degree of foreign control, as measured by this indicator, varies greatly. It is possible to make only a very tenuous case that greater closeness of control within the foreign group leads to higher profitability.

Table 5.17 Profitability related to the Degree of Foreign Control (Equity Ownership)

1 Proportion of Equity Foreign Owned	2 Number of Firms	3 Weighted Average Profitability	4 Average % Output Exported
50-99%	6	14.00	33.4
100%	8	14.24	52.1
	14	14.10	

Source: Author's calculation from interview and questionnaire.

On the second proxy variable, equity ownership, it is by no means convincingly shown that 100% ownership produces better performance. However it is a surprising by-product of the analysis that both the proxy variables of control are closely related to the proportion of output which is exported. It may be felt that sales on the domestic Irish market are facilitated by Irish directors. It should also be noted that 100% exporting firms are much less likely to have local shareholding (perhaps because they have a more integrated sales strategy) as these may prove an unnecessary encumbrance.

An additional finding is that foreign firms employ a large number of Irish nationals as managers. In the "paired" sample of eleven foreign firms, seven have an Irish general manager and in all but one foreign firms, there is at least one top policy making post held by an Irishman.

This policy of employing Irish executives is an important finding in view of the concern within Ireland that foreign firms are creating only "low grade jobs".[41]

(k) Sales and Marketing

The sales strategy of a unit within an international firm depends, to some extent, on the overall policy of the firm. This can vary from a fully integrated world network with markets allocated to particular subsidiaries by the head office, to a loose form of division whereby each unit sells to any market in which it gains a foothold. In the sample the foreign firms are more export orientated than their domestic counterparts as Table 5.18 shows (the figures are for 1972). The sample of foreign firms is however much less export orientated than the population from which it is drawn. This arises because of the lack of comparable Irish firms where foreign firms are entirely export orientated. In the present sample four pairs 5, 6, 10 and 11 are producing purely for the home market.

The sales strategy of the firms within the foreign group varied greatly. A comprehensive global marketing strategy exists for firms F9 and F10. In firm 10, the unit in Ireland has not been assigned any export markets from head office and therefore produces only for the Irish market. Whether this was for reasons of cost could not be ascertained. Firm F9 has no sales department (except for spares) and therefore has no selling costs.

Sales, and the destination of exports are therefore completely controlled by the parent.

Some Irish subsidiaries felt that they operated with considerable autonomy within a global policy controlled by head office. This applies to firms F1, F2 and F7. Firm F7 has a sales department for Ireland only - export sales are handled by the parent firm. A looser structure is evident for firms F1 and F2. F1 has a separate sales and marketing department and has considerable discretion within a group policy. The manager said that real control over sales was in the hands of the subsidiary itself. Firm F2 operates roughly in this way but the group co-ordinates sales actively - this means that units are given responsibility to sell their own products though competition between the units is avoided - also one unit does not sell the production of another unit. It is interesting to note that the manager of this firm believed that market trend information from the parent was more valuable to the Irish Unit than was technical know-how. Notification of trends and swift response to this information he felt to be vital ingredients of business success.

Table 5.18 The Export Orientation of the 22 Firms (1972)

Pair	% of Output Exported (1972)	
	Irish Firm	Foreign Owned Firm
1	90	70
2	0	2
3	55	2
4	0	45
5	0	0
6	0	0
7	2	60
8	40	98
9	18	96
10	0	0
11	0	1
'Score'	2	6

Source: Author's calculation from interview and questionnaire.

The other firms F3, F4, F8 and F11 were given autonomy in sales matters. Firm F11 felt that its independent sales effort was very important in the company's success (it is however noteable that little is exported). Firm F4 relies on the parent firm for sales outlets as the bulk of this subsidiary's sales are to the parent's home market. The sales departments in pairs 5 and 6 were unimportant because of the nature of the products and so the foreign parent's role was minimal.

In making a generalisation from the above details, it should be borne in mind that "market access" is frequently held to be a factor in the package of advantages that foreign investors carry. The present set of firms are not the best from which to extrapolate because they are unrepresentative in their export content. However the reliance on the parent for sales information and outlets is important. Not all are part of a global strategy but use of the parent's outlets and sales department is an important constituent of success. For the import substituting firms, sales departments for Ireland are seen as a vital aid to successful operation as the following paragraphs help to show.

A comparison of the sales efforts of foreign firms with their Irish competitors shows that the former group devote more attention and resources to this part of the business. The division of manpower within the firm is taken as a proxy of the total resources devoted to the various activities. Table 5.19 presents the distribution of manpower between managerial/administrative tasks, sales effort and direct production in five pairs.

Table 5.19 The Division of Manpower in five pairs of firms.

Pair	1 % of Manpower in Management Administration		2 % Manpower Devoted to sales effort		3 % Manpower Directly engaged in production	
	Irish firm	Foreign firm	Irish firm	Foreign firm	Irish firm	Foreign firm
1	25.0	15.0	6.2	10.0	68.5	73.0
2	16.4	19.4	4.6	11.1	71.8	65.2
7	15.0	22.9	3.0	5.7	82.0	71.4
8	10.0	5.8	2.5	2.5	87.5	91.8
10	16.4	23.7	3.3	4.9	78.7	71.4

Source: Author's calculation from interview and questionnaire.

In four cases out of five the foreign firm devotes a greater proportion of personnel to sales - in the other case the allocation is the same. The low level of sales effort in the Irish group reflects the situation throughout Irish owned industry according to the Committee for Industrial Progress.[42] The sales efforts of foreign firms are often aided by the use of well known brand names (a demand side analogue of patents) which create areas of monopolistic advantage. As part of selling costs, foreign firms spend heavily on advertising within Ireland: eleven of the top 20 spenders on advertising on television are foreign - as are nine of the top 20 on radio, including the top spender in each category.[43] This is however a vast understatement of the advertising effort of foreign firms who spend heavily on the U.K. media (press and television) which is available in Ireland. The sales

effort of foreign owned firms who produce for the home market create a strong stimulus to demand and this represents a further source of advantage over their Irish competitors.

(1) Mechanisms of Transmission of Efficiency to the Domestically Owned Sector.

This chapter has so far been almost exclusively concerned with what may be termed "internal efficiency". Thus it has been shown that foreign firms may be viewed as more efficient than their Irish counterparts on various indicators. They will thus raise overall average efficiency when included in an aggregate with Irish firms. However it remains to show if foreign firms themselves contribute anything to the efficiency of the Irish owned sector.

The first possible set of mechanisms are those which operate through the normal input output transactions matrix of the economy. The output from a foreign firm used as an input to the Irish firm may raise efficiency by forcing the adoption of new techniques or simply by being of high quality, causing less waste or embodying technical advances. Alternatively by demanding high quality or up to date inputs from the domestic sector, efficiencies may be improved. Such mechanisms are limited however by the export orientation of foreign firms and the low linkage effects between the foreign and domestic sector (chapter IV). In the small sample of this chapter,

none of the Irish firms supplied a sizeable amount of output to foreign owned firms in Ireland.

However one mechanism that was in operation is the creation of a pool of skilled managers within Ireland which encompasses both the foreign owned and the domestic sector and between which groups a flow of managers is developing, in both directions. Many innovations in the domestically owned group have been brought about by managers who have worked at some stage for a foreign owned firm in Ireland. (Four instances of this transfer from the foreign group to Irish firms was found, but this seems too high a figure to be repeated at the level of the population of firms). Transfer of course occurs the other way also. This phenomenon has had a further major benefit - a "reverse flow brain drain" of Irish born managers back to Ireland, perhaps at first with a foreign company, who eventually transfer to the domestic sector. Such people often became entrepreneurs in the sense of launching new business ventures. This supports the hypothesis that Ireland has not lacked entrepreneurs but rather has lacked the conditions for the channelling of entrepreneurial ability. However such entrepreneurs were trained abroad.

Two other areas of efficiency spin off may also be isolated. Firstly (and partly as a consequence of the creation of a cross-ownership pool of managers) managerial techniques in the domestic sector have profited from the

demonstration effects from the foreign owned sector. Secondly the entry of foreign firms has lowered the search costs of finding profitable opportunities for new entrants and established firms. Areas of opportunity for future profits have been pointed to by these new entrants. Observation and invitation of both management techniques and technology at close hand is of this kind.

Technological transfer has been limited by the weakness of the domestic sector and by the pervasiveness of proprietary technology in the international firm (technology owned or controlled by the specific institution). There are examples, in the plastics and metals sector where the domestic sector has taken advantage of non-proprietary technology by licensing agreements, demonstrations and so on and has acquired technology from foreign firms or after a stimulus from them.

Finally the increased competition (and demonstrations of success) from foreign firms has provided a "salutory jolt" to the domestic sector - in the words of an Irish firm's manager. This has, in the main, been limited to very few sectors because of the different sectoral bias of the two groups, but in one or two areas it has proved an effective means of increasing competition. The decline in protection however has in most areas done more towards this end than has the entry of new firms, although it is possible that new entrants have a more immediate galvanising effect.

To conclude this section, the judgement must be that the efficiency increasing impact of foreign firms on the Irish owned sector is limited. It is limited by the lack of sectoral overlap between the two groups and by the low level of linkages between them. In the long run however the demonstration effects through the close contacts which exist between the managers of the two groups and the interchange of executives, may have an important beneficial influence on the efficiency of the Irish sector. The technological inflow may also prove of use to the domestic sector if problems of the proprietary nature of much of the information can be overcome and if the technology is acquired in the most suitable way - which may not be FDI.

Section 4. Conclusions.

Any conclusions about the efficiency of foreign owned firms in Ireland which derive from the above data must be hedged by consideration of the small and biased sample from which the conclusions are drawn. The need to pair firms to draw observations from firms producing the same product meant that many foreign firms had to be excluded. This is particularly true where the foreign firms are exporting 100% of their output. This non comparability problem reduces the scope of this chapter.

The analysis does show that there is no mystical element in the superior performance of foreign firms and

that the picture is not one of unalloyed foreign superiority. The evidence suggests that some difference exists in the production functions of the two groups. Such differences exist in the combination of the primary factors, capital and labour and in the use of inputs. Foreign firms tend to be more capital intensive and to use a more advanced technology, deriving from a greater R & D input. Labour too tends to be more highly skilled.

Material inputs into foreign firms are of a higher quality; technological know-how is more freely available because of information flows within the firm, such know-how may also be available at a price equivalent to its marginal cost, whereas outsiders to the firm (non owners of the proprietory technology) would have to pay a price equivalent to average cost to obtain it. The importance of intermediate inputs is shown by the difference between output and value added, but there is little evidence that the foreign firms in the sample are low value added firms - per unit of input they add a higher proportion of value added than do the domestic firms. Such specialised high quality inputs contribute to the differences between the two groups.

The investigation confirmed expectations on R & D and sales effort. Foreign firms rely on the parent firm for R & D. However they also perform more R & D per unit of output in Ireland than do Irish firms. The value of the R & D supplied from the parent cannot be judged by

the price that unit pays or by the cost to the parent. However such intra firm information and the adaption work done within Ireland are of great importance to the Irish unit. The sales effort of the Irish subsidiary is tailored to fit the overall strategy and structure of the foreign company to which it belongs. Nevertheless a large share of the resources of the Irish unit is usually put into the sales effort. Emphasis on the importance of this sales and marketing effort serves as a corrective to seeing efficiency purely in supply side terms. This sales effort is not confined to firms selling directly to the final consumer; intermediate and capital goods suppliers in the foreign group also record large sales efforts.

The role of management was found to be difficult to isolate. Through its function as co-ordinator and combiner of resources, management clearly is responsible for the performance of the firm. However no separate indicator of management ability could be devised to compare the two groups. Although the degree of foreign control was not strongly related to profitability within the foreign group it was, interestingly, strongly related to the degree of dependence of the foreign firm on exports.

Scale factors and capital intensity were generally more important in the foreign group. However scale factors were seen as determinants of efficiency only when they were not overridden by other advantages, such as embodied technology, capital intensity and presumably

better management. Foreign firms in general used more capital intensive technologies but this was by no means always the case.

The contribution of the foreign sector to the economy in terms of efficiency was found to be limited by structural factors within the economy and by the low linkage effects of the foreign sector. However, management contacts both formal and informal and the creation of a pool of skilled managers within Ireland, were found to have produced some spillovers of efficiency and this was expected to increase in the future through interchange of ideas and personnel.

Appendix I to Chapter V - Case Studies of Foreign Investment in Ireland

The following cases are not necessarily included in the paired sample of the preceeding chapter.

Case 1

Nationality of Parent Firm	- U.S.
% Foreign Ownership	- 100%
Location	- Non Designated Area, large town
Industry	- Electrical Machinery
Sales	- £1,200,000 (1972)
Employment	- 230

This wholly owned subsidiary of a large American parent company was founded in the period between 1964 and 1966. It is almost entirely export orientated (96% of production in 1971) and supplies mainly the European market, although there have been occasions when exports have been directed back to the parent company. There is some division of production between the U.S. parent and the Irish subsidiary. The Irish unit has no selling organisation, sales are arranged from the U.S. and there is also a selling organisation in the U.K. and one other in the EEC. The firm thus has no selling costs. Also no R & D is carried out in Ireland, all drawings and specifications come from the U.S.A. The company was considering transferring some development and modification work to Ireland.

The parent-subsidiary relationship is very close - the subsidiary sends full accounts monthly to the head office. There is a strict percentage (of sales) payment from the subsidiary to the parent for "general services". Profits are made and held in Ireland - a large share of profits are at the moment being ploughed back and the interviewee explained that the rest is held in Ireland, though in what form was not specified. Expenditure transfers within the firm are looked at from the "group point of view", which means that transfer pricing is used to allocate funds within the group and to avoid tax. The finances and tax bill of the group is seen as an integrated whole.

The subsidiary has faced quite severe labour troubles in the past. The manager suggested that the parent firm had seriously considered liquidating its Irish unit in the face of an unofficial strike (which may later have become official - there was some confusion on this point) over rates of pay, (this coincided with a trade downturn). However a new pay package was agreed and under the National Wage Agreements of 1971 and 1972 labour problems have been averted. The manager interviewed said that the unions were most helpful and no further difficulties were anticipated. However the manager (who was Irish) felt that some of his American superiors had failed to understand Irish workers and suggested that U.S. techniques of labour relations and man-management would have to be revised if continuing industrial peace was to be achieved. He felt

that a more flexible approach from above would be beneficial. There was no significant labour turnover however and the supply of workers was more than adequate except in one or two narrowly defined skills. Between one third and one half of the labour force is skilled (defined as a four year apprenticeship or equivalent) and it was suggested that rates of pay were superior to local domestically owned firms. This was not in fact the case at that time, but the new agreement just being brought in by the subsidiary made it so later in the year.

Raw materials were largely imported mainly from the U.K. (steel), although some castings and gears were purchased from Irish companies.

The firm had suffered a severe downturn in trade, largely due to a recession in the States and during this period contract work was taken in from the U.K. and Ireland thus increasing the share of output going to the local market.

The subsidiary clearly saw itself as permanent and as part of an integrated global network of control. The major future problem appears to be inflexible management and possibly there remains some resentment from past troubles. This aside the firm is now back to healthy profitability.

Case 2.

Nationality of parent firm	-	German
% Foreign Ownership	-	100%
Location	-	Designated Area, large town
Industry	-	Household Appliances
Sales	-	£2,000,000 (1972)
Employment	-	630 (480 women)

This subsidiary began production in 1964 and has expanded production steadily from that time (with the aid of extension grants). Production is almost entirely for export, sales go all over the world, although the U.K. constitutes an important share. Sales on the Irish market are small but are considered valuable for employee satisfaction - "it helps for our employees to see their products in the shops". (This is indicative of the care taken with labour relations; a comprehensive policy of paternalism is followed and labour relations are clearly excellent). All sales and marketing are carried out in Germany, although the subsidiary maintains a small sales department for Ireland only. All design and research is carried out in Germany. The value added in Ireland is high, the subsidiary takes in raw materials unprocessed and produces the final goods; there is no integration of production on process lines between Germany and Ireland. The Irish factory produces a smaller range of products than the German one. In the main the processes may be considered labour intensive; mostly unskilled labour is used.

Labour relations are excellent but there is a high rate of turnover of female labour for reasons unconnected with working conditions. The firm is justifiably proud of its training schemes. Wages are high (the managing director suggested that they were amongst the highest in the province). No labour problems have occured.

The subsidiary is closely integrated with the German firm in finance, marketing, design and R & D. Accounts are sent to Germany on a two monthly basis ("for our own benefit"). In Germany a monthly basis would be required. However the management felt that it was reasonably autonomous and, more important, could influence the decisions taken by the head office. It was felt that in this way Irish interests were better safeguarded than in a situation of more autonomy. There were ten German personnel in the subsidiary, but particular posts (with, for the moment, the exception of the managing director) were not reserved for Germans. German and Irish managers were integrated (a statement agreed to by the Irish personnel manager). Organisation costs were high, work study and industrial engineering were placed at a premium.

The location of the plant was chosen with a view to closeness to transport facilities (airport, harbour), availability of labour and the desire "for a good grant". Container traffic was not extensively used and the transport facilities aspect was much less important.

Asked what differences he had found between operating in Germany and Ireland, the managing director enumerated the following points - (1) It is easier to obtain workers in Ireland, although there were certain problems with female labour. (2) It is not as easy to buy materials in Ireland. Purchasing has to be from the U.K. "at least". German suppliers are more quality conscious and more aware of the necessity to meet delivery dates. The nationalised companies of the U.K. are "not the best suppliers". (3) Transport conditions are more difficult in Ireland and of course there is the problem of shipping parts back and fro to Germany. (4) The trade union system is different. In Ireland each separate company has to deal separately with the unions, whereas this is organised on a provincial basis in Germany. Neither system, he felt, was necessarily better, there was room for adaption and the system depends so crucially on those who operate it. (5) There was, he felt, a problem with the Irish educational system which is not geared to industry, although this was beginning to be recognised. The secondary schools were useless for him because they still thought of training for traditional jobs. In addition they are also public service orientated. Certain crucial skills are not being developed and in particular engineers are not good enough.

Case 3.

Nationality of parent	- U.K.
% ownership of foreign firm	- 66%. Part of project is a joint venture.
Location	- Dublin (main location).
Industry	- Plastics
Sales	- £2,000,000
Employment	- 440

This British/Irish joint venture has several plants throughout Ireland, (only part of its production - the part analysed in the chapter is referred to above). The plant was originally established in the early sixties to take advantage of the protection afforded to the Irish market. The plant was thus intended to service the domestic market only. Part of the production was handled by a joint venture between the British firm (1/3rd interest) and an already established Irish firm (2/3rds interest). A different product line was handled by a wholly owned subsidiary.

The joint venture exports 45% of its output and the export outlets are obtained by the British parent. Most of the exports go to the U.K. but many countries are served. The entry into the EEC has apparently made little difference to the project.

The joint venture is profitable and all the units in the group make a "reasonable contribution" to overall profitability. However the Irish plants are not operating

at full capacity - this appears to be at least partly due to a changed structure of demand to which adaption was slowly taking place. The firm has experienced no labour trouble and the manager felt that the national wage agreements were "working well".

The arrangement between the U.K. parent and the Irish subsidiary has changed over the life span of the project. The agreement that the U.K. parent should take a sizeable proportion of output still remains, However, on the technical side there have been changes. Originally, the technical knowledge and expertise of the parent was important, particularly in getting production going. At this stage the top engineer and several foremen were sent to Ireland from the U.K. and several Irish employees were sent to the U.K. for training. A technical agreement was reached at a fixed payment (£5,000 p.a.) to the U.K. parent. At the time this payment was, according to the interviewee, an underestimate of the value of the transferred knowledge and expertise. However, this payment "became unrealistic" once production had been underway some years because the flow of knowledge and expertise was now two-way. Consequently when the company underwent some organsiational changes, the payment was ended. The manager conceded that "certain services" were still obtained from the U.K. firm but no payment was now made.

The role of grant aid for this firm is interesting. An original grant was paid but the firm has since expanded

without grant aid. It is possible that the project would originally have gone ahead even if grant aid had been refused, but in this case it is likely that the original plant would have been smaller. One project was underway when a grant was awarded and this eased the cash flow situation but made little material difference to the expansion. Grant aid is not instrumental in the decisions of this firm to establish in Ireland, or in its expansion plans.

Case 4.

Nationality of parent firm	- German
% foreign ownership	- 100%
Location	- Designated Area, small town.
Industry	- Metal Trades
Sales	- £1,000,000
Employment	- 223

This wholly owned German subsidiary was established with an IDA grant in 1961. The firm produces precision metal products from raw materials which are almost entirely imported. Machinery is from Germany or the U.K. The unit in Ireland has its own sales organisation in the U.K. and EEC. Output is 98% exported, of which half goes to the U.K. and half to the U.S.A.

The Irish unit has only one German employee - the general manager, all the remainder are Irish. The firm has encountered no labour problems, although the general

manager said that he found it difficult to have more than one union to deal with, unlike Germany. In the early years of operation, labour turnover was a problem, but this ceased to be the case when a settled labour force was found. There are some problems in obtaining certain groups of skilled workers (toolmakers were particularly mentioned) and the firm is attempting to train some of its own workers in specific skills. The interviewee, (general manager) said that he felt there was a potential for more skills in the workforce. This is in accord with all the German-owned firms in the sample, all of which were full of praise for the aptitude of Irish workers. The manager also stated that a further advantage of Ireland was working with a homogeneous workforce, whereas the German situation involves problems with "guestworkers" of several nationalities. He felt that the Irish education system was not good but that this was not too much of a problem. Many of his workers had their first industrial job in the factory, and although this had disadvantages in that the need for precision and exactness were not always appreciated, it also meant that the workforce had not picked up any bad habits. He said that wages were nearly equal to the rates for the same job "in Birmingham".

The location was chosen in order to gain the highest possible rate of grant aid, with an eye to transport needs and in order that the factory should become an integral part of the local community. This desire for identification with (and perhaps domination of) the local community is a

much noted trait amongst German investors in Ireland. The firm is expanding with the aid of an IDA extension grant.

The Irish unit relies on R & D from the parent firm, although it is virtually autonomous on the sales side. The profitability of the Irish unit is considered to be good. The Irish unit pays the German company for technical services. How this was paid could not be ascertained, although the payment was said to be "reasonable".

Case 5.

Nationality of parent	- European (not German)
% foreign ownership	- 50% (joint venture)
Location	- Dublin
Industry	- Plastics
Sales	- £553,000
Employment	- 72

This joint venture began production in the late 1950s. Exports are unimportant, running at approximately 2% of total outputs. Capacity has steadily expanded. The original grant was not important in setting up but is important now. A new extension was grant aided and this help was vital, given the increased technicality of the process.

The Irish unit is integrated within a group of companies. The Irish unit has its own sales department and

the unit is "fundamentally controlled" by the local management. However the overall sales are co-ordinated by the group of firms of which the Irish unit is a part. The units do not however, sell each other's products. In the early stages of the project (the first five years), technical know-how from the parent was very important. However, the Irish unit now employs its own plastic technologist and there is little reliance on know-how from the foreign parent. What the foreign parent does contribute is market trend information, which the parent is ideally located to provide. The (Irish) manager interviewed said that this was of paramount importance. Information on products and machinery was also given from the foreign parent and was almost equally valuable. Instructions on marketing from the foreign parent were taken (through a free exchange of information) and this helped greatly as the product had to be geared to the latest trends in marketing. Therefore product change and innovation and the exact determination of markets was decided by the foreign parent because of its access to superior information.

The profit history of the Irish unit is interesting. After profitability was achieved (and the last seven years had generated reasonable profits), for the first few years they were ploughed back in the Irish unit, presumably to ensure stability and to expand capacity. The policy after this was to share the profits throughout the group.

The Irish unit had experienced some labour troubles. The unit was totally unionised but had run into demarkation problems through inter-union rivalry about the manning of machines. The unit employed three shift working for men and two shift working for women. Wages were said to be comparable to those of the source country. The main difference between labour costs in Ireland and those in the source country arose because of the social welfare contribution element (approximately 5% of labour costs in Ireland but up to 30% in the source country). Being located in Dublin most of the labour had industrial experience and there was an increasing labour turnover problem. It was felt that there was a constant battle to get labour to conform to the rules and regulations of the unit. The firm paid the Anco levy and had appointed training officers largely it seemed to justify paying the levy; the manager felt there was a compulsion to train labour but he was sceptical of the benefits of the scheme.

Case 6.

Nationality of parent firm	- U.S.
% foreign ownership	- 100%
Location	- Non-Designated Area, large town
Industry	- Electrical Machinery and Apparatus
Sales	- £1,600,000
Employment	- 350

This wholly owned subsidiary of a U.S. multinational firm was set up in the early fifties by a company of a

different nationality which was later absorbed into the U.S. firm. The Irish unit was in the course of digestion when the interview was carried out. The Irish unit produces electrical goods, both capital goods and consumer goods. Originally the unit enjoyed tariff protection, but this has now disappeared. The firm does hardly any exporting because of shortage of capacity, which is fully employed with home market sale.

The manager was not sure exactly what rationalisation would be carried out by the U.S. firm and so he described the situation with the previous foreign parent. The Irish unit had a selling agency in Dublin and also imported and sold the products of the parent firm. The design and manufacture side was carried out in Ireland and there was an R & D section in Ireland, although in the main the foreign parent was relied on for basic research. The chief designer was from the source country. Sales were "helped" by the foreign parent. The U.S. company which took over exercised close control over monthly accounts but in the main, the local management was left free to run the business. A payment of 3% on all sales was paid to the head office for technical assistance, but the manager said that this was a gross overpayment which was a means of transferring profits out of Ireland. The aim of the company was to expand the export side of the business of the Irish unit, both to take advantage of the tax free export profits provision and to remove the constraint of the small home market.

The location was chosen because of Government persuasion and inducements (and policy on rural electrification), transport reasons and because a site in excess of immediate requirements could be purchased at a lower cost than in the locality of Dublin. The plant was located near a port which was an advantage because most raw materials come from the EEC and U.K. and machinery mainly from Germany and the U.K.

Appendix II to Chapter V. Questionnaire to Firms

STRICTLY CONFIDENTIAL

NAME OF COMPANY

MAIN PRODUCTS MADE

1. ORIGINAL INVESTMENT MADE IN (Year)

2. GRANTS RECEIVED AMOUNTS Year

e.g. New Industry Grant

Small Industry Grant

Anco

Re-equipment

Other (please specify)

3. TOTAL ASSET VALUE OF COMPANY (1971, 1972 or 1973)

Is it possible to give a breakdown of this figure (e.g. fixed/current etc.) ?

4. TURNOVER (1972 or 1973)

Is it possible to give the trend of this figure ?

5. % OF OUTPUT WHICH IS EXPORTED:

6. Please indicate export markets if any, and their importance.

7. PRE OR POST TAX PROFITS (Please state which)
   1971, 1972 or 1973.

8. TOTAL EMPLOYMENT:
   Male Employment: Female Employment:
   Direct Production Workers: Office Staff:
   (of which number "skilled":)

9. What percentage of costs are labour costs ?
   (or payroll amount)

10. Does the company carry out any Research and Development ?
    (if so please give some indication of the importance of this function):

11. Does the company have a separate SALES DEPARTMENT ?
    (if so please indicate its importance)

(Questions 12 - 14 to foreign subsidiaries only)

12. Does the Irish company rely on the foreign parent -
    (a) for technical services ?
    (b) for sales and marketing ?
    (c) for any other function ? (please state)
    Are payments made for these services ?

13. Please give the Nationality of the Directors of the firm and of the Heads of Departments of the Irish Company.

14. Are there any comments you can make on the Irish Economic Environment ?
(e.g. production difficulties, differences in methods of operation as compared to the parent firm. Are there any particular shortages ? - e.g. skilled labour).

Notes and References

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3. Report on Electrical Machinery, Apparatus and Appliances Industry Committee on Industrial Progress (1971) Prl. 2061 Stationery Office, Dublin. Report on Metal Trades Industry C.O.I.P. (1970). A.B. McNamara and D.M. Sainsbury (1972) A Survey of the Irish Plastics Industry Institute of Industrial Research and Standards, Dublin.

4. The letter was accompanied by a covering letter from Dr. Charles Carter, Vice-Chancellor of the University of Lancaster, to whom I wish to express my thanks.

5. The number of pairs in the analysis (11) compares favourably with the Southampton enquiry on U.S. investment in the U.K. which produced 17 paired comparisons. See Dunning (1966) Op. Cit.

6. W.A.P. Manser (1973) The Financial Role of Multi-national Enterprises Cassell, London quoting A. Rook (1971) Transfer Pricing: The Measure of Management Performance in Multi-Divisional Companies. British Institute of Management, Survey Report No. 8, London.

7. Staubough and Robbins interview Fortune August 1973.

8. Yair Aharoni (1966) The Foreign Investment Decision Process Harvard U.P.

9. R.S. Ekaus (1955) "The Factor Proportions Problem in Underdeveloped Areas" American Economic Review September 1955.

10. See W.P. Strassman (1968) Technological Change and Economic Development Ithaca N.Y. Cornell University Press.

11. Dermot McAleese (1972) "Capital Inflow and Direct Foreign Investment in Ireland 1952 to 1970" Journal of the Statistical and Social Inquiry Society of Ireland, vol. XXII, part IV, 1971-72.

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13. Dermot McAleese (1972) Op. Cit.

14. Michael Chisholm (1970) "On the making of a Myth?" How capital intensive is industry investing in the Development Areas? Urban Studies vol. 7, no. 3, October 1970.

15. Patrick N. O'Farrell (1971) "The Regional Problem in Ireland: Some Reflections upon Development Strategy" Economic and Social Review (Dublin) vol. 2, no. 4, July 1971.

16. O'Farrell (1971) Op. Cit. p. 479

17. See Dunning with Rowan Op. Cit. p. 367

18. McNamara and Sainsbury Op. Cit. Table 12.

19. Dunning with Rowan Op. Cit.

20. See Harry G. Johnson (1970) "The Efficiency and Welfare Implications of the International Corporation" in C.P. Kindleberger (ed) The International Corporation M.I.T. Press pp 35-56.

21. J.H. Dunning (1970) "Technology, United States Investment and European Economic Growth" in Kindleberger (ed) Op. Cit.

22. National Science Council (1972) "Ireland Background Report on Science and Technology". Compiled by Diarmuid Murphy. Stationery Office, Dublin.

23. E. Denison (1962) The Sources of Economic Growth in the United States. Committee for Economic Development, New York.

24. Harry G. Johnson (1970) Op. Cit.

25. Harry G. Johnson (1970) Op. Cit.

26. John H. Dunning (1970) Op. Cit.

27. One case reported by a manager of a foreign owned firm in the electrical machinery sector was that the quality of components being purchased from an Irish firm was improved at the insistence of the foreign owned purchaser.

28. Diarmuid Murphy and D. O'Brolchain (1971) Research and Development in Ireland 1969 published by Central Statistics Office Dublin for National Science Council, October 1971.

29. Ibid p.38 Further figures reported by the Irish Central Bank suggest that the data in Table 5.13 are a considerable underestimate.

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31. Richard Lynn (1968) The Irish Brain Drain Economic and Social Research Institute Paper No. 43, Dublin, November 1968.

32. See Robin Murray (1972) "Underdevelopment, International firms and the international division of labour" in Towards a New World Economy, introduced by Jan Tinbergen, Rotterdam U.P. 1972.

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35. Michael Z. Brooke and H. Lee Remmers (1970) The Strategy of Multinational Enterprise, Longman, London

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40. Committee on Industrial Progress (1973) General Report (Prl.2927), Stationery Office, Dublin.

41. See Business and Finance August.

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Chapter VI: The Effect of Foreign Direct Investment on the Balance of Payments of the Irish Republic.

Section 1. Introduction

The preceeding five Chapters have analysed FDI using observed market prices only. The analysis of the balance of payments effects of FDI in this Chapter and the social cost-benefit analysis of the following Chapter move into the realm of shadow pricing by utilising prices of inputs and outputs derived from the ruling "world price" or "international price".

The effects of FDI on the balance of payments of host countries has been a subject of controversy. It could be argued that the balance of payments is a general equilibrium phenomenon and therefore does not merit separate treatment. The balance of payments is the result of the interaction between the domestic economy and the rest of the world.[1] An analysis of the effect of FDI on domestic income would suffice as it would imply the effect on external payments. Valid though such an argument may be, there are compelling reasons for regarding the balance of payments as a worthy object of independent scrutiny. Firstly, imbalances in external payments may be difficult or impossible to remove by Government policy measures. Adjustment mechanisms do not function automatically. Inadequate policies and incomplete adjustment can result from distortions and structural rigidities within the economy, from imperfections in competition and from restrictions

on flows of information. The full range of corrective policy weapons is often not available to Governments - this applies to Ireland, whose monetory and exchange rate policy is closely tied to those of the U.K. Secondly, even if the above does not apply, policies may have to be adopted to correct external payments imbalances which impose costs on the economy. These costs may be more difficult for the domestic economy to bear than are external payments imbalances. This is true a fortiori where the external balance can be characterised as a constraint on national development. Shifting resources into uses which increase the generation or saving of foreign exchange may be a costly and difficult process. Thirdly, the above difficulties are compounded when the economy is small and open like that of Ireland. Lack of control of key policy instruments means a loss of room to manoeuvre. Also, Government statements view the balance of payments as an independent policy target. This is perhaps best illustrated by the major policy shift of the mid-fifties away from protectionism towards freer trade in the face of a payments imbalance, (documented in Chapter II).

Foreign Direct Investment and the Balance of Payments.

There are several compelling reasons for examining the effect of FDI on the host country's balance of payments. Firstly, international flows of capital and goods are not independent; strong relationships exist between flows of goods and of factors internationally.[2] This was clearly illustrated in the case of Ireland, in Chapter IV. Secondly,

because of the problems and costs of achieving external balance, the question whether foreign investment produces the foreign exchange to service the host nation's debt has been a major point of contention amongst economists . This raises the issue of "the correct way" to assess the balance of payments effects of FDI. Thirdly, where foreign investment is concerned, we are dealing with market imperfections because such imperfections are the source of the foreign investor's advantage and so the assumption of an automatically equilibriating external balance can no longer be upheld. This requires elaboration. Within the neo-classical model, every investment produces the resources required to pay for the factor inputs used. Perfect competition in every industry produces a uniform rate of return on capital and the "adding up problem" does not exist (the equality of total revenue and factor rewards throughout the economy is ensured). Imperfections in the capital and labour markets however destroy this neat equality. Because of the monopolistic competition element in FDI, super-normal profits may be earned by foreign factors. The return earned on foreign capital and technology will in this situation be greater than their opportunity cost. In normal circumstances this would present a distribution problem for the host Government. However such returns earned by foreign investors may be remitted to the source country imposing a loss on the host. The reallocation problem imposed on the host country is thus that it has to shift resources in order to earn the foreign exchange to finance such remittances. This problem can increase

over time if the foreign sector grows through retained earnings and then remits a large proportion of its earnings. Secular growth of remittances from foreign owned firms is a constant fear of host Governments. This represents an important source of instability in the balance of payments of many countries and deserves investigation in the Irish case. It requires an examination of the dividend policies of foreign firms. Fourthly, the balance of payments takes on a political dimension also. Host nations have a tendency to attribute great importance to balance of payments effects. Vernon suggests that this concern is due to balance of payments consequences being regarded by host Governments as a proxy for the loss of host national control over the industries where direct foreign investment is important.[3] Thus the balance of payments impact of the FDI becomes imbued with political repercussions.

The Assessment of the Effects of FDI on the Balance of Payments of Host Countries.

The balance of payments effects of FDI can be examined from the point of view of the host country, the source country or in terms of the investing firm's interunit (subsidiary to parent or subsidiary to subsidiary) transfers. Such effects can be quantified at a macro or micro (individual firm) level. There has been a great deal of controversy concerning the "correct way" to estimate the balance of payments effects of FDI. In this Chapter the remainder of

this section examines the above controversy. Section 2 analyses a model of balance of payments adjustment which has special relevance for FDI, Section 3 approaches the balance of payments from an intra firm viewpoint and Section 4 presents quantitative estimates of the effect of FDI on the Irish balance of payments.

We are concerned here only with the effect of FDI on the host country's balance of payments. The crucial theoretical issue in this context is the so called "alternative position assumption". This assumption is simply used to answer the question of what the situation would be if the particular foreign investment had not taken place. The results of all the studies carried out on this issue are very much influenced by the particular alternative position which they assume. There are several conflicting viewpoints on the "correct" alternative position.

The view adopted by Streeten and others is that the correct way to examine the effect of FDI on the external balance is to calculate "direct effects" only.[4] Direct effects are those inflows and outflows which actually cross the exchanges. Thus the comparison is between (capital inflows, equity and foreign loans together with the exports of the project) and (debt servicing costs, dividends and royalties plus imported inputs). The implicit alternative position assumption is that a domestic project with exactly the same production conditions but domestically financed would have replaced the foreign owned project if no foreign

investment had taken place. It further implies that all "non-direct" effects would result from any project be it foreign or domestic. The opposing view to this is the assumption that non-direct effects do differ between foreign and domestic projects.

An opposing view is taken by Little and Mirrlees[5] by the Pearson Commission and by the UNCTAD study,[7] who suggest that the impact of FDI on the balance of payments should include non-direct effects which may differ between foreign and domestically owned projects. Non direct effects which are expected to differ between the foreign project and the alternative domestic project are: the remuneration of labour, the cost of capital over time, the impact on the production of non traded goods and the output of the project which substitutes for imports.

Streeten's argument rests on the twofold proposition that a domestic project (or a domestically financed one) is always an alternative and that the domestic alternative will always have the same "indirect" impact on the balance of payments. Even if the first part of the proposition is accepted, the result does not follow because an alternative domestic project may have different indirect effects arising from differences in the cost of technology and management, effects arising from the foreign subsidiary being part of a larger organisation and from differences in the timing of flows (for the choice may be between a foreign project at time t or a domestic one at time (t + n) where n is the lag

which enables the domestic economy to assemble the requisite package of resources). It seems likely that the production function of a domestic alternative firm will differ from a foreign subsidiary.

A rather different approach is adopted by Hufbauer and Adler.[8] They suggest four sets of assumptions concerning the effect of direct foreign investment. They refer to this problem as the "substitution question". The different substitution assumptions are (1) the "classical assumptions" - direct investment supplements host country investment and completely replaces source-country investment, (2) the "reverse classical assumptions", direct investment substitutes for host country investment and does not affect source investment, (3) the "anticlassical assumptions" are that no substitution takes place at source or abroad and finally (4) the "reverse anticlassical" assumptions - overseas investment occurs at the expense of source country investment and displaces host country investment. The fourth assumption is put in for symmetry only as it implies that direct investment actually decreases world capital formation, which is extremely unlikely. The choice amongst the other three when we consider only the host country, as in this study, is between complete replacement of host country investment (reverse classical) and addition to host country investment (classical assumption). Therefore the assumptions in the literature have varied.[9] The view taken here is that, as no correct answer is at hand, a number of alternative situations must be considered. These must be realistic in

taking account of the nature of FDI and the conditions of the host economy. Further, the non direct areas of impact must be explicitly accounted for because there is no guarantee that they will "cancel out" when the alternative position assumption has been fixed.

The following section moves on to consider the relevance of a recent theory of balance of payments adjustment to the case of Ireland. We return to the question of estimating the balance of payments effects of FDI in the sections after that.

Section 2. The "Common Cause" Theory and the Irish Balance of Payments.

It is difficult to isolate causality within a general equilibrium framework, particularly when this involves the ex post accounting relationship of the balance of payments. However, an attempt to explain the balance of payments adjustment process, which may be relevant to the case of Ireland and to the analysis of FDI inflows, is provided by Marina von Newmann Whitman.[10] This is the "common cause" theory of external adjustment. The theory postulates that in a small, open economy facing a large capital inflow, movement of the current and capital accounts are not accommodating to each other but that both are the result of a common cause, namely a movement in the marginal efficiency of capital schedule (M.E.C.) in the export sector.

The common cause theory is concerned with the explanation of balance of payments adjustment (traditionally, the balance of trade is the centre of theoretical attention). In the common cause approach, long term capital movements are specifically considered as autonomous elements rather than being lumped together with short term flows as "accommodating movements". Capital mobility is an important underlying assumption. The theory also includes Keynesian income effects, capacity and output effects.

The causal chain embodied in the theory runs as follows. An upward shift in the MEC schedule of the export sector, the "common cause", induces an increase in investment in that sector. Domestic investment increases and switches to that sector and there is an inflow of long term foreign capital into the exporting sector because of the increased rate of return. An increase in exports occurs which, through the multiplier process, leads to an increase in income. The income increase is also fired by the increased investment. This leads into the familiar spiral of real wage increases (or decreased unemployment) increased imports and a secondary rise in consumption and imports. The effect of capacity increase in the export sector is to induce a secondary increase in exports. Thus the theory suggests that export-led prosperity may co-exist with a deficit in external payments.

The primum mobile is a shift in the anticipated rate of return in the export sector which attracts long term

foreign capital. The theory in its basic form suggests that such a change will arise from an increase in demand for export products. In the Irish case however, a change in the expected rate of return in the export sector may have arisen from changed cost as well as demand factors. On the cost side, the generous incentive package to foreign owned firms is the major factor. Also in a dynamic sense the cost conditions of Ireland become more favourable as long as the cost of Irish labour does not increase as rapidly as in competitor nations. The rate of return in the export sector of Ireland thus has increased because of falling costs relative to other locations in the period we are analysing. On the demand side, the removal of British tariffs (through the AIFTA) and the reduction of EEC tariffs have resulted in an increased demand for Irish export products.

Ireland thus seems to fit the assumptions of the theory. Changing cost and demand conditions have meant that the prospective rate of return in the export sector has increased over the period, particularly for foreign firms. The substantial inflow of foreign capital into the exporting sector is crucial to the theory.

Here we can subject the theory only to rudimentary tests. The theory predicts that a positive relationship will exist between the level of exports and the level of domestic investment because both, according to the theory, are functions of shifts in the MEC schedule in the export

sector. A simple test of this relationship showed this to be the case.[+]

The theory also predicts that an increase in exports should be accompanied by an increasing deficit in the balance of trade. Tests of this proposition also confirmed

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+ Where Y is G.D.C.F. and X_1 is total exports and X_2 is industrial exports, the following relationships were found for time series data 1956-70.

(1) $Y = -32.318^{++} + 0.001^{++} X_1 \qquad R^2 = 0.9654$
$\qquad\qquad\qquad\qquad (0.00001)$

(2) $Y = 48.151^{++} + 1.220^{++} X_2 \qquad R^2 = 0.9695$
$\qquad\qquad\qquad\qquad (0.058)$

++ indicates that the coefficient is significant at the 1% level (n = 15).

Figures in brackets are standard errors.

The association is stronger where industrial exports is used as the independent variable. This is because of the closer definition of the relevant "export sector". The strong positive assocation is clear.

the predictions of the theory.[+] The strong negative relationships found are in the opposite direction to a priori belief.

Finally, some fragmentary evidence can be assembled to support the crucial assumption that the inflow of foreign long term capital into the exporting sector is sensitive to shifts in the MEC schedule of that sector.

+ Using y_1 as balance of trade, y_2 as total current balance together with exports (x_1) and industrial exports (x_2) for time series data 1956-70.

(3) $y_1 = -10.644 - \underset{(0.00001)}{0.0005^{++}} x_1 \qquad R^2 = 0.8408$

(4) $y_2 = 19.995 - \underset{(0.0001)}{0.0002^{++}} x_1 \qquad R^2 = 0.4173$

(5) $y_1 = 52.363^{++} - \underset{(0.072)}{0.634^{++}} x_2 \qquad R^2 = 0.8456$

(6) $y_2 = 4.746 - \underset{(0.070)}{0.234^{++}} x_2 \qquad R^2 = 0.4234$

$^{++}$ indicate significance at the 1% level (n = 15)

This set of results produce consistently significant negative results. Again, the most accurately defined relationship in terms of the theory - (5) is the most significant relationship.

Shifts in the MEC can only be inferred from more readily quantifiable changes (which affect ex post returns rather than anticipated returns), such as changes in the incentives to exporting and widening market penetration opportunities. The sensitivity of foreign capital inflows to incentives is shown by the upsurge of investment following an increase in incentives, vide Table 3.1 years 1960 (following the establishment of SFADCo), 1967-8 (reform of the IDA) and 1969-70 (1969 Industrial Development Act). Similarly the prospect of the opening of the U.K. market to Irish exporters with the AIFTA agreement led to an upsurge of foreign investment in that year. Such factors can be expected to lead to an upward shift in the anticipated rate of return of the foreign firm and, on the evidence of Table 3.1, this leads to an inflow of FDI.

The importance of the common cause theory for Ireland rests on the view that long term foreign capital is a crucial factor in the balance of payments adjustment mechanism. The inflow of foreign capital into the exporting sector in response to a change in the prospective rate of return is seen to have ramifications on several crucial areas of the economy. The hypothesis that the common cause mechanism can be applied to the Irish case is not refuted by the tests above.

This theory suggests that the behaviour of foreign owned exporting firms is worthy of examination, not only because their actions affect the capital inflow into

dividend, interest and royalty payments outflows. All these flows will vary with the type of organisation adopted by the firm. Chapters III and IV examined the trade flows of foreign owned firms in detail. However such flows will be influenced by the firm's internal organisation as follows. The export behaviour of foreign owned firms is influenced by the extent to which the head office allows the subsidiaries to service the markets in which they are competitive on cost grounds as against the extent to which markets are allocated amongst units on other than cost grounds. Export restriction clauses may be a constraint on some subsidiaries. Similarly, on the import side, subsidiaries may be given autonomy to shop around for the cheapest possible inputs from whatever source or they may be forced to purchase inputs within the firm. Transfer pricing is also an issue here - goods transferred within the firm may be priced at other than "arms-length" prices in order to transfer funds between units.

The importance of such arrangements is difficult to evaluate in the Irish case. There is little evidence of export restriction clauses being a constraint on the behaviour of Irish units.[12] Similarly, evidence on intra firm purchasing and pricing is difficult to collect - there is no incentive to remove profits by transfer pricing where the firm exports a large proportion of output because such profit is untaxed and can be freely remitted. The incentives to transfer pricing are low in the case of Ireland.

Ireland and Irish exports, but also because of the repercussions on the whole balance of payments adjustment process. The strategy of foreign owned firms is examined in the following section.

Section 3. The Strategy of Foreign Owned Firms in Ireland and the Irish Balance of Payments.

The balance of payments position of the host country is not *per se* a matter of importance to the foreign investor. It will only occasionally enter the decision variables of the foreign firm - in a situation where "fundamental disequilibrium" forces or threatens to force a change in exchange rate parities - for the strength of the host country's currency may be important to the investing firm. The firm's concern is with the relationships between its separate units. The strategy of the firm with regard to the transfer of goods, funds, technology and the reinvestment of profits will be affected by its organisation. Some controversy has arisen over the form of economic organisation likely to be adopted by international firms - the major point at issue is the degree of independence which foreign subsidiaries have in taking investment decisions.

Before entering this controversy it is necessary to list those items which directly effect the balance of payments of the host country. The major ones are imported intermediate goods and exports, the capital inflow and

Of more importance is reinvestment/dividend remittance behaviour and here the theoretical literature on the strategy of international firms has produced a controversy. This concerns the independence or inter-dependence between the various units of international firms and this has direct relevance for the balance of payments of host countries. The issue stems from the characterisation of the earnings of foreign owned subsidiaries as analogous to the profits of a compulsive gambler who constantly puts his winnings back into the game. Such a "gambler's earnings hypothesis" was suggested by Barlow and Wender.[13] Edith Penrose extended the hypothesis by presenting it in terms of the organisational characteristics and the "economies of growth" of the subsidiary unit.[14] Such a hypothesis depends crucially on the assumption of subsidiary independence (which Penrose suggests is a result of economic distance, weight being given to on-the-spot judgements and immobility of personnel). In terms of this hypothesis, investment goes on "long after a comparison of rates of return on capital would attract new investments in the absence of the existing subsidiary."[15] i.e. the establishment of a subsidiary induces a "commitment" to continue investing in that unit.

The prediction is therefore that of a build-up in the asset value of the subsidiary, financed from internal funds, eventually associated with a large reverse flow of dividends. Such an eventuality is clearly important for the host balance of payments because a large outflow of

dividends may prove destabilising. For a complete formulation of the theory however, we must have more information on the dividend policy of foreign owned subsidiaries, particularly on the timing of such flows. The hypothesis is dependent on the assumption that dividend policy depends on subsidiary variables only. A fixed ratio of profits remitted as dividends would suffice but a strict version of "gambler's earnings" implies that this ratio must equal zero for some time after the subsidiary achieves profitable operation.

Stevens suggests an alternative hypothesis viz: (1) investment behaviour in foreign subsidiaries is not different from domestic investment and (2) this is best characterised by the maximisation of the <u>global</u> profit of the organisation.[16] A common investment constraint, operative on all units in the organisation is thus postulated. The conclusion is that full interdependence of investment functions within the firm is the norm and so reinvestment and dividend policy are functions of "whole firm" variables rather than of subsidiary unit variables alone.

It is difficult to test the competing hypothesis at firm level in the Irish case as data on profits and dividends over time are difficult to obtain. Disclosure of such figures is not compulsory and firms will not normally give such figures voluntarily. Attention is thus turned to aggregative data in an attempt to determine investment and dividend policy as it affects the balance of payments.

It has been suggested by Dermot McAleese that much of the FDI in Ireland is financed by new capital inflows rather than by the expansion of existing firms through reinvestment.[17] This suggests that profits are not continually reinvested and presents a reverse "gambler's earnings" hypothesis at the macro level. The growth stimulus thus arises from the attraction of new firms to Ireland.

This proposition can be examined by looking at extension projects. Extension projects are expansions of existing firms in Ireland aided by IDA grant finance. Of the 396 live foreign owned projects listed in Chapter III, 69 or 17.4% of the total are extension projects. This includes fifteen firms which had carried out two extensions and one firm which expanded on three separate occasions. Extension projects are smaller than the average foreign owned project; average investment in extensions is £ 388,900 against £ 487,000 for all projects. This means that the importance of extensions as measured by capital investment at full production falls to 13.9% of total FDI.

The time profile of extensions must however be considered. As Table 6.1 shows, the number of extensions towards the end of the period covered increased rapidly (the figure for 1971 may be incomplete).

Table 6.1 Time Profile of Foreign owned Extension Projects.

Year	Number of Extensions	Year	Number of Extensions
1961	1	1967	10
1962	1	1968	6
1963	3	1969	15
1964	3	1970	20
1965	2	1971	7+ (including 3 pending)
1966	4		
		Total	72

+ Figure may be incomplete.

Source: Author's calculations from IDA data.

Taken in conjunction with the timing of the inflows of foreign capital (Table 3.1) and the findings of the Survey of Grant Aided Industry that the mean time for a grant aided project to achieve profitability is 2.6 years+, the figures for 1967-1970 are very revealing. There does appear to be a significant re-investment mechanism at work.

Some supporting evidence for this contention is given by the slow growth in dividend outflows from Ireland. Table 6.2 shows that the "Income from capital" entry in the balance of payments accounts has not registered a significant increase in outflows, compared to the growth of inflows.

+ Median time 2 years.

However, these figures should be interpreted with caution as they include some entries related to banking.

Table 6.2 Income from Capital-Inflow and Outflow (£ million)

	1960	1965	1966	1967	1968	1969	1970	1971
Income from Capital-Inflow	30.9	44.2	44.9	46.1	51.0	50.9	58.7	58.9
Income from Capital-Outflow	18.7	24.5	27.5	27.7	27.4	32.4	39.3	46.8

Source: Irish Statistical Bulletin. June 1970, September 1971, September 1972.

There is little apparent acceleration in the figures for outflows until 1969-1971, the same period in which reinvestment also increased rapidly. Both sets of observations may therefore be the result of the increasing profitability of foreign owned firms and the fact that many of them just reached full production. In view of this it seems wise to postpone a test of the behaviour of foreign owned firms until more observations become available.

In relation to the balance of payments, reinvestment behaviour has been the subject of a great deal of attention because of the distinction that is often drawn between FDI financed from internal funds as against that financed by an

inflow of new funds from the source country. There is conceptually no difference between investment financed from these two sources. However, it is often the case that dividend outflow is compared to the original capital investment rather than the foreign owned capital stock extant at the time.[18] The reallocation problem to release foreign exchange for remittance may be a serious one for the host country despite the erroneous comparison made between dividends and original capital investment. This may force the host country to restrict domestic consumption and investment to generate the required foreign exchange. Edith Penrose goes on to suggest that this problem will be worse when the foreign owned firms are export orientated because their sales (and therefore profits) are more prone to fluctuations. With regard to Ireland, this proposition, like the "gambler's earnings hypothesis" must be regarded as not proven. The problem of future dividend outflows causing balance of payments and reallocations problems may be ahead if the capital flow continues and conditions favour high remittance rates. However, this spectre has not arisen yet and will not do so if profitable opportunities for reinvestment remain open in Ireland.

Summary

The strategy of international firms in moving funds across the exchanges is a function of their organisational structure. The Irish economy is affected by subsidiary

units' reinvestment and remittance decisions. On limited evidence, caused by the small number of observations over time, it appears to be the case that a reinvestment mechanism, aided by extension grants, is taking place. Remittance of dividends has not yet precipitated any shortages of foreign exchange. However, the build up of foreign capital in Ireland may in the future produce a large outflow of funds, causing reallocation problems. Judgement on this issue must, for the moment, be postponed. For the moment, the "gambler's earnings hypothesis" is not proven.

Section 4. Quantification of the Balance of Payments effects of Foreign Direct Investment.

1. The model of balance of payments impact.

Any model of balance of payments impact must steer a course between general equilibrium analysis, where payments are balancing and self-correction nullifies disturbances, and partial equilibrium analysis, where the ceteris paribus assumption may eliminate certain important effects.[19] The model utilised here derives from the UNCTAD study of Lall et al.[20] The approach adopted is a micro-level study - the impact is assessed on a firm by firm basis. The effects isolated are at the margin, taking one firm at a time. There are several advantages inherent in this micro approach. Firstly, many parameters can be assumed unchanged by the entry of one foreign owned project. In this category are

tastes, prices and wage levels. Secondly, Government policy can be assumed to remain unaltered. Policy conclusions can be arrived at for one firm, or within small aggregations such as for a sector. Finally, a separate assessment of the alternative position can be made for each firm. This is particularly important when the firms under consideration differ in several important respects, notably given the varying difficulty of replacing foreign technology, skills and management within, as well as between sectors.

The disadvantages derive from two main sources. Firstly, major changes of policy cannot be discussed in this framework. Partial equilibrium precludes the derivation of general equilibrium conclusions. Secondly, there are serious omissions. The balance of payments implications of "external effects" emanating from FDI have to be omitted and, as pointed out elsewhere, external effects may be an important part of the impact of FDI on the host economy. Linkage and secondary effects are also omitted. In addition, the issue of technological borrowing is dealt with in a cursory fashion and the difficulties of accurate measurement are subsumed in a "degree of replacement" coefficient, which estimates the extent to which the foreign project would have been replaced in the alternative position.

2. The Data

The data used combines that from IDA sources with the An Foras Forbartha survey and data culled from the author's interviews. The IDA data consists of projections by the firms and is the most complete set covering all live firms (firms pending and firms that have failed are excluded from the balance of payments analysis). The An Foras Forbartha and interview data are used to assess the extent to which the IDA projections have been met and to calculate a "fulfilment proportion" which is applied to those firms of the same nationality and sector where only the IDA projection exists. In most cases, this could be estimated for all firms but in one or two sectors, projections could not be checked adequately and such sectors are noted below; the estimates of balance of payments impact for these sectors are very tentative.

Coverage of the data over time, however, is very limited because of the lack of accurate data. No time series data for the crucial parameters can be found. Therefore the estimation of balance of payments effects could be made for only one year - 1971. (The UNCTAD study calculated balance of payments effects for several years and then averaged them). The danger remains that 1971 was an atypical year but this difficulty cannot be avoided. The dangers of generalising from the experience of one year must be noted.

3. Assumptions and Methodology

The two major factors discussed here are (i) the design of the model used to assess the balance of payments impact of FDI (ii) the appropriate alternative position assumption(s).

(i) Two models of balance of payments impact

The problems encountered in estimating the balance of payments effects of FDI can only be tackled within a coherent conceptual framework. Two such conceptual structures are utilised here; the "long run balance model" (LRB) deriving from the work of Little and Mirrlees[21] and the "internal balance model" (IB) which relies on basic work by Max Corden.[22] Here we examine both models with respect to an invariant alternative position-replacement of the foreign project by imports. Section 2 introduces alternative assumptions.

The Long Run Balance Model

The long run balance model is derived from the cost benefit analysis formulated by Little and Mirrlees. The LRB model attempts to evaluate the effects of FDI on the net income of the host country. In deriving "income effects", all inputs and outputs of the project are valued at international prices. Balance of payments effects are therefore introduced by the valuation of all inputs and outputs at an opportunity cost equal to their tradeable value.

A central difficulty of such a scheme is that of establishing the balance of payments impact of the utilisation of non-tradeable goods (including labour and non-transferable capital, i.e. buildings and land). The crucial assumption in the LRB model is that the Government can, and always will, act so as to keep the supply and demand for non-traded goods in "long run balance". Consequently the full resource burden of producing non traded goods falls on the balance of payments. The diversion of resources from the production of traded goods to non traded goods results in an immediate balance of payments impact. [This assumption and its consequences mark the crucial difference from the internal balance model]. A further assumption of the LRB model is that, at all times and in all sectors, full capacity working is maintained. If this assumption were violated, the cost of increasing the output of goods from non full capacity factories would not be given by their ostensible opportunity costs.

Given this framework, every category of input and output can be valued in terms of its impact on the balance of payments by the opportunity cost/international prices calculus. The items are valued as follows.

The sales of the project S (below the subscript L refers throughout to LRB valuations) are valued at the ruling world price for the product or products (f.o.b.). In the Irish case, where exports constitute by far the

the largest proportion of the sales of foreign firms, prices are those given by the firms. The role of transfer pricing will be less important where such exports are final goods because of the level of competition in world markets. Where this is not the case, and "transfer pricing" is suspected, then the price used is the average price for the good as computed from External Trade Statistics.[23] Where the output of the foreign firm is sold on the Irish Market the international price is either the import price (c.i.f.) into Ireland (from External Trade Statistics) or is the domestic price reduced by the tariff (i.e. $S_L = \frac{P}{(1+t)}$ where P is the home market and t the Irish tariff rate). The preferred method is direct price comparisons between imports (c.i.f.) and home price, which are used whenever possible. The two methods are equivalent under a series of restrictive assumptions, such as no "water" in tariffs.

Traded inputs are similarly valued at c.i.f. prices into Ireland. Transfer pricing may arise here but is extremely difficult to eliminate.

Non-traded inputs, which under the assumptions of this model, constitute a resource burden on the balance of payments, are split up according to the Irish input-output table[24] into traded goods so that they too are valued in terms of their balance of payments impact. Non-traded goods are not an important factor in the Irish case because (1) most goods are traded and have a border price

(the existence of Northern Ireland as part of the U.K. ensures this) (2) evidence suggests that the Irish exchange rate is not, and was not in 1971, greatly overvalued. Where non-traded items are small, they can be valued by the use of a standard conversion factor (SCF) which is the ratio of the prices of a bundle of goods at external prices to the same goods at internal prices (or the inverse of the shadow foreign exchange rate). The input valuation C_L is given by summing traded and non-traded goods.

Factor-inputs are valued at opportunity costs. The cost of capital is awkward because it must be measured over time. Capital is first divided into two elements, foreign capital and domestic capital. The balance of payments cost of foreign capital is the amount of dividends, interest and repatriated funds which cross the exchanges. These items are already denominated in terms of their foreign exchange cost and are represented as D. The opportunity cost valuation of domestic capital employed in a foreign firm is the amount that such capital would have earned had it been employed elsewhere in the economy. The calculation is for a specific time period - 1971. The rate of return chosen must reflect this timing. An opportunity cost of 20% of the capital stock per annum was attributed to the domestic capital used in this way. The reason for the choice of such a high shadow rental on capital is that the input of Irish capital consists mainly of Government

funds, channelled through the IDA to foreign investors.[+] The second major domestic (Irish) source of capital for foreign firms is risk capital put up by Irish individuals and companies to create "joint ventures". In view of the desire of Irish policy makers to develop the domestic industrial sector, this again has a high scarcity value. A third source of funds from Ireland; local debt, is a relatively unimportant source of finance for foreign companies. If the rate of 20% is felt to be too high, sensitivity analysis could be employed - a lower shadow rental would give more favourable results for Ireland in every case where domestic capital is employed - which means in all of the projects. The revised results will vary in direct proportion to the size of the domestic capital share. The opportunity cost of using up domestic capital is designated O_L.

The same principles govern the balance of payment impact of the remuneration of labour.[25] The wage bill is split into two elements: returns to "non scarce" labour and to "scarce" labour. Scarce labour is that which would be employed in the absence of the project. Non scarce labour would, in the absence of the foreign project, be unemployed (or emmigrant). Returns to scarce labour are

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[+] Chapter VII provides a cost-benefit analysis in which benefits are expressed per £ of public investment. The choice of 20% is clearly an arbitrary one - to use sensitivity analysis would however, unduly complicate the results.

valued at what the workers would have earned if the project had not taken place (= L). Non scarce labour cannot be considered in this way because its earnings constitute a net income gain for the host country and its spending has an adverse balance of payments impact ($=W_M$). The balance of payments improves only to the extent that savings increase. The spending from the earnings of non-scarce labour (W_M) thus causes income effects to diverge from balance of payments effects. Representing overall balance of payments effect with LRB assumptions as B_L^I and income effects by I we thus have:

$$B_L^I = I - W_M \qquad \text{(Equation 6.1)}$$

When these effects are measured, the labour force must be divided into scarce and non-scarce labour and the consumption of non-scarce labour must be estimated. An estimate of the proportion of scarce labour has to be made for each firm. However this estimate must also reflect overall macro-economic conditions (6% unemployment throughout 1971 and continuing emigration). Our assumption is that skilled workers could find alternative employment but not the rest of the work-force. Where detailed figures on the skill profile for particular firms are unavailable, an average figure for firms in the same industry is applied. The consumption of non-scarce labour is assumed to equal its income-savings of such labour are assumed to be negligable.

The final element in the calculation of LRB effects is the payments to the source country of royalties on technical know-how and possibly on management contracts. These are direct payments and like dividends, are already valued at their "foreign exchange equivalent". Royalty payments and all payments for technological borrowing are denoted by R.

Using the above symbols and the LRB assumptions (with the alternative position, replacement by imports being denoted by the superscript ^{I}) the estimating equation is given by equation 6.2

$$B_L^I = S - (O_L + C_L + L + R + D) - W_M \qquad (6.2)$$

where S is sales, O_L is the opportunity cost of using up domestic capital, C_L is input costs, L the payment to scarce labour, R royalty payments, D dividends and W_M spending from the earnings of non-scarce labour, all as defined above.

The Internal Balance Model

Several of the elements defined above enter the internal model (IB) in exactly the same form as under LRB assumptions. These are D and R, which are transferred directly across the exchanges and the value of final output S which represents in every case a tradeable good.

The crucial difference between the two models is the assumption concerning the balance of payments impact of non-trained goods. The IB assumption is that the increased demand for non-traded goods caused by the entry of a foreign firm is nullified by an exactly equivalent reduction in the Government's own consumption of non-traded goods. The assumption of the LRB model that the Government maintains equality between supply and demand for non-tradeable goods produces the result that such goods have a balance of payments effect. This is because resources have to be diverted from the traded to the non-traded goods sector. The IB assumptions imply that no such diversion takes place as the Government simply reduces its demand for non-tradeables by an equivalent amount to the increase in demand caused by the entry of the new project.

The balance of payments impact of the foreign firm's consumption of non-traded goods is therefore zero. This does not mean that the resource cost of producing non-traded goods is zero - this is still given by the LRB framework, but that this cost is not reflected in any balance of payments effect. Overall demand for non-traded goods is assumed not to change after the entry of a foreign firm - merely the identity of the buyer changes (from Government to the entrant foreign firm). Labour is a non-traded good and therefore the input of labour and its payment has no balance of payment effect (The Government is assumed to reduce its demand for labour by an

amount equivalent to the employment of the foreign project). In addition, the Government is assumed to act so as to counteract the balance of payments impact of the increased spending of non-scarce labour. Only traded goods inputs affect the external balance under IB assumptions and such inputs (valued as under the LRB schemes) enter the equation as C_i (where subscript i refers to IB quantities).

The same shadow rate of return is applied to domestic capital but this rate applies to traded capital only. Non-traded capital (buildings and land) is assumed to be transferred to the foreign project from Government hands and so no balance of payments impact results. The impact of domestic capital on the balance of payments in opportunity cost terms is thus given as O_i.

The estimating equation for the balance of payments impact of foreign firms (B_i^I) is thus given by equation 6.3.

$$B_i^I = S - (O_i + C_i + R + D) \qquad (6.3)$$

where S is the sales of the project, O_i is the opportunity cost of "traded capital", C_i the impact of traded inputs, R is royalty payments and D dividend payments, all valued under IB assumptions as outlined above.

The Relevance of the two Models

Prima facie, both sets of assumptions are unrealistic. The LRB assumptions can be challenged on the grounds that

no Government can ensure that the supply of a heterogeneous group of industries producing non-traded goods will exactly match in a frictionless way the changing demands for such goods. Full capacity working throughout the economy is an extremely heroic assumption. In the IB model, given the rigidities in production Government administrative procedures and the aim of attaining other social objectives, it is impossible to expect a Government to continuously accommodate increasing demand by cutting back its own demand for non-traded goods. Such a policy would be intolerable.

The two cases can be seen as extreme assumptions between which the true position will be found. The UNCTAD study suggests that the true position will be much closer to the LRB results.[26] Government policy is clearly a most important determinant of which assumptions are more close to reality. In a situation of unemployment and potential emigration like that facing Ireland in 1971 the IB assumptions, requiring the Government to reduce its demand for non-tradeable goods, appear to be unrealistic. The LRB assumptions seem to be a closer approximation to reality but this can be no more than an approximation, given rigidities, excess capacity in several industries, the imperfection of information flows and the inadequacies of Government response.

2. The Alternative Position Assumption

Three alternative position assumptions are utilised. Assumption I is that in the absence of FDI, an exporting firm is replaced by no project at all and that the foreign firm which sells to the domestic market is replaced by imports. (The discussion of the two models above was predicated on this assumption). This applies to firms which sell to both markets pro rata with sales.

Assumption II is replacement of the foreign project by a domestic project similar in every way, except that the replacement project is completely financed from domestic sources. Alternative III recognises that II may be unrealistic from the point of view that all inputs may not be available from Irish sources. Therefore (1) the cost of technology and management may differ (2) the replacement (Irish) firm may be deficient in certain respects vis-a-vis the foreign project and that it may not be possible to replace the whole of the output of the foreign project. A degree of replacement (less than or equal to 100% of the output of the project) coefficient is thus applied to encompass such a situation.

The degree of change in balance of payments impact as we move from assumption I to II will depend on the comparative cost of foreign versus domestic financing. The change will thus depend on the magnitudes of D (payments in respect of foreign capital) and O_L^{II}, the opportunity

cost of the Irish capital needed to replace the foreign share of the capital stock. Thus equation 6.4 shows the "financial replacement" alternative.

$$B_L^I - B_L^{II} = D - O_L^{II} \qquad (6.4)$$

In many cases, financial replacement may be considered unrealistic, in particular because of the interrelated nature of the foreign company's "contribution". This is espectially true in sectors where Irish management is weak and technological dependence is great. The reason for including "financial replacement" is not for its realism but to differentiate between the purely financial contribution (capital provision) of foreign firms and its contribution in other areas. In a real world situation this may be altered by the different cost (in the extreme, complete unavailability) of foreign technology, management, market outlets and organisational skill which faces an Irish firm as compared with a foreign affiliate.

Assumption III is adopted in the hope of capturing some of the cost differentials mentioned above. The assumption is made that the replacement firm would utilise the same technology as the foreign firm - which may well not be the case. The Irish firm therefore would usually pay a greater amount for the technology than the affiliate. The pricing of technology and management is extremely difficult to estimate where no "objective criteria" (such as suggested

arms length values by the firms where interviews were carried out or established prices) could be found. In these cases, the highest level of royalty payments made by a foreign firm to its parent in that sector was imputed on the grounds that such a figure represents an approximation to the market price of the knowledge transferred. The degree of replacement coefficient represents even more estimation problems. Such a coefficient can be expected to vary from 100% in areas like simple food processing to almost zero, where technology, patents and know-how are unavailable outside a tiny group of large firms and where the level of vertical integration is very high. The degree of replacement is thus an estimate of a very tentative nature. The estimate is mainly based on the existing strength of the domestically owned sector - the proportion of output controlled by wholly Irish owned firms. This can be expected to be directly proportional to the ease of entry for Irish firms into the sector. Many caveats are necessary when an estimate of degree of replacement is made and in some sectors no attempt was made to provide an estimate.

Assumptions II and III are utilised only in terms of the LRB model. This is because (1) the LRB framework appears more valuable for the Irish case, (2) it was found that IB did not discriminate between firms and sectors as effectively as LRB. LRB allows differences to be shown in a clearer light and (3) to limit the number of results to be presented.

The above discussion highlights the limits to quantification. It is clear that several important variables have been completely excluded; notably external economies and diseconomies, and that other quantities such as the cost of technology, cannot be established with any real degree of certainty. It is hoped however, that the results go as far as is possible at the moment and that they give some useful insights into the effects of FDI on the Irish balance of payments.

4. The Results

Balance of payments effects are calculated for each firm separately. The Appendix to this Chapter presents the results at individual firm level. Results were obtained for all the firms in the IDA data set for which a complete range of data is available. The coverage was 233 from the 396 "live" firms. No attempt was made to compute balance of payments effects for failed firms or the other categories.

The results are in all cases presented as a percentage of sales for the year 1971. Table 6.3 shows the outcome of aggregating individual firms to sectoral level. The figures in Table 6.3 are thus percentages of sectoral output. In terms of the numbers of firms within them, the sectors are rather uneven. Further aggregation was not felt to be justified, although a separate figure was derived for the food industries in aggregate (SIC 201-7).

The three alternative position assumptions

Alternative I (replacement by imports) is calculated on both LRB and IB assumptions. In the LRB framework, most sectors contain not only projects which contribute to the Irish balance of payments but also some with negative balance of payments effects. (see Appendix Table) However, the sectorally aggregated results show in most cases positive balance of payments effects i.e. with LRB assumptions, taking replacement by imports as the relevant alternative position criterion, foreign projects have in most cases improved the balance of payments. Five sectors have negative effects and 21 positive effects with such assumptions. Negative results are given by paper and paperboard (SIC 264/5) metal cans and heating apparatus (SIC 342/3), special industrial machinery (SIC 354) other electronic equipment (SIC 365) and "other and unknown" products (SIC 19). Our results mean that had such projects not been undertaken the Irish balance of payments would have been improved (on this set of assumptions).

When Alternative I is computed with IB assumptions, the balance of payments effect of every firm is positive (one firm has a zero result however). The difference between the two models arises because of the transfer of the burden of non-traded goods (including non-traded factor inputs) away from the balance of payments on to the Government. The importance of non-traded goods, particularly labour services can be seen in the change in the results as we have from B_L^I to B_i^I. Almost all B_i^I results lie in the

range + 30% to + 40% : the very low figure for sector 19 reflects the low value added accruing to labour in this grouping - many of the firms are packaging or finishing operations at Shannon Free Airport. The figures illustrate the immense burden which would be placed on the Government if it had to act according to IB rules. For the other two alternative position assumptions only LRB assumptions are utilised.

The "financial replacement" alternative II yields 16 negative results and 10 positive ones sectorally. The negative results mean that in these sectors, Irish capital, at the margin, is less costly than the continued payment of dividends. However, this result ignores the fact that FDI represents a package of elements, including management skills, market access and technology as well as capital. It is a false position to separate returns to capital from these complementary features. The heavily negative results derive from those sectors where profits have been high. Indeed, differential profit earnings across sectors are a major influence on the results. Such returns may be better imputed to technological borrowing or management skills. The partial picture given by the results under this alternative is shown up by the number of technology intensive sectors which return negative results. The results of these sectors improve by the transition to Alternative III.

Table 6.3 Estimated Balance of Payments Effects of Foreign-Owned Firms

(1971) % Sales

Sector SIC Number	Number of firms	Alternative I		Alternative II	Alternative III
		Long Run Balance	Internal Balance		
		B_L^I	B_i^I	B_L^{II}	B_L^{III}
Meat Products 201	3	17.5%	34.3%	17.8%	18.1%
Dairy Products 202	10	27.3%	45.3%	16.8%	19.0%
Canned Food 206	7	0.9%	39.2%	-4.9%	-0.9%
Confectionary 207	3	11.6%	30.2%	-4.4%	-3.0%
Textiles 22	33	8.4%	33.5%	3.4%	6.9%
Apparel 23	21	9.2%	44.9%	3.1%	4.8%
Wood & Furniture 24,257	6	10.1%	56.8%	-1.4%	2.2%
Paper & Paperboard, Boxes & Containers 264,265	5	-2.7%	34.7%	-29.1%	-21.9%
Printed Matter 27	2	14.9%	61.4%	3.4%	10.4%
Industrial Chemicals 281,289	9	9.5%+	38.1%+	9.3%+	-

+ In this sector figures could not be established with certainty.

Table 6.3 Continued.

Sector SIC Number	Number of firms	B^{I}_{L}	B^{I}_{i}	B^{II}_{L}	B^{III}_{L}
Plastics & Synthetics 282	30	4.4%	33.0%	-5.0%	4.1%
Drugs, Soap, Cosmetics 283, 284	6	13.7%	46.5%	-0.8%	-
Rubber & Tyres 30, 301	3	4.7%	42.1%	-9.0%	-
Stone, Clay, Glass, Concrete 321, 324	5	6.1%	37.6%	1.3%	5.0%
Iron, Steel, Non Ferrous Metals 331, 332, 334, 335	14	5.8%	39.5%	1.6%	6.3%
Smelted & Refined Metal, other Non Ferrous 342, 343	6	5.1%	57.7%	-19.0%	-16.4%
Metal cans, Heating Apparatus 341, 342	7	-11.9%	36.3%	-27.7%	-20.3%
Special Industrial Machinery 354	7	-9.9%	37.5%	-31.2%	-22.7%
General Industrial Machinery 356,358	5	0.1%	32.9%	-8.5%	-1.2%
Office & Computing Machinery 357	8	5.6%	40.7%	-8.7%	-

Table 6.3 Continued

Sector SIC Number	Number of firms	B^{I}_{L}	B^{I}_{i}	B^{II}_{L}	B^{III}_{L}
Household Appliances 363	6	7.0%	45.3%	4.1%	9.3%
Other Electronic Equipment 365	7	0.3%	28.1%	-9.7%	-3.5%
Motor Vehicles 371	4	0.4%	33.6%	-8.7%	-3.6%
Instruments & Precision Goods 38	13	3.7%	34.9%	0.1%	7.8%
Medical Instruments 384	7	4.6%	34.4%	-5.3%	-
Other & Unknown Products 19	6	-2.4%	11.9%	-4.7%	6.7%
Food Industries 201 - 7	23	20.2%	39.8%	11.3%	13.1%
TOTAL	233	-	-	-	-

Source: Author's calculations from IDA and AFF data. see Text.

Alternative III attempts to allow for technical and royalty payments by including such payments explicitly and by entering a degree of replacement coefficient to show the extent to which the project could be replaced from Irish resources. The quantity of information required to satisfactorily carry out this transformation is immense and so estimates must be made. Several high technology sectors had to be excluded because of the difficulty of obtaining information. In all remaining cases, the results under Alternative III improved on Alternative II. This was true even in the food sector, where it was necessary to make some allowance for brand names and patents. The difficulties, in all sectors, of allowing for the impact of product differentiation and estimating the correct "arms length" price of technology are enormous. Some information was available for some sectors from questionnaires and some publications but this information was scant.[27] The remedy chosen was often the imputation of the highest percentage of sales represented by royalties of any firm in the sector to all firms within the sector. This was hoped to represent an approximation to arm's length prices. Overall results, for the reduced couple of sectors, for Alternative III was 12 positive returns and nine negative ones.

Results by Sector

The most beneficial balance of payments results are found in the food sectors. This is surprising in view of

the low technological dependence in this sector but this factor is over-compensated for by the abundance of Irish inputs which lowers imported inputs and raises Retained Value in Ireland (see Chapter IV). The best results for any single industry is given by dairy products (SIC 202)- a result which would be suggested by the theory of comparative cost, given Ireland's resource endowment. The aggregate result for the food industry (SIC 201 - 7) is better than that of any other sector on both B_L^I and B_L^{II}, although it is not the best when technological borrowing, product differentiation and degree of replacement are brought into the calculus. Other sectors recording strong positive effects are wood and furniture (SIC 24), printed matter (SIC 27) and drugs, soap and cosmetics (SIC 283/4). The wood industry and drugs production become negative in the financial replacement alternative II because of high profitability. Highly negative results occur in metal cans and heating apparatus (SIC 342/3), special industrial machinery (SIC 354) and the paper and packaging industries (SIC 264,265). High returns and oversubsidisation (a concept to which we shall return in Chapter VII) account for these results.

Several sectors (wood (SIC 24), printed matter (SIC 27), non-ferrous metal products (SIC 382,334,335)) record very high results on B_i^I. This is the result of the weighting given by IB assumptions to the non-traded component. Such sectors are labour intensive - the burden of labour payments is removed from the balance of payments by IB

Table 6.4 Ranking of Sectors by Balance of Payments Effect of Foreign-Owned Firms

[From highest positive to negative.]

Sector and SIC Number	Alternative I		Alternative II
	1	2	3
	LRB (B_L^I)	IB (B_i^I)	B_L^{II}
Dairy Products (202)	1	=5	2
Meat Products (201)	2	19	1
Printed Matter (27)	3	1	=5
Drugs, Soap, & Cosmetics (283/4)	4	4	11
Confectionary (207)	5	24	13
Wood & Furniture (24,257)	6	3	12
Industrial Chemicals (281,289)	7	12	3
Apparel (23)	8	7	7
Textiles (22)	9	21	=5
Household Appliances (363)	10	=5	4

Table 6.4 Continued.

Sector and SIC Number	LRB (B_L^I)	IB (B_i^I)	B_L^{II}
Stone, Clay, Glass, Concrete (321,324)	11	13	9
Iron, Steel, Non-Ferrous Metals (331,332,334,335)	12	10	8
Office & Computing Machinery (357)	13	9	=19
Smelted & Refined Metal, Other Non-Ferrous (342,343)	14	2	23
Rubber & Tyres (30, 301)	15	8	21
Medical Instruments (384)	16	18	17
Plastics & Synthetics (282)	17	22	16
Instruments & Precision Goods (38)	18	16	10
Canned Food (206)	19	11	14
Motor Vehicles (371)	20	20	=19

Table 6.4 Continued.

Sector and SIC Number	LRB (B_L^I)	IB (B_i^I)	B_L^{II}
Other Electronic Equipment (365)	21	25	22
General Industrial Machinery (356, 358)	22	23	18
Other and Unknown Products (19)	23	26	15
Paper & Paperboard, Boxes & Containers (264, 265)	24	17	25
Special Industrial Machinery (354)	25	14	26
Metal Cans, Heating Apparatus (341, 342)	26	15	24

Derived from Table 6.3. No ranking for B_L^{III} provided because of omissions.

assumptions. Indeed the results overall reflect the differing input structures across sectors. As Alternative I with IB shows the impact of non-traded goods and in particular labour input, so Alternative II shows the effects of remitted profits and differential profitability. Alternative III shows the impact of an attempt to account for technological borrowing in the widest sense.

Table 6.4 shows how the rankings of the balance of payments effects of the different sectors change as we alter the assumptions. The change from Column 1 to 2 shows how the rankings alter when the payment to labour is considered as a benefit rather than as a cost. Labour intensive sectors, such as printed matter (SIC 27), wood and furniture (SIC 24, 257) and Smelted and refined metal (SIC 342/3) move up the rankings whilst more capital intensive sectors move down the rankings. The change from column 1 to column 3 involves a change in the alternative position, from replacement by imports to the financial alternative replacement. Here the relative amounts of foreign to domestic capital, and profitability are the factors which alter the ranking. Sectors in which high profits are earned and remitted move down the rankings.

Comparison with other studies

The results above would be more meaningful were it possible to compare them with results from countries with similar economic strauctures. However the Hufbauer and

Adler and Reddaway Reports are concerned with the balance of payments impact on the source country and provide no help to this study.[28]

The studies conducted for UNCTAD by a team led by Streeten and Lall are concerned with countries at a much lower level of development than Ireland.[29] However, several features common to the UNCTAD studies and the results derived here are worthy of note. First is the importance of Government policy and particularly tariff and protection policy. It should not be surprising, given the methods of assessing balance of payments impact, that tariff levels affect the result. Indeed it appears to be the case that the absence of heavily negative results such as those found by Lall et al for India are largely absent from the case of Ireland because of the liberal tariff policy (and other inducements to free trade) adopted by Ireland.

A second common feature is the unimportance of the " financial contribution" of foreign owned firms. The major contribution of FDI is in both cases, to be found elsewhere. The most influential single factors in the UNCTAD study of India and Iran were raw materials, value of output and the cost of replacement capital. In the Irish case, the first two factors are very important but the last one is not of major significance. (Compare Alternative I with II under LRB assumptions).

Finally and most important, both studies emphasise very strongly that each firm must be assessed on the merits of its contribution. Generalisation is not recommended in either case. Variability within sectors is very strong in Ireland as in the UNCTAD study. Attempts to look for "rules" on balance of payments effects appear bound to fail. The UNCTAD study attempts by statistical methods to isolate outstanding factors to provide policy guidelines. However all such attempts are shown to be unsuccessful and the policy must be one of case by case pragmatism. Such is also the case for Ireland.

Summary

Balance of payments results, calculated according to two different analytical frameworks, with three alternative position assumptions, provide an interesting diversity of results and insights. The IB set of assumptions, which assumes that the Government follows a myopic, anti-growth policy of reducing its purchases of non-traded goods as the private sector increases them, was given less attention because of the inappropriate nature of its assumptions. However, if we consider that all payment to labour should be counted as a benefit and not as a balance of payments burden, then this is the more appropriate model to use. The LRB assumption in which the full resource burden of non-traded goods falls on the external balance, was judged to be a closer approximation to reality.

The results were sensitive to the alternative position assumption. The three alternatives; replacement by imports (or no project if the foreign project is completely export orientated), financial replacement by an exactly similar Irish firm and replacement by an Irish firm as far as is feasible in terms of the contribution of FDI in technology, management and so on where chosen to highlight various areas of contribution of the foreign owned sector.

The results were variable within, as well as between, sectors. The most favourable results were given by the food industries and by some of the more technology intensive sectors. However even sectors with highly favourable overall results contained several firms which had negative effects on the balance of payments (see Appendix Table). The clear implication is that an ex ante study of the balance of payments effects of foreign owned projects is necessary and such a study must be made on a pragmatic, firm by firm basis. No general guidelines on sectoral lines can be justified.

Section 5. Conclusion

This Chapter has investigated the relationship between Foreign Direct Investment and the Irish balance of payments in both qualitative and quantitative terms. Earlier Chapters have established the importance of FDI in the Irish economy and it was suggested that the functioning of the balance of payments adjustment mechanism according to the paradigm of the "Common Cause Theory" made the investigation even more important.

Moving from a macro to a micro approach, it was found to be difficult to test the behaviour of foreign owned firms with regard to such theories as the "Gambler's Earnings Hypothesis" because of the lack of suitable data. However a nascent reinvestment mechanism was felt to be at work and the data that are available do conflict with a strong version of the Gamblers Earnings Hypothesis.

Balance of payments effects were quantified at individual firm level for 1971. The results obtained were shown to be sensitive not only to the model of impact used but also to the alternative position assumption. The results were also variable within as well as between sectors. It is possible to establish some general propositions ex post on the kind of project that yields beneficial results but ex ante appraisal must be done on a firm by firm basis. Overall, the various models

gave positive or negative results as presented in Table 6.5. [The B_1^I model gave entirely positive results because of the treatment of labour payments as a benefit rather than a burden on the external balance.]

Table 6.5 Number of projects giving positive or negative balance of payments impact under the long run balance model with different alternative position assumptions.

Model	Positive impact	Negative impact	N.A.	Total
B_L^I	150	83	-	233
B_L^{II}	98	135	-	233
B_L^{III}	107	95	31	233

Source: Appendix Calculations.

The replacements by imports or no project alternative, B_L^I shows on ratio of favourable effect: unfavourable ones of almost 2:1. The " financial replacement" alternative position B_L^{II} shows more negative results than positive, from which we can conclude that, considered in isolation from other influences, foreign capital is more expensive, in terms of its cost to the balance of payments, than is domestic capital. Finally, when we make some allowance for the technological contribution of FDI, the positive results outweigh the negative ones; although this result must be

treated with caution given the uncertainties of measurement. There are also 31 cases where no estimate could be made using this assumption.

The effect of FDI on the balance of payments of the host country is an important parameter, both for analysis and for policy. In addition, such results help to define accurately the foreign sector's contribution to the domestic economy. However, the results should not be used as the final arbiter of the costs or benefits of FDI. Many factors are excluded from the calculus when evaluating balance of payments impact and we must also account for the trade offs between balance of payments objectives such as domestic efficiency, growth and distribution. Chapter V attempted to assess efficiency effects and the following Chapter provides the means towards a full cost benefit appraisal of FDI.

Chapter VI. Appendix.

Individual Firm Results.

Key: B_L^I = Balance of Payments effect under Alternative I (superscript) and Long Run Balance (subscript L)

B_i^I = Internal Balance (subscript i)

Firm 22_1 = Sector 22, Firm 1 etc.

All figures are % of sales.

Firm No	22_1	22_2	22_3	22_4	22_5	22_6
B_L^I	12%	22%	15.3%	-4.3%	8.2%	12.5%
B_i^I	41.5%	47.7%	32.4%	+17.7%	34.6%	59.5%
B_L^{II}	8.5%	29.7%	-41.2%	-11.3%	5.4%	1.5%
B_L^{III}	8.5%	29.7%	-41.2%	-10.8%	5.4%	1.5%

Firm No	22_7	22_8	22_9	22_{10}	22_{11}	22_{12}
B_L^I	-7.6%	16.4%	5.9%	-15.5%	3.3%	-8.3%
B_i^I	36.8%	56.1%	37.3%	52.0%	40.0%	42.3%
B_L^{II}	-13.6%	10.8%	-2.0%	-20.0%	-7.0%	-8.3%
B_L^{III}	-13.2%	11.4%	-2.0%	-18.0%	-7.0%	-8.3%

Firm No	22_{13}	22_{14}	22_{15}	22_{16}	22_{17}	22_{18}
B_L^I	-8.0%	20.8%	25.5%	2.8%	26.7%	0.3%
B_i^I	66.0%	38.6%	65.1%	46.8%	30.5%	19.3%
B_L^{II}	-8.0%	14.6%	9.4%	-10.5%	28.1%	-0.3%
B_L^{III}	-8.0%	14.6%	12.0%	-7.7%	28.1%	-0.3%

Firm No	22_{19}	22_{20}	22_{21}	22_{22}	22_{23}	22_{24}
B_L^I	5.6%	17.5%	13.2%	8.3%	-6.5%	12.9%
B_i^I	37.3%	36.8%	37.8%	49.7%	32.1%	39.6%
B_L^{II}	-0.7%	7.7%	-0.5%	7.9%	-10.3%	-7.1%
B_L^{III}	-0.7%	7.7%	2.6%	8.9%	0%	2.9%

Firm No	22_{25}	22_{26}	22_{27}	22_{28}	22_{29}	22_{30}
B_L^I	0.7%	12.5%	-18.6%	-5.3%	9.6%	25.8%
B_i^I	42.0%	28.4%	57.1%	21.6%	37.8%	34.3%
B_L^{II}	-5.3%	2.5%	-22.9%	-5.3%	7.6%	2.22%
B_L^{III}	-2.0%	7.5%	-12.9%	-5.3%	7.6%	23.1%

Firm No	22_{31}	22_{32}	22_{33}	23_{1}	23_{2}	23_{3}
B_L^I	14.2%	-0.3%	16.0%	-14.0%	24.5%	28.2%
B_i^I	25.6%	27.5%	32.5%	33.2%	59.5%	42.0%
B_L^{II}	8.9%	-4.9%	7.0%	-18.0%	26.0%	27.4%
B_L^{III}	8.9%	-4.9%	7.0%	-17.2%	26.0%	29.7%

Firm No	23_{4}	23_{5}	23_{6}	23_{7}	23_{8}	23_{9}
B_L^I	2.7%	-18.0%	7.9%	-13.0%	12.0%	-3.6%
B_i^I	42.4%	40.0%	46.5%	60.0%	48.2%	49.4%
B_L^{II}	5.0%	-21.3%	0.8%	-13.0%	-3.6%	-11.9%
B_L^{III}	5.4%	-21.3%	0.8%	-13.0%	-1.0%	-19.4%

Firm No	23_{10}	23_{11}	23_{12}	23_{13}	23_{14}	23_{15}
B_L^I	-9.5%	15.5%	2.0%	-18.5%	-9.9%	19.0%
B_i^I	40.6%	52.0%	42.7%	47.0%	47.0%	55.0%
B_L^{II}	-17.2%	45.5%	-1.9%	-23.0%	-10.2%	6.0%
B_L^{III}	-7.7%	50.5%	-0.6%	-22.5%	-0.5%	11.0%

Firm No	23_{16}	23_{17}	23_{18}	23_{19}	23_{20}	23_{21}
B_L^I	-14.9%	7.3%	22.7%	-43.1%	17.9%	13.8%
B_i^I	48.9%	34.7%	57.7%	22.6%	29.5%	26.1%
B_L^{II}	-26.3%	-0.7%	8.6%	-49.8%	14.2%	16.0%
B_L^{III}	-22.0%	-0.7%	8.6%	-40.2%	14.2%	16.0%

Firm No	24_1	24_2	24_3	24_4	24_5	24_6
B_L^I	5.2%	10.3%	-95.9%	13.8%	32.6%	6.7%
B_i^I	28.9%	41.3%	42.4%	60.2%	85.4%	44.4%
B_L^{II}	-0.1%	-3.0%	-119.4%	-2.8%	40.0%	5.1%
B_L^{III}	-0.1%	-1.0%	-117.1%	+2.8%	40.0%	5.1%

Firm No	27_1	27_2	30_1	30_2	30_3	201_1
B_L^I	8.8%	28.0%	0.7%	7.8%	-0.9%	3.0%
B_i^I	49.7%	86.3%	32.6%	20.4%	90.5%	26.8%
B_L^{II}	-2.9%	16.8%	-9.6%	5.8%	-47.8%	12.6%
B_L^{III}	5.8%	20.0%	-	-	-	12.6%

Firm No	201_2	201_3	202_1	202_2	202_3	202_4
B_L^I	11.3%	47.2%	7.3%	9.3%	59.6%	2.8%
B_i^I	17.7%	67.4%	28.0%	17.8%	74.2%	16.6%
B_L^{II}	14.0%	44.0%	3.1%	11.9%	56.6%	-1.8%
B_L^{III}	12.6%	24.0%	3.1%	11.9%	56.6%	-1.8%

Firm No	202_5	202_6	202_7	202_8	202_9	202_{10}
B_L^I	-2.3%	5.7%	37.8%	2.5%	32.5%	22.8%
B_i^I	56.6%	39.8%	44.9%	53.3%	53.2%	58.1%
B_L^{II}	-36.8%	1.0%	40.3%	7.5%	15.4%	2.1%
B_L^{III}	-21.5%	1.0%	39.2%	7.5%	15.4%	2.1%

Firm No	206_1	206_2	206_3	206_4	206_5	206_6
B_L^I	27.3%	52.0%	-4.0%	-42.7%	-4.9%	-12.4%
B_i^I	49.0%	68.3%	18.0%	74.4%	52.9%	43.7%
B_L^{II}	22.9%	52.9%	-13.3%	-56.0%	-12.5%	-14.0%
B_L^{III}	22.9%	52.9%	-13.3%	-56.0%	-12.5%	-2.5%

Firm No	206_7	207_1	207_2	207_3	$264/5_1$	$264/5_2$
B_L^I	-9.1%	7.9%	14.4%	17.5%	-30.2%	22.3%
B_i^I	23.9%	44.0%	17.8%	50.6%	12.4%	72.1%
B_L^{II}	-5.7%	4.7%	-13.2%	21.3%	-60.3%	-21.6%
B_L^{III}	-5.7%	4.7%	-10.6%	21.3%	-55.2%	-4.4%

Firm No	$264/5_3$	$264/5_4$	$264/5_5$	281_1	281_2	281_3
B_L^I	3.7%	-3.3%	20.6%	11.0%	6.6%	-1.1%
B_i^I	73.5%	35.6%	32.4%	61.5%	34.3%	36.2%
B_L^{II}	-44.8%	-5.1%	-41.2%	-5.9%	1.3%	-3.4%
B_L^{III}	-35.8%	1.1%	41.2%	-	-	-

Firm No	281_4	281_5	281_6	281_7	281_8	281_9
B_L^I	33.3%	6.1%	-17.4%	-4.4%	9.9%	15.9%
B_i^I	78.8%	25.1%	34.5%	20.0%	50.9%	35.9%
B_L^{II}	35.3%	-2.0%	-31.7%	16.7%	-8.2%	21.9%
B_L^{III}	-	-	-	-	-	-

Firm No	282_1	282_2	282_3	282_4	282_5	282_6
B_L^I	-12.0%	-27.1%	30.9%	7.5%	6.0%	20.0%
B_i^I	42.3%	16.8%	62.2%	44.8%	31.0%	42.0%
B_L^{II}	-33.0%	-11.2%	31.4%	-0.7%	-4.0%	18.9%
B_L^{III}	-27.0%	-4.2%	33.1%	1.0%	6.8%	20.8%

Firm No	282_7	282_8	282_9	282_{10}	282_{11}	282_{12}
B_L^I	8.7%	-16.3%	-10.9%	0%	9.3%	26.0%
B_i^I	43.3%	30.4%	34.0%	22.5%	25.3%	62.5%
B_L^{II}	-1.3%	-26.5%	-9.7%	0%	1.8%	27.0%
B_L^{III}	9.3%	-21.8%	-5.2%	0.1%	6.8%	31.0%

Firm No	282_{13}	282_{14}	282_{15}	282_{16}	282_{17}	282_{18}
B_L^I	1.8%	1.1%	-0.6%	2.9%	2.1%	19.3%
B_i^I	30.6%	31.0%	23.2%	34.6%	24.8%	50.9%
B_L^{II}	-4.8%	-7.3%	-8.0%	8.7%	-2.0%	8.0%
B_L^{III}	-0.8%	-0.6%	+2.0%	18.7%	2.1%	11.9%

Firm No	282_{19}	282_{20}	282_{21}	282_{22}	282_{23}	282_{24}
B_L^I	-19.2%	1.8%	0%	5.7%	13.3%	-7.8%
B_i^I	60.0%	36.4%	31.5%	49.3%	39.6%	19.7%
B_L^{II}	-52.5%	-10.6%	-17.1%	-4.3%	4.7%	-15.6%
B_L^{III}	-18.3%	-4.2%	-10.9%	5.7%	14.6%	-11.7%

Firm No	282_{25}	282_{26}	282_{27}	282_{28}	282_{29}	282_{30}
B_L^I	-16.1%	8.2%	4.0%	13.1%	0%	-4.7%
B_i^I	37.6%	41.5%	27.5%	20.2%	16.2%	17.9%
B_L^{II}	-20.5%	-9.0%	5.0%	4.2%	-7.4%	-27.4%
B_L^{III}	-10.5	15.1%	6.0%	12.2%	2.6%	-17.4%

Firm No	$283/4_1$	$283/4_2$	$283/4_3$	$283/4_4$	$283/4_5$
B_L^I	23.4%	4.5%	27.3%	-2.2%	5.6%
B_i^I	63.8%	53.6%	51.0%	25.6%	33.3%
B_L^{II}	16.6%	-16.8%	24.0%	-20.0%	-12.8%
B_L^{III}	-	-	-	-	-

Firm No	$283/4_6$	324_1	324_2	324_3	324_4	324_5
B_L^I	15.6%	-3.2%	18.4%	5.1%	8.9%	4.6%
B_i^I	29.3%	83.2%	60.4%	25.4%	28.7%	34.7%
B_L^{II}	-2.2%	-1.9%	11.6%	-7.6%	1.0%	6.9%
B_L^{III}	-	-1.9%	15.6%	2.5%	1.0%	9.1%

Firm No	331_1	331_2	331_3	331_4	331_5	331_6
B_L^I	6.0%	-2.7%	8.0%	-56.7%	25.0%	11.5%
B_i^I	43.7%	44.7%	39.6%	23.3%	62.0%	33.0%
B_L^{II}	16.0%	3.3%	6.5%	-50.0%	29.0%	4.8%
B_L^{III}	16.0%	10.0%	8.4%	-43.3%	31.0%	12.8%

Firm No	331_7	331_8	331_9	331_{10}	331_{11}	331_{12}
B_L^I	11.4%	-9.3%	1.6%	-11.3%	7.3%	-3.1%
B_i^I	45.7%	29.2%	38.4%	25.0%	44.0%	16.9%
B_L^{II}	2.9%	13.5%	-2.7%	-16.3%	-0.6%	-8.3%
B_L^{III}	12.9%	-2.5%	-2.7%	-10.8%	10.5%	0.8%

Firm No	331_{13}	331_{14}	332_1	332_2	332_3	332_4
B_L^I	-1.1%	-22.0%	10.3%	4.2%	15.8%	-76.9%
B_i^I	50.5%	35.3%	49.0%	75.0%	72.0%	0.1%
B_L^{II}	-5.3%	-26.0%	1.0%	4.2%	-18.1%	-168.5%
B_L^{III}	-5.3%	-16.0%	2.7%	4.2%	-16.2%	-148.1%

Firm No	332_5	332_6	342_1	342_2	342_3	342_4
B_L^I	-16.7%	12.2%	0.5%	4.2%	-10.0%	11.1%
B_i^I	38.0%	61.6%	29.2%	46.7%	44.6%	44.1%
B_L^{II}	-6.7%	52.0%	-6.2%	-1.0%	-4.6%	3.3%
B_L^{III}	0%	-8.2%	-5.5%	6.9%	-4.6%	3.3%

Firm No	342_5	342_6	342_7	354_1	354_2	354_3
B_L^I	-31.9%	-1.0%	-50.0%	14.5%	-127.5%	-41.2%
B_i^I	27.2%	64.8%	55.0%	4.2%	27.5%	62.5%
B_L^{II}	-62.7%	-16.2%	-49.0%	5.0%	-95.0%	-71.0%
B_L^{III}	-47.3%	-10.5%	-40.0%	12.5%	-65.0%	-68.1%

Firm No	354_4	354_5	354_6	354_7	356_1	356_2
B_L^I	-6.0%	0%	-4.9%	14.4%	9.2%	-37.7%
B_i^I	59.0%	49.3%	4.6%	38.2%	54.2%	40.0%
B_L^{II}	-6.0%	-2.0%	-43.4%	6.7%	13.2%	-30.3%
B_L^{III}	-6.0%	0%	-24.9%	11.1%	23.2%	-20.3%

Firm No	356_3	356_4	356_5	357_1	357_2	357_3
B_L^I	-6.8%	7.5%	7.0%	-5.2%	36.6%	35.5%
B_i^I	27.8%	35.3%	41.0%	16.1%	79.4%	70.4%
B_L^{II}	-11.6%	-2.0%	3.0%	-10.8%	28.6%	31.7%
B_L^{III}	-5.6%	8.0%	13.0%	-	-	-

Firm No	357_4	357_5	357_6	357_7	357_8	363_1
B_L^I	5.5%	3.8%	5.1%	-10.4%	-23.7%	-42.5%
B_i^I	39.7%	26.8%	41.0%	34.4%	10.8%	20.0%
B_L^{II}	2.5%	18.8%	-11.6%	-18.9%	-64.4%	-50.0%
B_L^{III}	-	-	-	-	-	-50.0%

Firm No	363_2	363_3	363_4	363_5	363_6	365_1
B_L^I	-15.1%	-16.0%	29.1%	-16.0%	0.2%	26.4%
B_i^I	51.2%	49.0%	51.8%	35.5%	23.3%	64.3%
B_L^{II}	-12.0%	-16.0%	25.9%	-23.0%	-8.2%	28.6%
B_L^{III}	-2.2%	-6.0%	25.9%	-13.0%	-1.9%	28.6%

Firm No	365_2	365_3	365_4	365_5	365_6	365_7
B_L^I	-11.0%	-6.5%	0%	-11.3%	3.9%	-5.6%
B_i^I	39.5%	53.5%	89.0%	46.4%	45.6%	33.3%
B_L^{II}	-21.5%	-11.5%	0%	-48.8%	-17.1%	2.4%
B_L^{III}	-12.5%	-2.8%	10.0%	-28.8%	-7.2%	2.4%

Firm No	371_1	371_2	371_3	371_4	38_i	38_2
B_L^I	1.0%	-7.5%	13.7%	-7.3%	29.5%	0%
B_i^I	46.0%	27.0%	30.0%	23.3%	54.7%	37.8%
B_L^{II}	-10.5%	-9.0%	10.0%	-28.7%	29.5%	1.8%
B_L^{III}	-10.5%	1.0%	13.7%	-18.7%	34.7%	4.4%

Firm No	38_3	38_4	38_5	38_6	38_7	38_8
B_L^I	-55.0%	13.8%	11.7%	-8.3%	12.4%	17.3%
B_i^I	72.0%	55.0%	42.0%	42.0%	40.9%	41.8%
B_L^{II}	-67.0%	14.0%	4.3%	-11.7%	-8.7%	14.5%
B_L^{III}	-65.0%	14.5%	9.3%	-0.3%	-	-

Firm No	38_9	38_{10}	38_{11}	38_{12}	38_{13}	384_1
B_L^I	4.0%	0.7%	3.3%	-2.3%	0.7%	-2.3%
B_i^I	22.9%	33.3%	48.8%	49.3%	22.4%	49.8%
B_L^{II}	2.4%	0%	-19.0%	-13.7%	0.7%	-39.4%
B_L^{III}	1.0%	-	-	-	0.7%	-16.5%

Firm No	384_2	384_3	384_4	384_5	384_6	384_7
B_L^I	12.4%	17.3%	4.0%	0.7%	3.3%	-2.3%
B_i^I	40.9%	41.8%	22.9%	33.3%	48.8%	49.3%
B_L^{II}	-8.7%	14.5%	2.4%	0%	-19.0%	-13.7%
B_L^{III}	-5.2%	19.1%	11.9%	9.1%	-4.0%	-3.0%

Firm No	19_1	19_2	19_3	19_4	19_5	19_6
B_L^I	0.7%	-6.2%	-38.7%	0.4%	-10.7%	-27.0%
B_i^I	22.4%	0%	-32.0%	9.9%	18.3%	11.3%
B_L^{II}	0.7%	-1.2%	-26.7%	-5.9%	-18.3%	-41.0%
B_L^{III}	0.7%	25.0%	-25.3%	-2.6%	-17.3%	-41.0%

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23. External Trade Statistics 1971 (Prl 3047) CSO Dublin.

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26. Lall et al (1973) op. cit. p 50.

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Chapter VII: Cost-Benefit Analysis of Foreign Direct Investment in the Irish economy.

Section 1 Introduction

The preceeding Chapters have attempted to identify and quantify the effects of FDI on the Irish economy. The aim of this Chapter is to bring these effects together in a coherent framework in order to provide a decision rule so that future decisions can be taken on a mutually consistent basis to obtain the maximum possible benefit to the economy.

Commenting on the incentives given to FDI in Ireland, Cooper and Whelan[1] correctly specify the problem when they state that their

> "Criticisms are directed to the question whether the substantial amounts of Irish investible resources devoted to industrial programmes could have been used in different ways with higher net benefits." [2]

This is a very valid means of assessing the cost to the economy of FDI. However only one cost (Irish investible resources) is included in the debit side of the calculus, therefore the credit side should show net benefit (i.e. benefits minus all costs except investible resources). Cooper and Whelan then follow this up with several deductions about the effect of FDI on the Irish economy, derived from casual empiricism. Their main conclusions may be summarised as follows.

(1) Value added, in particular value added accruing to Irish factors is a small proportion of the total output of foreign owned firms.

(2) Linkage effects from foreign owned firms are small.

(3) Irish capitalists are starved of capital because of grants paid to foreign capitalists.

(4) A low level of vertical integration exists in foreign firms.

(5) A "shallow industrial structure" has resulted as a consequence of (1) and (4).

(6) More resource-based investment is needed, particularly in the food industry.

Points (1) and (2) were quantified in Chapter IV under the analysis of "Retained Value". It is to be noted that "small" and "low" are relative terms and the Cooper and Whelan article makes no comparison of value added in foreign firms relative to Irish ones or to other quantities. It is contended here that such measures of benefit must be compared to costs if any sense is to be made of the findings.

From these propositions, Cooper and Whelan derive a set of partial criteria to be used for the assessment of foreign projects. The criteria are that the projects should be vertically integrated exporting firms with sizeable linkage effects and a high value added share in Ireland. The criteria suffer from the following defects.

(1) No explicit attention is paid to costs, although emphasis is given to grant payments.

(2) No attempt is made to value benefits except in terms of market prices and such benefits are not related to costs so as to provide a decision rule.

(3) Although the alternative to grant aid for foreign owned firms is specified as strengthening of the domestically owned industrial sector, no explicit alternative position assumption is specified. (Despite this an interesting proposal to strengthen the domestic sector through mergers and concentration is given. Perhaps the creation of a body like the former U.K. Industrial Reorganisation Corporation (IRC) is envisaged. This is worthy of more attention and is considered in the conclusion).

This Chapter examines the whole contentious area in a more coherent framework than the partial criteria suggested above. The following section examines several methods of cost-benefit appraisal, Section 3 presents the two cost-benefit methods felt to be most appropriate for the appraisal of FDI in Ireland, and Section 4 gives the results of this appraisal.

Section 2 Methods of Cost-Benefit Analysis

The cost-benefit method chosen must be flexible enough to incorporate the peculiar difficulties associated with FDI and must operate well in the face of severe data

constraints. This Section presents the justification for the use of the two methods chosen: Domestic Resource Cost Analysis and Net Benefits per £ of Public Investment. The possible alternatives to these two methods are now analysed and their deficiencies noted.

1. Profitability

The use of profitability as a decision rule for the acceptance or rejection of foreign projects raises the question of private versus social profitability. The criterion of private profitability rests on the acceptance of the market valuation of relative scarcity and benefit. In a non-optimal situation with distortions caused by monopoly power, tariffs and controls, such a valuation may not be acceptable, especially where underemployment and underemployed resources are extant. Moreover, foreign owned firms have considerable discretionary power in pricing those goods and services which are transferred within the firm and in the allocation of joint overheads. Market prices are unreliable and hence the necessity for shadow pricing. Externalities and other social benefits, including distributional factors, are ignored.

A further serious objection to the use of this criterion is that the "benefit" which it measures (profit per unit of capital employed) cannot be considered as solely accruing to the host country. The bulk of the profits may in fact be appropriated by the foreign investor. The

proportion of profits retained in Ireland may be very small. Also in this scheme, a major source of benefit to the host, which is the creation of employment, is treated as labour cost. Thus, by treating gains as private rather than social gains and ignoring their distribution, this method completely mis-specifies the benefits and costs of FDI to the host country.

2. The Measurement of Secondary Multiplier Effects

Hans Singer argues that the only true test of the integration of FDI into the domestic economy is the size of the secondary stimulus given to the host economy via linkage effects.[3] Moreover, he suggests, on the premise that FDI can only be a benefit if it is absorbed into the domestic economy, that this is the proper test of the benefits of FDI. Although the danger of enclave growth makes the basic point a valid one, the method does not present a good means of appraisal because it ignores the overall contribution of the foreign firm to the growth of real output and its contribution to other social objectives such as the employment or emmigrant resources and to the balance of payments.

An extension of this concept leads to an appraisal based on "retained value" (RV) as in Chapter IV. However, even such an extension cannot be considered a complete evaluation method because it ignores the cost of achieving this proportion of retained value.

R.V. is however useful as an adjunct to a more complete cost-benefit analysis because R.V. includes first round linkage effects and helps to isolate the benefits of investment which accrue to the host nation.

3. The Labour Intensity Criterion

The tendency of foreign owned projects to be capital intensive is a major issue of discussion as Chapter V showed. It is natural for the host country to appraise inward investment in terms of jobs created because this may be the major benefit of FDI. However, the creation of such jobs is achieved at a cost which should be related to the benefits.

The labour intensity criterion gives a simple decision rule - establish projects in order of job creating capacity, until the budget constraint on grant aid is exhausted. However, over time a high failure rate may result as rising wages (a stated aim of Irish economic policy) increase costs more than proportionately in labour-intensive firms. Other objections centre on the unbalanced and inconsistent shadow pricing system which is employed. The criterion rejects the market's valuation of labour but accepts market prices for inputs of capital and intermediate goods and for final products. The system is inconsistent because labour is an input into each of these other elements. Many other benefits and costs, such as balance of payments effects, the remittance and distribution

of profits and social costs and benefits are ignored. It is also worthy of note that industries established and expanded under such a rule are likely to be ones with less than average spillover and demonstration effects for the skill and technology content will tend to be smaller than in more capital intensive projects.

The employment effect must be incorporated in any cost benefit analysis because it is on extremely important areas of benefit. It should not however, be seen as the only benefit, nor should employment creation be regarded as costless (improvements in employment should not be regarded as if they were achieved at minimum cost). The criterion is partial and ignores many important effects.

4. The Little and Mirrlees (OECD Manual) Technique of Appraisal.

The Little and Mirrlees (LM) schema is superior to the methods above because it provides a self-consistent integrated approach including a suitable method of shadow pricing. Any coherent scheme of cost-benefit analysis is merely a means of valuing the activities of a project or group of projects within a mutually self-consistent framework. The cost element is the using up of factors of production which have alternative uses (opportunity costs). Benefits consist of the increase in value of the (processed) inputs. The problem of valuation of costs and benefits is great. Most means of assessment

utilise market prices as the correct valuation. However, domestic distortions, price rigidities and divergences from optimality introduced on policy grounds (such as tariffs) mean that market prices are not true indicators of the relative scarcity of goods and factors. Consequently, the analyst must utilise some alternative valuation system.

When foreign owned firms are under analysis, there are several special factors which the framework must be able to incorporate. The alternative position must be stated.[4] Also, not all the benefits of the activity accrue to the host country - part of the value added is remitted as profits to non-nationals of the host country. Part of the resources used up are contributed from outside the host country. Provided such resources do not displace host country factors, they represent an addition to the available resources of the host.[5] They do not therefore have an opportunity cost to the host - their cost is borne by foreigners who forego other alternatives in order to invest abroad.

The Little and Mirrlees method (LM) as set out in the OECD Manual[6], provides a framework which is well suited to coping with these problems. All inputs and outputs to the project are valued in terms of their contribution to earning or saving foreign exchange. Traded goods are valued at border prices; exports f.o.b.,

imports c.i.f. Non-traded goods are valued on the same basis by using the input-output table to split non-traded goods into traded goods equivalent. In the LM schema, factor inputs are valued according to the following rules. Capital goods are treated just like any other input. Capital is valued according to its foreign exchange equivalent - it is split into traded goods and imputed to cost in the year in which the cost arises. Labour is valued at a shadow wage rate (SWR) which reflects not only the loss in production elsewhere due to employment in the foreign owned project, but also the increased commitment to consumption induced by its employment in the project,+ (thus introducing society's time preference into the SWR).

Benefits and costs are then discounted by the accounting rate of interest (ARI) which represents the rate of return to the marginal project. This rate of return is chosen, therefore, to exhaust the investment fund.[7] Costs borne by foreigners can easily be eliminated, as can payments abroad (the latter are particularly easy to remove as they are already in "foreign exchange equivalent" values).

The difficulty in applying the LM method is in this case lack of adequate data. The LM method is designed to evaluate a small number of projects on which a complete set of data can be estimated over the whole life of the

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+ See Section 3.b (ii) for a full exposition of the calculation of SWR.

project. However data of such quality proved to be unobtainable; even the detailed interviews did not produce data which covered the whole time span of the project. Consequently a method had to be evolved which incorporated the best features of the LM analysis but allowed application of the method to a large number of projects on which data over time are severely restricted. Such a method is described in the following section.

5. Domestic Resource Cost Appraisal.

The most crucial constraint on the analysis of FDI is that data over time is non existant. The method chosen must be suitable for the analysis of a large number of projects on which data is available for only a limited time period. Such a method is the domestic resource cost (DRC) mode of analysis, which was originally utilised by Anne Krueger to evaluate protectionist regimes.[8]

Essentially, DRC analysis gives a cost-benefit ratio over a certain time period; it is thus ideal for the analysis of FDI in Ireland. The ratio compares the domestic cost of an activity (DC_i) with the value added at international prices accruing to Irish owned factors (National Value Added (NVA_i).) The domestic cost of an activity is simply the opportunity cost of the use of the domestic factors employed in that activity. The benefits are defined, as in the LM framework, as value added at

international prices. Only that part of value added which accrues to Irish owned factors is included, thus removing problems of the distribution of benefits. The cost benefit ratio for activity is thus $DRC_i = \frac{DC_i}{NVA_i}$ (7.1)

This method, which may be described as a truncated (or data constrained) LM method was one of two cost benefit analyses applied to FDI in Ireland. Problems of methodology and of application are discussed in detail below.

6. Benefits per £ of Public Investment

In the general case, this criterion is relatively easy to apply. It simply requires the formulation of the ratio $\frac{\text{Net Benefit}}{\text{Input of Government Funds}}$ (7.2)
Projects with the highest ratio of benefit to public funds are chosen, in order until the budget is exhausted. However, in the calculations below, data deficiencies meant that the ratio could be calculated for only one year. It is necessary therefore to reduce ongoing capital costs to that year only, which presents very real problems.

Section 3. Methodology and Operational Problems

1. Definition.

(a) Domestic Resource Costs.

DRC is a ratio of the opportunity costs of domestic

resources use to value added at international prices. Therefore DRCi = $\frac{DCi}{NVAi}$ (7.1) where NVAi is value added accruing to domestically owned resources.

Operationally, DRC is defined according to (7.3)[9]

$$DRCi = \frac{VjiSj + dni\ Vjh\ sj}{Piqi - \sum_j MjiPj - \sum_f r_f V_{fi} - R_i} \qquad (7.3)$$

where Vji is the amount of the jth domestic factor used as an input into activity i.

Sj is the shadow price of the jth domestic factor.

dni is the amount of the nth non traded good used in the production of i.

Pi, Pj are international prices of output i and input j.

qi is the quantity of output i.

Mji is the quantity of input j into output i.

r_f is the repatriated return to the fth foreign factor.

V_{fi} is the amount of foreign factor f used in activity i.

Ri is the royalty payment abroad for activity i.

This definition raises several issues. Firstly, valuation of inputs and outputs. Two valuations are used, one with observed market prices, the other on shadow prices derived according to assumptions set out below. Secondly the problem of non-traded inputs arises. The denominator of (7.3) represents the improvement in the balance of payments brought about by the operation of

domestic factors in co-operation with foreign owned ones in a foreign project (on general equilibrium grounds). It is therefore necessary to include non traded goods in the numerator because such goods are intrinsically related to this balance of payments improvement. This can be seen to be closely related to the analysis of balance of payments effects of Chapter VI. In the discussion of Chapter VI the two alternative models took non-traded goods as a resource burden; either on the balance of payments (long run balance) or on Government resources (internal balance). In both cases, it was a cost deriving from the change in the balance of payments. The transport cost barrier prevents non-traded goods from entering the traded goods sector, but the production of non-traded goods uses up resources. (Thus in DRC analysis non-traded goods inputs must be included as a cost because in this sense they are an essential part of the activity). In the case of Ireland this is a very minor problem quantitatively - because of the existence of Northern Ireland and the close links with the U.K. economy, almost all goods are traded and therefore have a "border Price". (Thus the factor $\sum_{nj}$ dni Vjh Sj in equation (7.3) is usually minute).

(b) Net Benefit per £ of Public Investment

This criterion is applied according to the following formula; $\frac{\text{Net Social Benefit}}{\text{Input of Government Funds}}$ (7.2)

Net benefit is defined as value added accruing to Irish factors from the operation of foreign owned firms at appropriate prices. The formula is first computed using market prices and then shadow prices. Ideally the full secondary stimulus to the host economy should be included in net social benefit. In practice, first round linkage effects are included as an approximation to the full stimulus. Shadow prices are applied only to Irish capital and labour - no attempt is made here to revalue other inputs or output.

The following section investigates the serious operational problems encountered by both methods.

2. Operational Problems.

(a) The Alternative Position

The usual premise of cost-benefit analysis is a "with project" versus "without project" decision rule. This formulation implies that a foreign project is not replacing an exactly similar domestic project. However, the foreign project is drawing Irish resources away from alternative uses elsewhere in the economy and such inputs have an opportunity cost. It is the valuation of these opportunity costs with which the shadow pricing framework is concerned.

The discussion in Chapter VI suggested that direct replacement was not a likely alternative position and that a "without project" alternative was justified in many cases.

(b) Shadow Pricing of Inputs and Outputs

i. Material Inputs and Outputs

In the Net Benefit per £ of public investment (NBI) appraisal, all material inputs and outputs are valued at market prices only.

As shown above, the DRC method values secondary inputs at the value of equivalent imports (c.i.f.) and outputs at the equivalent export price (f.o.b.) Non-traded goods are split into traded goods equivalent by the use of the input output Table.[10]

ii. The Shadow Wage Rate (SWR)

The method used for deriving the SWR follows Little and Mirrlees.[11] This method is well suited to the DRC approach because benefits are defined in the same way as the LM approach. The results of the calculation of SWR are also applied to the NBI analysis.

The SWR should reflect, not only the decrease in production elsewhere through labour being drawn into the project, but also the effect such employment has on consumption levels in the economy. If the Government wishes to attach a high value to savings then it will choose a SWR which reflects this by attaching a high (negative) value to the consumption of labour. This will raise the accounting

price of labour relative to capital and will lead to less labour intensive projects being chosen. The estimation of the SWR should provide a value for firstly the loss of production elsewhere and secondly a relative valuation of consumption vis-a-vis saving.

The SWR measures the opportunity cost of the input of labour into the project. Therefore we need to know the use to which labour would be put in the absence of the project. Under the alternative position adopted here, that of no alternative domestic project, the labour would remain in agriculture, emigrate or remain unemployed.

Unemployment is a major problem in Ireland. As Table 7.1 shows, unemployment has, since 1968, not been below 5% of the labour force. In May 1973, it was 5.9% (66,000).

Table 7.1 Unemployment in Ireland 1968-1973

	1968	1969	1970	1971	1972 May	1973 May
Unemployment as % Labour Force	5.4	5.1	6.0	6.0	6.1	5.9
Unemployment - Thousands	61	58	68	68	72	66

Source: 1968-1971 "Review of 1971 and Outlook for 1972" Table 10 and Table E.

1972-1973 "Business and Finance" 31st May 1973.

Emigration, particularly of skilled and educated workers, has long been a problem for Ireland. Indeed, a major reason for the policy of encouraging FDI was the hope that such investment would create jobs in Ireland. However, the trend of emigration figures is downwards and the absolute size of the flow is small in relation to unemployment, despite its social significance.

The opportunity cost to be imputed to an emigrant is the amount he remits to the country he leaves. Table 7.2 shows the number of migrants and total remittances 1960-1970.

Table 7.2 Emigration and Remittances 1960-1970

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Emi-gration	6994	5721	5428	6133	5791	5088	4417	4478	4385	Na	Na
(a)U.K. Remitt-ances £000	5883	6459	6326	5662	5607	5726	7017	5766	Nas	Nas	Nas
(b)Other Count-ries £000	7423	7423	7384	7449	7865	8789	8164	10999	Nas	Nas	Nas
Total £000	13306	13891	13710	13111	13472	14515	15181	16765	20200	21700	2390

Source: Statistical Abstract of Ireland : Various Issues.

Irish Statistical Bulletin : Various

Although remittances in total are an important item in the Irish balance of payments, totalling £ 23.9 millions in 1970, remittances per emigrant are low. The U.K. Census (1971) showed that 720,985 residents of the U.K. were born in the Irish Republic. On the assumption that the U.K. : Rest of the World emigrant proportion was the same as in 1967 (the last year in which a distinction was made in the statistics), remittances from the U.K. were £ 7,966,600. Remittances per head per year from Britain therefore were only £ 11. 40. The effect of emigration on the SWR therefore must be very small.

The SWR should reflect the decrease in production elsewhere caused by the labour being drawn into the project under analysis and the effect this has in increasing consumption. Most of the labour, if not employed in the industrial sector, would be employed in agriculture. The opportunity cost of this section of the labour force is thus the marginal productivity of labour in agriculture (AMPL). The AMPL is estimated by the minimum weekly wage in agriculture (this is more satisfactory than equating AMPL with average productivity in agriculture as LM suggests because we can assume that the margin, the minimum wage, is equal to marginal productivity). In December 1971, the minimum weekly wage in agriculture was £ 16. 27 or £ 813.50 per annum.[12] The figure of £ 813.50 per worker was imputed as the opportunity cost of labour - the fall in production elsewhere in the economy.

The SWR should also account for the effects of the increased consumption to which the extra employment gives rise. If a comparison is made between a situation where an equal addition to output without the employment of an extra man and the situation with the extra employment, then the increase in consumption is equal to the consumption of the wage earner. In other words, the employment of an extra man causes a national decrease in the amount of funds available for investment by an amount (C - AMPL), where C is the consumption level of the wage earner. The SWR is therefore calculated as the consumption of the wage earner minus the extent to which the Government wishes to weight the increase in consumption thus caused against savings.

Formally therefore,

SWR = consumption benefits of employing one more worker in the project minus the extent to which the Government wishes to discount consumption in favour of investment

i.e. $SWR = C - \frac{1}{Go}(C-AMPL)$ (7.4)[13]

where Go = Government's relative valuation of consumption against saving.

C, AMPL as above.

To estimate C, we need to know the earnings of labour and the savings proportion. Average weekly earnings (December 1971) were £ 21. 79, or £ 1,089.5 per annum. In 1970, personal savings were £ 145 millions from a National income of £ 1,474 million. The imputation of a savings

proportion of $\frac{1}{10th}$ gives an average consumption figure, per wage earner, of £ 981.

The factor Go must be deduced from Government policy statements and action. The "Third Programme for Economic and Social Development 1969-72", IDA policy statements and the "Review of 1971 and Outlook for 1972" show that efforts have been made to increase the proportion of investment in GNP as a deliberate aim of policy.[14] This has been attempted under New Industry, Small Industry and Home Industry Programmes. Such statements however, give no guide to the quantification of such a preference for savings. The relative valuation of investment to consumption was chosen as $^4/_3$ and $^5/_4$, on arbitrary grounds. Applying these proportions gives -

$$SWR = 981 - \frac{1}{5/4} (981 - 813.5) = £848.5 \quad \text{(from 7.4)}$$

and $$SWR = 981 - \frac{1}{4/3} (981 - 813.5) = £ 855.8 \quad \text{(from 7.4)}$$

Given the low (zero) opportunity cost of unemployed and emigrant labour, a figure of £ 850 per annum was chosen to reflect the relative likely proportion of unemployment, emigration and agricultural employment. This figure represents the opportunity cost of a man-year of work; consequently care has to be taken to standardise for part time workers (mainly female labour).

∴

iii. The Shadow Rental of Capital

In the full LM analysis, capital is split into traded goods equivalent and imputed in the year in which it arises as a cost. The social rate of time preference is included via the SWR, as above, where it determines the relative values of consumption and saving. Discounting is then carried out by the Accounting Rate of Interest - the rate of return of the marginal project or the opportunity cost of capital.

In the truncated form presented here therefore, the valuation of capital must reflect not the social rate of time preference, which is already included in the SWR, but the opportunity cost of capital.

Only the usage of Irish domestic resources should enter the cost-benefit calculus - the cost of foreign inputs are borne by foreigners. Irish capital inputs consist of the grants received by the foreign firm, Irish capital in joint ventures and debt raised from Irish sources.

A high shadow rental should be imputed to domestic capital. "High" is a relative term and here it is used relative to the commerical returns on domestic capital. The capital used, it is suggested, has a scarcity value in excess of that attributed by the market. The IDA grant represents a direct allocation of Governmental funds for productive use. Such funds in Government hands are highly

flexible and can, in principle, be allocated across a wide range of activities to promote the perceived "social good". Alternative uses are: the strengthening of the domestic industrial sector, Government enterprise or a state holding company. Such funds have therefore a high social opportunity cost. Similarly, in joint ventures, Irish equity is employed. The obvious alternative use here is Irish owned enterprises and we should again impute a high shadow rental. It may be argued that the rationale for employing a shadow rental greater than the market rate depends on the existence of channels, other than the foreign firm to transform these funds into productive investment. However, at the margin, such channels do exist; Irish firms, state enterprise and the small and home industries grant scheme. This does not however prejudice the alternative position assumption, which is merely that no identical domestic project is replaced. In other words, a "with" and "without" comparison does not imply that the opportunity cost of inputs is zero.

Ideally, sensitivity analysis should be employed to see how much difference the choice of varying shadow rentals on Irish capital makes to the results. However, it was decided not to present such a plethora of results, given the large number of projects analysed. A shadow rental of 20% was imputed on the basis of the considerations above. Some experimentation with rates of 15% and 30% was carried out, but this was found to make little difference to the calculated cost-benefit ratios.

iv. The Distribution of Benefits and possible Omissions

In the same way that only Irish-owned inputs enter the cost side of the account, so only those benefits which accrue to Irish factors enter as benefits. It may be argued that the analysis as conducted here gives insufficient emphasis to other aspects of distribution. It would be possible to weight the benefits in a systematic way according to who received them. Tax revenue and the income of lower paid workers could be highly weighted. It was felt however that in view of the problems encountered in devising such weights (with scant help from Government pronouncements), it was not a fruitful exercise.

The treatment of re-invested foreign profits is a facet of this problem. If such profits are re-invested, they should be considered as part of investment and not imputed as costs to the host. To assume that all profits are remitted induces a bias against FDI. An industry average reinvestment ratio was therefore applied to all firms in the industry. This ratio was calculated from as many firms, and time periods as were available.

Earlier sections of this work have shown that external economies and diseconomies may arise from the operation of foreign owned firms. Such gains and losses are very difficult to quantify and are therefore excluded. Conceptually it is possible to include such factors - in the DRC analysis external benefits should be added to the denominator and external social costs to the numerator and in the NBI analysis net external social benefits can be added to the denominator.

Section 4 Results

(a) Domestic Resource Cost Analysis

The results of the DRC analysis are presented in Tables 7.3 and 7.4 and Appendix I. Appendix I shows individual firm DRC results. Table 7.3 gives these results aggregated on a basis similar to the Irish Census of Production Classification (which is presented as Appendix II) to allow comparison with that Census. Table 7.3 presents the calculation of DRC at market prices and at the shadow prices derived above. The classification used in Table 7.4 is the Standard Industrial Classification. (Here the coverage is more complete).

It was hoped that it would be possible to calculate the DRC of the total Irish industry; thus providing a standard of comparison against which to measure the foreign owned firms. Such estimates could however not be made because of the difficulties in obtaining data on the capital sotck of Irish industry.

The "non-fulfilment of targets" columns in each table require explanation. In most cases, the results achieved by the foreign firms, judged by the AFF Survey results, are quite close to the projections which the firms made to the IDA. Where this is not the general rule, allowance can usually be made from AFF and IDA information for cases where projections have not actually been achieved.

However in three SIC groups, chemicals, plastics and synthetics and rubber products, there is evidence that several (usually large) projects have failed to achieve their targets and the available sources of information on these projects is less reliable. In these sectors an estimate was made on the basis of other IDA information and the AFF Survey where appropriate- however such estimates are less reliable than for the rest of the sample.

A simple decision rule for accepting or rejecting projects ex ante can be derived from consideration of the DRC results. It will normally be the case that, with satisfactory shadow pricing, all projects with a DRC equal to or less than 1.00 should be accepted. Costs are less or equal to benefits. If data are available over the duration of the project, then a discounting procedure should be adopted. However, if such data are not available, then the method of analysing the DRC of the project at a year of full production is a good approximation, provided that an agreed valuation of capital can be devised. Investment decisions with limited amounts of capital to employ (capital rationing) should be carried out by ranking the projects by DRC and implementing them in order from the lowest upwards. This will give the highest benefit-cost ratio possible for the limited resource.

The 233 live projects analysed in this section (Appendix I) give results as follows:- 100 give a DRC greater than one, including two with a negative result (which means that

the valuation of both inputs and outputs at international prices and the deduction of returns to foreign factors leads to a negative NVA, i.e. the value of output is less than value of input at shadow prices), four give a result equal to one and 129 have a DRC less than one. On a strict interpretation of the rule, ignoring linkage effects and external economies, only 133 of the projects operating at full production result in benefits exceeding costs (58% of the total).

On a sectoral basis the 26 sectors in Table 7.4 divide as follows - 17 give a result less than one and nine are greater than one. However three sectors; Food products (0.98), Motor Vehicles (0.99) and other Electronic Equipment (1.01) are very close to the dividing point where benefits equal costs. A margin of error must be allowed in calculations such as these and these three sectors cannot be unequivocally assessed because of this margin.

The difference between DRC at market prices and at shadow prices is shown in Table 7.3. This difference arises because of the differences in valuation of material inputs, outputs and the inputs of capital and labour. All the market price DRCs are greater than one because of the influence of tariffs and domestic distortions. Foreign firms which export all their output will be operating very close to the point where DC = Value Added at international prices because they pay no import duty on inputs. Returns

to foreign capital must be deducted from this and in many cases high profitability will raise the $\frac{DC}{NVA}$ fraction. In such 100% export cases, material inputs and outputs will have already been valued at international prices. When foreign firms are evaluated at shadow prices the most important change is usually in the valuation of labour services. Foreign firms pay higher wages than do domestic firms[15] and the "non-cost" part of the wage bill at shadow prices (i.e. that above £ 850 per annum per full time employee) is usually the most important factor.

On the other hand, shadow pricing imputes a higher valuation than the market rate to the services of capital. This is not usually of a large enough magnitude to out-weigh the wage factor. However cases of "oversubsidisation" do occur. Capital intensive firms relying heavily on domestic capital are the exceptions to this rule. The influence of tariffs, domestic distortions and comparative advantage are all influences on the relationship of inputs to output, which exercise an influence on DRC. These comments lead to a survey of the reasons why some results, both at firm and industry level were greater than one, i.e. why costs exceeded benefits.

No single reason can be given for those cases where costs exceed benefits, but several factors are important in bringing about these results. The major contribution of foreign firms to social benefit is through the provision of jobs. This benefit is reflected by the SWR which is

below ruling market wage rates. This reduction in measured costs is usually great enough to counter-balance the increased cost of domestic capital when valued at the shadow rental. There are, however, three distinct cases where this does not apply.

(1) Where the foreign firm is highly capital intensive. Consequently a large part of value added accrues to foreigners and payment to labour is small. This tendency towards capital intensity was discussed above. The IDA attempt to encourage labour intensive industry but where growth prospects are good, capital intensive projects are aided. (2) Where foreign profits are high. This need not necessarily be confined to capital intensive firms and indeed it was noticed in a sub-sector of the food industry. Foreign profits are excluded from NVA (the benefit part of the DRC fraction) and where high profits are combined with a large proportion of capital from domestic sources (grant, debt) it will cause the DRC rates to exceed one. (3) The case of oversubsidisation. In addition to the capital grant, the IDA may give rent subsidies, interest subsidies and other help from the panoply of incentives at its disposal. Labour training grants are also available from AnCo and grants towards exporting from Coras Trachtala. The net result of this input of Irish funds (valued at the shadow rental) is in some cases to raise domestic costs above NVA (little of this Irish capital receives a direct return from the foreign firm) and DRC again exceeds one.

Table 7.3 Domestic Resource Cost at Industry Level (CIP) Market Prices and Shadow Prices.

1 Sector & CIP Numbers	2 No of Foreign Firms in Sample	3 Foreign Firms DRC-Market Prices	4 Foreign Firms DRC-Shadow Prices	5 (See Text) Non-Fulfilment of Targets DRC
1 Food (05-12)	21	1.04	0.45	-
2 Textiles (18-19)	28	1.09	0.76	-
3 Apparell (20-22)	19	1.09	0.71	-
4 Wood & Furniture (23-24)	3	1.05	0.94	-
5 Paper & Paper-board (25)	5	1.27	1.21	-
6 Printing & Publishing (26)	2	1.05	0.62	-
7 Industrial Chemicals (Part of 31)	11	1.08	+	1.66
8 Glass, Stone, Clay, Concrete, (33-34)	5	1.41	0.73	-

Table 7.3 Continued

1	2	3	4	5
9 Metals (Part of 35)	15	1.08	0.95	-
10 Metal Cans, Heating Apparatus (-1)	6	1.08	1.82	-
11 Electrical Equipment (37)	13	1.07	0.84	-
12 Industrial Machinery (Part of 36)	16	1.06	0.84	-
13 Instruments & Precision Goods (-1)	19	1.09	1.03	-
14 Plastics (44)	25	1.17	+	1.33
15 Rubber Prod's.(-1)	2	1.10	+	1.59
16 Miscellaneous (42)	4	1.32	1.51	-

Notes Exact correspondence of classification not possible lines 10,13,15.

Non-fulfilment which could not be allowed for lines 7, 14, 15. (See Text)

Source: Author's calculation from confidential IDA data and AFF survey.

Table 7.4 Domestic Resource Costs of Foreign Firms at Shadow Prices - SIC Classification

1 Sector and SIC Number	2 Number of Firms	3 DRC Shadow Prices	4 DRC - Non-Fulfilment
Meat Products (201)	3	0.21	-
Dairy Products (202)	10	0.31	-
Food Products (206)	7	0.98	-
Confectionery (207)	3	0.49	-
Textiles (22)	33	0.73	-
Apparel (23)	21	0.67	-
Wood & Furniture (24 & 257)	6	0.70	-
Paper & Paperboard, Boxes & Containers (264,265)	5	1.21	-
Printed Matter (27)	2	0.62	-
Agricultural & Industrial Chemicals (281,287,289)	9	-	1.60
Plastics & Synthetics (282)	30	-	1.45
Drugs, Soap & Cosmetics (283, 284)	6	0.55	-
Rubber & Tyres (3,301)	3	-	1.42
Stone, Glass, Clay, Concrete (321/4)	5	0.73	-
Iron, Steel, Non-ferrous Products, Other Non-ferrous metal (331)	14	0.76	-
Smelted & Refined Metal (332,334,335)	6	0.85	-
Metal Cans, Heating Apparatus (342,343)	7	1.90	-

Table 7.4 Continued

1	2	3	4
Special Industrial Machinert (354)	7	1.65	-
General Industrial Machinery (356)	5	1.30	-
Office & Computing Machinery (357,358)	8	0.53	-
Household Appliances (363)	6	0.82	-
Other Electronic Equipment (365)	7	1.01	-
Motor Vehicles (371)	4	0.99	-
Instruments & Precision Goods (38 minus 384)	13	0.79	-
Medical Instruments (384)	7	0.63	-
Other & Unknown Products (19)	6	1.08	-
TOTAL	233		

Source: Author's calculation from IDA and AFF data.

A further cause of excess domestic costs occurs more systematically within an industry simply because the choice of project is wrong. Such cases occur in the following sectors: Industrial Chemicals (281, 287, 289) Rubber and Tyres (3,301) Metal Cans, Heating Apparatus(342/3) and Special Industrial Machinery (354) . This may be because the firm or industry operates at low value added and, more importantly, low NVA within Ireland. It may be because the protective wedge of the tariff structure encourages inefficiency or because certain necessary supporting facilities (interlinked industries, external economies) are unavailable in Ireland. In a nutshell, such firms or industires have a DRC greater than one because even with subsidisation and additional help, they have no comparative advantage when opering in Ireland and this shows through in the DRC ratio. Despite the result that the influence of comparative advantage is dominant, the sectors in Table 7.5 are widely defined and so within sectors product specialisation and scale effects mean that this does not apply to all firms.

To return to the results at industry level (SIC Classification Table 7.4), the best results are achieved by three industries in the food sectors; meat products, dairy products and confectionery, followed by office and computing machinery, drugs, soap and cosmetics, printed matter and medical instruments. The worst results are recorded by the three sectors where non-fulfilment of targets is serious (agricultural and industrial chemicals,

plastics and synthetics, rubber and tyres, where the results are very tentative) in addition to metal cans and heating apparatus and special industrial machinery.

Analysing which of the above factors fits these cases is no easy task. However two generalisations are possible with regard to the good performers; firstly, in the food sectors, printed matter and drugs, soap and cosmetics there is vigorous competition from the domestic sector which may have both stimulating effects and external economies. The second generalisation is that for computing machinery and medical instruments (and to some extent for food) there is a truly European market and vigorous competition on that market. Generalisations for the poor performers fit into the discussion above (DRC results greater than one). Capital intensity is a common feature and in the rush to attract advanced technology industries (with future growth prospects in mind) it is likely that in some cases, oversubsidisation has occured. The non-fulfilment of projections given to the IDA by large firms in the three sectors of Column 4 Table 7.4 may be a temporary phenomenon but for the moment poor results are being recorded. High remittance of profit and royalty payments in these sectors (particularly 354, 356 and 342/3) is a feature which increases DRC. In summary, it seems that the "traditional" explanations of successful performance - competition and "comparative advantage" remain forceful.

Table 7.5 Net Benefit per pound of Public Investment of Foreign Firms - SIC Classification

1 Sector and SIC Number	2 Number of Firms	3 Market Prices	4 Shadow Prices
Meat Products (201)	3	6.0	4.9
Dairy Products (202)	10	6.1	4.8
Food Products (206)	7	4.6	3.6
Confectionery (207)	3	4.9	3.9
Textiles (22)	33	5.1	4.6
Apparel (23)	21	4.7	4.5
Wood & Furniture (24,257)	6	4.5	3.8
Paper & Paperboard, Boxes & Containers (264,265)	5	3.2	3.0
Printed Matter (27)	2	5.3	4.1
Industrial & Agricultural Chemicals (281,287,289)	9	(2.6)	(1.9)
Plastics & Synthetics (282)	30	(2.1)	(1.9)
Drugs, Soap & Cosmetics (283, 284)	6	2.8	2.8
Rubber & Tyres (3,301)	3	(2.9)	(2.4)
Stone, Glass, Clay & Concrete (321,4)	5	3.3	3.6
Iron & Steel (331)	14	3.1	2.7
Smelted & Refined Metal (332,334,335)	6	3.4	3.4
Metal Cans, Heating Apparatus (343/3)	7	2.6	2.1
Special Industrial Machinery (354)	7	2.9	2.4
General Industrial Machinery (356)	5	4.0	3.6

Table 7.5 Continued

1	2	3	4
Office & Computing Machinery (357,8)	8	5.2	4.9
Household Appliances (363)	6	3.8	3.6
Other Electronic Equipment (365)	7	2.6	2.7
Motor Vehicles (371)	4	3.2	2.9
Instruments & Precision Goods (38 minus 384)	13	5.0	5.1
Medical Instruments (384)	7	4.9	4.5
Other & Unknown Products (19)	6	2.0	1.7
TOTAL	233		

Source: Author's calculations from IDA and AFF data.

(b) Net Benefit per £ of Public Investment

The evaluation of net benefit per pound of public investment proceeds on the lines set out above. Net benefit is defined as value added accruing to Irish domestic factors and the input of public funds is calculated per annum. Capital grants are capitalised over an (arbitrarily chosen) 20 year period and under shadow pricing, the shadow rental of capital is used. The results are shown with both market prices and shadow prices in Table 7.5.

The figures in Table 7.5 should ideally be taken in comparison with benefits accruing from alternative uses of public funds, such as encouragement of domestic enterprises, valued on the same basis. As they stand, however, they allow only cross-sectoral comparisons within the foreign group. The figures reveal a wide disparity between industries. The best results are found in the food, textiles, and precision goods (357, 358, 38) sectors. The worst results occur in those sectors where non-fulfilment of targets is most serious - figures in brackets in Table 7.5 and in some sectors of the metals and engineering industries.

The importance of the amount of annual subsidy to the calculation should be emphasised. As the denominator of the net benefit per pound of public investment, the amount of subsidy carries a great deal of weight in determining outcomes. Those sectors which are over-subsidised relative

to their net benefit give a low fraction and those sectors where the subsidy is small relative to generated benefits give a high one.

The use of this criterion would involve an a priori calculation of net benefit and the calculation of the annual subsidy equivalent of the grant and concessions to be given, before approval of the project. This would both provide a rational criterion for the amount of the capital grant, related to the benefit to the economy and would eliminate the danger of oversubsidisation.

(c) The two methods compared

Table 7.6 shows the ranking by industry given by the two appraisals. It appears from this Table that the rankings are similar and this is confirmed by a rank correlation analysis (Spearman's rank correlation coefficient $r_s = 0.851$, which is significant at the 0.01 level).

The differences in the rankings arise because of the differences in the shadow pricing systems involved and because of the re-ordering of costs and benefits. In the DRC system, all inputs and outputs are valued at international price equivalents, whereas the NBI system only values primary inputs; capital and labour at shadow prices. The DRC system presents a pure cost benefit ratio DC : NVA whereas the NBI system singles out one important element - input of Government funds as the denominator of its cost

benefit ratio, putting all other elements into a net benefit ratio. This has the effect of giving extra weight to the input of Government funds.

Although ranking by the two methods does not significantly affect the overall ordering by sectors, there are some factors which are worthy of comment. The most spectacular change is that of instruments and precision goods (38 minus 384) which moves from 13th rank by DRC to first rank under NBI - partly this change is due to the change in the value of inputs, particularly as inputs are mainly imported and more significantly they are largely imported from other units of the same firm. Such inputs may be under-valued in order to make profits in tax-free Ireland, thus valuation at true free market prices increases costs. More significantly, such firms are entirely foreign owned and perhaps surprisingly, have received a lower level of subsidisation than average - perhaps because they are generally capital intensive. The reverse case of "over-subsidisation" applies to drugs, soap and cosmetics (283,284) which moves from 5 to 18 under NBI and to iron and steel (331) which moves from 12 to equal 19th. This oversubsidisation appears to be the result of a desire to establish these two industries in Ireland, even if the costs were higher than normal.

Table 7.6 The ranking of industries by DRC and NBI appraisal, at shadow prices.

1 Sector and SIC Number	2 DRC Ranking	3 NBI Ranking
Meat Products (201)	1	=2
Dairy Products (202)	2	4
Food Products (206)	16	=12
Confectionary (207)	3	9
Textiles (22)	=10	5
Apparel (23)	8	=6
Wood & Furniture (24,257)	9	11
Paper & Paperboard, Boxes & Containers (264,265)	20	16
Printed Matter (27)	6	8
Industrial & Agricultural Chemicals (281,287,289)	24	=24
Plastics & Synthetics (282)	23	=24
Drugs, Soap & Cosmetics (283,284)	5	18
Rubber & Tyres (3,301)	22	=21
Stone, Glass, Clay, Concrete (321,324)	=10	=12
Iron & Steel (331)	12	=19
Smelted & Refined Metal	15	15
Metal Cans, Heating Apparatus (342/3)	26	23
Special Industrial Machinery (354)	25	=21
General Industrial Machinery (356)	21	=12

Table 7.6 Continued

1	2	3
Office & Computing Machinery (357,358)	4	2
Household Appliances (363)	14	=12
Other Electronic Equipment (365)	18	=19
Motor Vehicles (371)	17	=17
Instruments & Precision Goods (38 minus 384)	13	1
Medical Instruments (384)	7	6
Other & Unknown Products (19)	19	26

Source: Column 2 from Table 7.4 Columns 3 & 4

Column 3 from Table 7.5 Column 4

Note: Spearman's rank correlation coefficient

r_s = 0.851 significant at 0.01 level.

Section 5 Conclusions.

The results of a cost-benefit analysis cannot be considered in isolation from the methods used to derive those results. Such methods must cope adequately with conceptual problems and be suited to the constraints imposed by lack of adequate data. There are also special problems when FDI is being investigated. In this category is the correct choice of "alternative position" and the division of costs and benefits between the foreign partner and the domestic economy.

The major problems which a cost-benefit analysis must solve are the identification and valuation of costs and benefits. When market prices are inadequate indicators of social values - and this must generally be the presumption where unemployed resources show evidence of a serious resource imbalance - a system of shadow prices must be devised. The identification of national costs and benefits is complicated where foreign resources are used.

Two methods of cost-benefit analysis were suggested above as being appropriate methods given the particular stringent data constraints. As applied, neither method can be considered a complete analysis because changes over time are not adequately allowed for - no means of discounting costs and benefits can therefore be utilised. (This arises because of data constraints and is not an inherent difficulty of either model).

External effects and linkage effects are dealt with only peripherally, or not at all. However, both methods allow computation of host country benefits and costs in ways which lead to simple decision rules. The DRC analysis allows projects to be ranked in order of desirability and facilitates the comparison of foreign projects with domestic ones or with the domestic industry as a whole (though this exercise could not be carried out because of the lack of adequate data.) DRC ratios can be aggregated from the firm level to the industry level in order that sectoral comparisons can be made. This allows deductions to be made as to the "nearest to optimal" distribution and magnitude of FDI. The NBI criterion allows comparison of the net benefit derived from an input of Government funds into foreign-owned projects with alternative uses of such funds - thus allowing a rational allocation of scarce resources to be made.

It is believed that these two methods offer a better means of evaluating the benefits and costs of FDI than other possibilities because they present neither a single-value objective function (profits, labour intensity, linkage effects, outflows versus inflows on the balance of payments) or a set of partial criteria (as for instance suggested by Cooper and Whelan). The criteria used in fact identify costs and benefits consistently and provide a means of comparing costs with benefits in a manner which is flexible enough to allow changes in crucial parameters such as the alternative position and policy changes.

The results of the cost-benefit analysis show a wide variety of results at the individual project level. As a post hoc means of assessing performance, foreign projects performed well, under both criteria in the following sectors; the food industry, textiles and apparel, medical instruments, office and computing machinery and instruments and precision goods (although the last gave very different results under the different systems). However, in a large number of cases, according to DRC measurement, many projects have imposed a greater cost on the economy than their contribution to it, unless they have generated unusually large external effects. Many of these cases have arisen because the projects have not achieved the performance which they forecasted they would attain. Such cases are concentrated in the plastics and synthetics, industrial chemicals and rubber and tyres sectors: they tend to be large projects and therefore have a large influence on the sectoral results.

Overall, the DRC appraisal gives 133 individual projects whose benefit is greater than cost from 233 surveyed. This is a 58% "success" ratio of those projects analysed. This is not a complete picture because foreign firms which failed or were taken over before failing are excluded (because of lack of information).

The NBI criterion is not amenable to dividing projects into "good" or "bad" as it is a relative criterion. The variation in success of the projects appears just as forcefully as in the DRC results. We need much more information

to utilise this criterion properly however - namely the yield on public investment from other uses of funds. All we can at present show from the calculations is the relative yield of sectors and the dispersion in returns.

Both sets of results suggest that a more rigorous and systemative cost-benefit appraisal should be made by the IDA before giving a grant to foreign owned projects (this applies equally to Irish owned grant aided firms.) Such an appraisal would not require much more data than the IDA receives already and although it could not remove those cases where projections are not fulfilled, it would ensure a better use of Irish investable resources. Firms which did not meet targets could be penalised by receiving lower proportionate grant payments or other benefits from the state (tax relief for instance). Such a policy could be linked specifically to the relationship between projected and actual employment; though labour subsidies are not recommended as an overall policy.

Such a policy of rigorous ex ante appraisal by the IDA would require an input of expertise but this should be a small problem given the skills within the IDA and the output of suitable Irish graduates. The appraisal could be conducted at first at the macro level using the NBI criterion to evaluate the benefit of the total amount of investable funds as compared with other uses of Government funds and then at the micro level, using a DRC criterion. This evaluation would increase selectivity in grant-giving and

would cut down foreign projects accepted for grant aid (indeed all acceptances) in the short run, but it would ensure that the benefits of FDI are maximised for a given outlay of Irish domestic resources. It would not necessarily lead to a more labour intensive production structure within the foreign firm. However, the employment of labour would not be outweighted by costs but would be correctly evaluated in relation to other benefits (given an agreed shadow wage).

The fact that 42% of live foreign owned projects are not beneficial to the economy in a cost benefit sense should be a sufficient stimulus to a more careful and rigorous screening of foreign projects. However, this figure should not be applied without qualification to present day projects. Many such projects were accepted when Ireland was in an inferior bargaining position, than she is now, when experience of the incentive level necessary to build a sound economic framework was limited and before Irish entry into the EEC. A much tougher bargaining attitude can now be adopted, whilst still maintaining an attractive programme of incentives. Future policy is considered in the concluding Chapter.

Appendix I Industrial Firm Domestic Resource Costs:

Shadow Prices

SIC	Sector	Number of Firms	Domestic Resource Cost of Individual Firms
201	Meat Products	3	0.21, 0.35, 0.17.
202	Dairy Products	10	0.69, 0.38, 0.10, 0.60, 1.20, 0.80, 0.31, 0.96, 0.45, 0.28.
206	Food Products	7	0.29, 0.12, 1.43, 1.81, 1.13, 1.39, 1.31.
207	Confectionary	3	0.69, 0.23, 0.75.
22	Textiles	33	0.61, 0.79, 0.39, 1.53, 0.63, 0.71, 8.60, 0.63, 0.79, 1.60†, 0.88, 1.23, 1.14, 0.27, 0.39, 0.89, 0.56, 1.02, 0.81, 0.25, 0.40, 0.79, 1.24†, 0.28, 0.98, 0.55, 1.37†, 1.25, 0.72, 0.42, 0.63, 1.01, 0.47.
23	Apparel	21	1.56, 0.47, 0.20, 0.77, 1.56, 0.75, 1.59, 0.57, 1.10, 1.39, 0.61, 0.95, 1.51, 1.24, 0.41, 1.49†, 0.67, 0.46, 4.21, 0.39, 0.49.
24, 257	Wood & Furniture	6	0.74, 0.56, 6.00, 0.56, 0.59, 0.82.
264, 265	Paper, Paperboard, Boxes, Containers	5	0.79, 4.88, 0.15, 0.82, 1.09, 1.12.
27	Printed Matter	2	0.66, 0.54.
281, 289	Industrial etc. Chemicals	9	1.88†, 0.64, 1.26†, 1.09, 1.25†, 2.11†, 2.57, 1.80, 0.64.
282	Plastics & Synthetics	30	1.17, 1.75, 0.51, 0.59, 0.52, 0.49, 0.69, 2.21, 1.15, 1.04, 0.33, 1.89†, 0.82, 0.94, 1.09, 0.85, 1.34†, 2.35, 0.78, 1.01, 0.83, 1.87†, 1.34, 1.44, 2.11†, 0.90, 0.83, 0.43, 1.00, 1.25.

Appendix I Continued

SIC	Sector	Number of Firms	Domestic Resource Cost of Individual Firms
283, 284	Drugs, Soap, Cosmetics	6	0.36, 0.81, 0.28, 1.09, 0.83, 0.44.
3, 301	Rubber & Tyres	3	1.40†, 1.66†, 1.02.
321, 324	Stone, Glass, Clay, Concrete	5	1.05, 0.54, 0.65, 0.48, 0.82.
331	Iron, Steel, Non-ferrous Prod's.	14	0.87, 1.04, 0.58, 18,00, 0.56, 0.39, 0.65, 1.56, 0.90, 1.80, 0.56, 1.29, 1.03, 1.67.
332/ 4/5	Smelted & Refined Metals	6	0.61, 1.00, 0.56, 1.64, 0.60, 2.38.
342, 343	Metal Cans, Heating Apparatus	7	0.93, 0.87, 1.30, 0.51, 1 Neg, 1.02, 2.00.
354	Special Industrial Machinery	7	1.75, 6.10†, 2.37, 1.13, 1.00, 1.49, 0.42.
356	General Industrial Machinery	5	0.70, 2.16, 1.64, 0.63, 0.76.
357, 358	Office & Computing Equipment	8	1.88, 0.46, 0.59, 0.71, 0.79, 0.39, 1.51, 3.15.
363	Household Appliances	6	3.83, 1.36, 1.36, 0.35, 1.49, 0.99.
365	Other Electronic Equipment	7	0.51, 2.29, 1.16, 1.02, 6.29†, 1.09, 0.83.
371	Motor Vehicles	4	0.94, 1.16, 0.66, 1.31.
38	Precision Goods & Instruments	13	0.28, 1.00, 2.10, 0.72, 0.60, 1.25, 0.52, 2.25, 1.01, 0.53, 0.53, 1.50, 0.86.

Appendix I Continued

SIC	Sector	Number of Firms	Domestic Resource Cost of Individual Firms
384	Medical Instruments	7	1.38, 0.19, 0.46, 0.69, 0.97, 0.66, 1.05.
19	Other & Unknown Prod's.	6	0.50, Neg., 4.14, 0.71, 6.35, 1.43.
	TOTAL	233	

Source: Author's calculations from IDA data.

+ Unfulfilled targets - figure tenuous.

Appendix II The Irish Census of Industrial Production

Classification

Industry Classification

01 Mining and Quarrying.

02 Turf Production and Bog Development.

03 Bacon Factories.

04 Slaughtering, preparation and preserving of meat other than 03.

05 Creamery butter, cheese and other edible milk products.

06 Canning of fruit and vegetables, manufacture of preserves, jam etc.

07 Grain milling and animal feeding stuffs.

08 Bread, biscuit and flour confectionery.

09 Manufacture and refining of sugar.

10 Manufacture of cocoa, chocolate and sugar confectionery.

11 Margerine, compound cooking fats and butter blending.

12 Miscellaneous food preparations (including fish).

13 Distilling.

14 Malting.

15 Brewing.

16 Aerated and Mineral Waters.

17 Tobacco.

18 Worsted and Woollen (excluding clothing) Linen and Cotton spinning, weaving & manufactures.

19 Jute, canvas, rayon, nylon cordage & miscellaneous textiles.

20 Hosiery.

21 Boot and shoe factories.

22 Clothing manufacture of made up textiles except apparel.

Industry Classification

23 Manufacture of wood & cork except furniture

24 Manufacture of furniture & fixtures, brushes & brooms.

25 Manufacture of paper and paper products.

26 Printing, publishing and allied trades.

27 Fellmongery, Tanning and dressing of leather.

28 Manufacture of leather and leather substitutes except footwear.

29 Fertilisers.

30 Oils, Paint, Inks and Polishes.

31 Chemicals and Drugs.

32 Soap, detergents and candles.

33 Glass and glassware, pottery, china and earthenware.

34 Structural clay products, asbestos, plaster, gypsum and cement.

35 Metal trades (excluding machinery and transport equipment).

36 Manufacture and assembly of machinery except electrical machinery.

37 Manufacture of electrical machinery, apparatus and appliances.

38 Ship and boat building and repairing.

39 Manufacture of railroad equipment.

40 Assembly, construction of mechanically propelled road vehicles.

41 Assembly etc. of vehicles other than mechanically propelled road and land vehicles.

42 Miscellaneous Manufacturing industries.

43 Laundry, cleaning and dying industry.

44 Plastics.

Chapter VII Notes and References

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3. Hans Singer "The distribution of gains between investing and borrowing countries". American Economic Review May 1950.

4. On this point see also W.B. Reddaway et al "Effects of U.K. Direct Investment Overseas - An Interim Report". Cambridge U.P. 1967 and Reddaway et al "Effects of U.K. Investment Overseas - Final Report". Cambridge U.P. 1968 and G.C. Hufbauer and F.M. Adler "Overseas Manufacturing Investment and the Balance of Payments" U.S. Treasury Dept., Washington D.C. 1968 also Review of Hufbauer and Adler by R.N. Cooper. Journal of Economic Literature December 1969.

5. Paul Streeten "The Role of Private Investment". Venture Vol. 22 No. 1. January 1970. Suggests that displacement does take place.

6. I.M.D. Little and J.A. Mirrlees (1968) Manual of Industrial Project Analysis in Developing Countries Vol. II. Development Centre O.E.C.D. Paris.

7. Little and Mirrlees ibid. Chapter XIV.

8. Anne O. Krueger (1966) "Some economic costs of exchange control : The Turkish Case". Journal of Political Economy.
Further developed in Anne O. Krueger (1972) "Evaluating Restrictionist Trade Regimes. Theory and Measurement". J.P.E. January/February 1972.
See also B. Balassa and D.M. Schydlowsky (1972) "Domestic Resource Costs and Effective Protection one Again". J.P.E. January/February 1972.

9. This formula is adapted from Krueger (1972) Op. cit. The formula in the text differs from Krueger's because it has not been "normalised" - divided by the international price of the final output. The normalisation procedure was used by Krueger so that she could show the similarity of her method with the standard formula for the effective rate of protection for an activity. See Kruger (1972) page 53.

10. Input-Output Tables for 1964. (Prl 985) January 1970, Central Statistics Office, Dublin.
External Trade Statistics 1971 (Prl 3047) C.S.O. Dublin April 1973.

11. Little and Mirrlees Op. cit. Chapter XIII.

12. Review of 1971 and Outlook for 1972. (Prl 2357) p.95 Table 15, Stationery Office, Dublin (1972).

13. Little and Mirrlees Op. cit. p. 167.

14. Third Programme : Economic and Social Development 1969-1972. (Prl 431).
Stationery Office, Dublin March 1969. passim. See also IDA policy statements, Review of 1971 and Outlook for 1972. Op. Cit. etc.

15. See the results of the analysis in Chapter V and United States Chamber of Commerce in Ireland. Survey of American Manufacturing: Press Release. (Survey is confidential) 23rd August, 1973 which shows that the average weekly wage in U.S. firms was £ 30. 50 per week.

16. This is interesting in view of the recent large influx of foreign firms into this industry in Ireland. See Sunday Times, 13th April, 1975.

Chapter VIII Conclusions

This Chapter is divided into three sections. The first reviews the nature and magnitude of FDI in Ireland. The second section analyses the most important areas of impact of FDI on the host economy. The final section provides an overall assessment of the effect of FDI on real income and draws together the policy conclusions.

Section 1: Foreign Direct Investment in Ireland

The Irish Republic has received a substantial and increasing inflow of FDI from the mid fifties onwards. At the end of 1970, total investment under foreign control amounted to £ 144.3 millions. Foreign firms accounted for 8% of Gross Fixed Capital Formation in 1970. This proportion, by international standards, is high but not outstandingly so. However, foreign investment represents a much higher proportion of fixed capital in the manufacturing sector.

The importance of FDI is perhaps best illustrated by its share of output. Foreign owned firms accounted for 13.3% of the output of the Transportable Goods Industries in 1970. When food, drink and tobacco are excluded, this proportion rises to 17.4% of output. Foreign owned firms have made a major contribution to employment which is crucial for Irish economic policy

making. Employment in foreign owned projects was estimated to be around 40,000 in 1972.

Foreign projects are mainly export orientated - over 81% of their output goes to foreign markets. The exports of foreign owned firms in 1970 were estimated at 29.5% of total Irish exports and at 46.1% of exports when food, drink and tobacco are excluded. This is a contribution to the trade balance, but other balance of payments effects, such as the import bill of foreign firms must also be considered.

Such increases in output, employment and exports have not been achieved without costs. There has been, from the late 1950's, a substantial programme of incentives to foreign investors. The institution of this programme went hand in hand with the move away from a policy of economic protectionism towards one of freer trade. This programme has involved tax relief on profits earned on export sales and capital grants to newly established projects as its two major incentives. From the inception of the programme up to the end of 1971, there have been capital grants of £ 49.2 millions to foreign owned firms. Grants to foreign firms have, in recent years, averaged over 75% of the total industrial grants disbursed by the Government, reaching a maximum proportion of 85% in any one year. Over the same time period, total tax revenues foregone under the export tax relief scheme has

been £ 39.9 millions of which at least £ 18.4 millions was relief to foreign owned firms.

An examination of the foreign owned sector of Irish industry at a micro level reveals several important characteristics. The foreign owned sector is not dominated by any one source country. The U.K. and U.S.A. are the most important countries of origin, with roughly equal numbers of projects. Germany is almost as well represented by numbers of projects and there is also a considerable number of Dutch, South African and Canadian owned projects. The 'Japanese invasion' had not achieved any significant incursions at the time of this investigation. Taking into account the size of investments, rather than just the number of projects, U.S. investment is the most important because U.S. projects are much larger than U.K. and German ones. There are also some very large projects amongst the 'other nationalities' group.

When the foreign sector is divided into industry groups, no one industry or set of industries is predominant. The market orientated 'horizontal' investment type considerably outweighs the supply orientated 'vertical' investments. Raw material based foreign investments occur in the food industry and in the extractive industries. The vast majority of investments however are export market orientated; the major markets which are serviced from Ireland being the U.K. and EEC. Several high

technology areas are well represented in the distribution of foreign firms by industry, notably: plastics and synthetics, drugs and pharmaceutical, industrial chemicals, industrial machinery, instruments and precision goods. More traditional areas with considerable foreign investment are textiles, apparel and areas of the metal trades.

Most foreign investors prefer 100% ownership of their Irish subsidiaries. However, pressure from Irish sources, particularly the IDA, has led to an increasing proportion of joint ventures within the foreign sector. This is an important development and one which opens the possibility of greater benefits to Ireland. The drawback appears to be the greater instability of joint ventures, which has led to a failure rate of 15.2% - well above the overall failure rate of 11.7%. Increasing equity participation by the IDA may go some way towards counteracting this tendency.

The several regional disparities which exist in Ireland were examined in Chapter I. Foreign investment was envisaged as playing an important role in the alleviation of this disparity. In practice, over 36% of [illegible] foreign owned projects were located in Designated Areas. Further investigation showed however, that the least developed areas were completely neglected by foreign investors and that within the DAs there was a large disparity which had been left untouched. Inter-

mediate areas, on the other hand, benefitted from foreign investment and the employment thus created.

In summary, the foreign owned projects established in Ireland exhibit a great deal of diversity. In total however, their importance to the economy is significant mainly because of their dual role as employers and exporters.

Section 2: The major areas of impact of FDI on the Irish economy

Foreign direct investment of the magnitude indicated above must have a substantial impact on the host economy. This section reviews the most important areas of impact, viz. domestic economic structure, employment, entrepreneurship, technological and efficiency implications, the impact on trade and the balance of payments, finally, control and policy implications.

(1) The domestic economic structure

The influx of FDI into the Irish Republic has influenced the industrial make-up of the manufacturing sector; in addition FDI has led to some important developments within industrial groups.

The 'modern' sector of Irish manufacturing is dominated by foreign owned firms, producing largely for export. The allocation of funds from Government sources has largely favoured such foreign-owned firms. Two possible dangers exist for the domestic sector: firstly that domestic firms will be displaced by foreign owned projects and secondly that existing domestic firms may be starved of crucial inputs, particularly capital and skilled labour.

The state of the manufacturing sector strongly suggests that displacement may have been minimal, even non existant. Little evidence can be adduced to show that projects which could have been carried out by domestically owned firms have been pre-empted by foreign owned ones. This is reinforced by the IDA stipulation that foreign owned firms in receipt of grant aid should be non competitive with domestic ones. This applies of course to existing domestic firms but cognisance is taken by the IDA of future developments (particularly since the start of the new entrepreneurs programme). The weakness of the domestic sector after the period of protectionism and the alleged lack of entrepreneurial stability (examined in detail below) add further weight to this argument.

The second danger, starvation of resources in the existing domestic sector, is a different case. Concentration on the encouragement of new projects, particularly export orientated ones, and the financing of the grants scheme have placed a considerable burden on the domestic sector. As shown above, the grants and tax relief schemes involve a transfer of funds from existing manufacturing industry to new export orientated projects. Upon the establishment of the new projects, there is competition between the 'new' and the 'old' sectors for scarce resources. The Small Industries and Home Industries programmes do not appear to redress the balance of the competitive disadvantage which domestic industry faces in

attempting to attract capital. Foreign subsidiaries can rely on their parent firms both for supplies of capital and as guarantors for loans. Several domestically owned firms, particularly those producing for the home market, undoubtedly are constrained in their expansion plans by lack of capital. The competition for resources is also acute in certain areas of the market for skilled labour. Competition from foreign owned firms, who are able to pay better wages, has led to curtailment of expansion plans or to an increase in costs for several domestically owned firms. Again the activities of state bodies, notably Anco are to some extent a polliative, but these efforts have so far proved to be insufficient to prevent these constraints from operating on the domestic sector.

A rather different aspect of the problem of the co-existence of foreign owned and domestic firms is the emergence of a dualistic structure in Irish industry. The evidence presented in Chapter IV shows that the existence of the foreign owned sector has contributed to such a structure. The dichotomy is shown by the pattern of exporting and the importing of inputs. To some extent the disparities are accounted for by the influence of the industrial mix and of scale factors but dualism is mostly due to the differences in behaviour within industries. This division is endemic because linkage effects between the domestic and foreign sectors are small. This is at least partly due to deficiencies

in the domestic sector, in that it is unable to supply the quantity and quality of resources needed by the foreign investors at competitive prices. It is also due to the preference of foreign investors for dealing with traditional suppliers. In general, foreign subsidiaries do not perform the full range of functions within Ireland and they import material inputs and services from other units of the firm. Substantial linkage effects emanate from the food industries but the rest of the foreign sector approximates to enclave growth. Consequently the secondary stimulus to the domestic sector from the foreign firms is small.

(2) Employment

FDI in Ireland has created 40,000 jobs within foreign firms in 1972. This is very close to a net figure of direct job creation because we can assume that displacement was not great. Constraints on expansion of the domestic sector caused by diversion of resources to the foreign sectors may have cost some jobs, but in comparison this appears to have been minor.

Despite this job creation in new industry, the employment situation remains grave. Unemployment is still at 6% of the labour force and the decline in the numbers at work in agriculture continues to pose problems for the achievement of full employment. The

decline in traditional import substituting industry means that new industry is the major employment creating force in the state. Nevertheless, FDI has proved to be a major force in bringing about the reduction in emigration.

The type of employment created by foreign firms is also of interest. Foreign owned firms have created employment in the unskilled, semi-skilled and clerical type managerial categories. In addition, the entry of foreign firms has created excess demand for certain categories of skilled labour. FDI has increased the rates of pay for skilled labour. The main gap in the job creation spectrum is in the highly trained scientific workers, technologists and research workers. The tendency of multi-national enterprises to centralise certain functions, in particular R & D and marketing, has led to there being little increase in demand within Ireland for such workers. This is of particular concern because of the brain drain from Ireland. The efforts of the Government to attract such facilities to Ireland seem likely to achieve only limited success, given the strength of the centralising tendencies within the multinational firm. In the long term, more success may result from moves towards a science policy which can keep such workers in Ireland.

The foreign contribution to employment in the lagging regions of Ireland has been of considerable

importance. Precisely because many functions are performed abroad, foreign subsidiaries are often more footloose than their domestically owned counterparts. The declared aim of Government policy, to provide employment in the DAs, has been facilitated by this characteristic of foreign subsidiaries - reinforced of course by higher rates of grant aid. Over 36% of foreign projects are located in the DAs.

There are however, several qualifications to be made. Firstly, failure rates of foreign projects have been greater in the DAs. Secondly, a closer examination of location patterns shows that some of the most needy areas, in employment terms, have been ignored. (Transport limitations, lack of infrastructure and other external diseconomies have overwhelmed the attraction of the higher grant in such areas). Thirdly, there is still a concentration of foreign owned firms on the East coast and around Dublin in particular. The proposed counter attraction of the West has only been important in the Limerick-Shannon region.

(3) Entrepreneurship

There is a view, strongly held in Ireland, that a major constraint on development is the lack of entrepreneurial ability. It is certainly the case that, in the past, entry into the church or the civil service has been favoured socially to the detriment of the business profession. Other traditions, such as that of emigration to gain experience and as a proof of manhood have drained

Ireland of skilled entrepreneurs.

However, entrepreneurship is a function rather than an attribute of a particular group of people. Up to the late fifties, conditions favouring the exercise of this function were lacking. The protectionist policies and the anti-competitive outlook of Government policy makers are the root causes. The size of available markets and the cost structure of the economy meant that the rewards for risk taking and innovation were small. Consequently, innovations were few and directors and managers were conservative and often pessimistic about expansion opportunities.

The switch of policy towards freer trade and an 'open door' policy to FDI has done much to release these constraints on the exercise of the entrepreneurial function. The return to Ireland of Irish born Managers, who have laid the basis of a successful career elsewhere, is testimony to the fact that talent has been latent in Ireland for some time. These Managers are the beginning of a pool of talent cutting across the ownership division between foreign owned and Irish firms. In the long run, the creation of a cross-ownership pool of Irish executives and managers should prove to be a major benefit from the inflow of FDI. The conditions for the successful exercise of the entrepreneurial function, with rewards commensurate with it, are emerging.

This will benefit the domestic sector in particular - especially as the IDA programme to foster young entrepreneurs is also reaching take off.

(4) Technology

FDI is one way of obtaining proprietary technology. It may not however be the best or the cheapest way of obtaining such knowledge. The alternatives for a country such as Ireland are licensing and Government undertakings.

A national strategy based on licensing requires a strong domestic sector containing firms able to absorb and effectively use the technology. Up to now, this has not been a feasible alternative except in very restricted areas (though it has been used when allied to Government support as in the case of N.E.T.) It should become feasible over a widening range of industries as the domestic sector develops.

Major technological innovations require a long mobilisation of resources, which must be sustained over a long time period. Often, recourse to the capital market is insufficient and Government funding is required. This alternative has proved successful in the case of N.E.T. It would be unwise to believe that this alternative is feasible across the whole range of industries, given the limited commitment of the Irish Government in this

direction. Further development of the Government's role in fostering domestic technological advance could prove a successful complementary policy to the continued importing of foreign technology.

In many fields across the industrial spectrum, FDI will continue to be the most important way of obtaining technology. Given this, it is vital to assess the effects which have so far been evident. The introduction of foreign technology by foreign firms has had both 'internal' and 'external' effects.

Internal effects - those affecting the foreign subsidiary - derive from the fact that foreign technology often gives the subsidiary a competitive advantage. Technology based subsidiaries are export orientated in the main and are able to combine foreign technology with relatively cheap Irish labour. Together with the incentive package, this constitutes a formidable competitive base.

The external effects however give cause for concern. There appears to be little 'spinoff' or 'spillover' of technological advances from the foreign owned to the domestic sector. This is partly because of the weakness of the domestic sector, but is mainly due to the nature of modern technology. Most important (and profitable) knowledge is in the form of proprietary knowledge, owned and controlled by a particular corporation. The

corporation thus keeps a close hold on this income-creating asset. It is therefore unreasonable to accept FDI and to expect a great deal of diffusion from subsidiaries.

However, some diffusion of benefits can be observed if we define technology somewhat less rigourously. Perhaps the most important spinoff is the creation of an industrial ethas within Ireland. The transfer of labour and management referred to above also transfer ideas and practices. Other 'embodied' transfers may take place with the sale of blueprints, formulae and alter ideas by foreign subsidiaries to domestic firms.

(5) Trade, Trade Policy and the Balance of Payments

The impact of FDI has been most pronounced in the trade sector. Foreign owned firms accounted for almost one half of Irish industrial exports in 1970. Some sector's exports are completely dominated by foreign owned firms. The growth of exports has been dependent on the inflow of FDI. Indeed, Irish exports have been growing at a more rapid rate than the markets they serve.

The rapid rate of export growth has enabled the country to expand its import bill. It should also be noted that foreign owned firms import a higher proportion of inputs than do domestic firms. Foreign owned firms have been instrumented in tieing Ireland more closely to the EEC - an estimated 38% of foreign subsidiaries

output goes to the old EEC of the Six and a further 37% to the U.K. The growth, amount, destination and sectoral composition of Irish exports are critically dependent on inflows of FDI. This trend can be expected to continue, particularly given the advantages of foreign subsidiaries in exporting, viz: access to information, marketing facilities and channels of distribution abroad.

The export orientation of foreign owned firms encouraged by the incentive scheme has meant that Irish tariffs have been only a minor irritant. The switch in trade policy has been almost fully completed but the earlier protectionist policy has left a small group of foreign owned firms which engage in import substitution. Inward oriented FDI has been limited by the small size of the domestic market.

Despite this overwhelming export orientation, it is not necessarily the case that foreign projects contribute positively to the balance of payments of the host country. The propensity of foreign firms to import and the payment of returns to foreign capital may be important and we must consider what the situation would have been without FDI. The formal models constructed to express these effects at the firm level showed an enormous diversity of results - within as well as between sectors. This emphasises the wisdom of analysis on a case by case basis when considering suitability for grant aid. The results varied according to the alternative

position assumed, but taking the view that the correct alternative is no project, positive results outnumbered negative results by just under 2 : 1. On this basis FDI has contributed positively to the external balance - but this contribution could have been much greater had a more careful project selection procedure been followed.

(6) Control and policy effects

When foreign owned firms constitute an important part of domestic industrial structure, host Governments frequently fear a loss of control of the domestic economy. Two main dangers are feared. Firstly that foreign owned firms will be unresponsive to host Government policy so that additional 'persuasion costs' will be imposed on the host Government. Secondly, there is the danger that the source country Government will interfere in economic policy through the agency of the subsidiary.

The organisation of the MNE is felt to exacerbate this control problem. As shown above, functional speculation makes the MNE in many cases akin to a network, part of which cannot function effectively in seperation from the whole. In some cases, the concentration of key parts of the enterprise in the source country allows the subsidiary little freedom of action. Such a view is based on an idealtype of the MNE, which does not fit all cases. However, many restrictions can be, and are, placed

on the Irish subsidiary by the parent. Export restriction clauses may prevent the subsidiary from servicing all those markets which it is capable of reaching, dual loyalties may affect the decision makers and the subsidiary may be an agent of the extraterritorial application of source country laws and practices. MNEs can also avoid host country policies by access to the facilities of their parent. For example, host monetary policy can be avoided by a transfer of funds within the MNE and by transfer pricing of intermediate goods and services. A new source of uncertainty may thus be attached to the policy decisions of host countries.

These sources of power are potential rather than overt. It is difficult to find examples of such practices by MNEs in Ireland - but this is not surprising as use would be covert. On the other hand, there are indications of the responsiveness of subsidiaries to Government policy - regional incentives are a good example. There have been occasions of threats of closure by certain foreign owned subsidiaries and although such threats are not unknown by national firms, the footloose nature of MNE subsidiaries makes this more potent.

It has been suggested, by Raymond Vernon amongst others, that fears of loss of control to foreign firms can be reduced by the establishment of joint ventures. This involves a trade off between the commitment of

domestic capital and the amount of real control gained (this may be illusory, especially if technology remains under foreign control). In addition an extra degree of instability may be injected - a fact reflected by the greater failure rate of joint venture projects.

In the rush to attract FDI to Ireland, there has been little attempt to evaluate the impact of foreign control on policy making and execution. Up to the present, there has been little conflict, for policies which favour FDI have been seen by the host Government as optimal for the Irish development. The extent of the control of foreign investors will be seen only if there is a radical change of Government policy.

Section 3: Overall assessment of the effects of FDI on the Irish economy and policy conclusions

(i) The means of assessment of FDI

A main theme of this thesis has been that a formalised cost benefit appraisal should be applied to prospective foreign (and Irish) projects wishing to receive grant aid. The criteria applied by the IDA are designed to ensure viability but they also include some social benefit valuations. Emphasis is also given to employment creation. The IDA criteria can be listed as follows: (1) the market for the product must be an expanding one, (2) long term stability (a low risk of technological obsolescense), (3) a high male content in total employment, (4) high value added when the full impact of the project on national income is accounted for, (5) ease of exportability, (6) low capital requirement per job created or good links with the rest of the economy.[1] Such criteria, coupled with a list of 'priority areas' allow a very large range of projects to qualify for grant aid. In fact, those projects which have been refused grants are usually turned down on grounds of 'weak finance' or 'lack of adequate marketing facilities' - features relating mainly to the parent firm rather than to the prospective Irish subsidiary.

A more formal set of criteria, with a coherent decision rule, are necessary in order to ensure that the gain from the project outweighs the costs. Further it

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should ensure that all the gains are not appropriated by the foreign investor. Two possible methods of analysis to ensure this were utilised in Chapter VII. Analyses of this type can be carried out with the information available to the IDA on an a priori basis. Changing policy and conditions can be reflected in changing shadow prices and assumptions. Seperate employment effects need not be considered as these effects are already included and valued. The IDA are indeed now following a policy of greater selectivity in giving grant aid to foreign owned projects. This is basically correct, except that the selection process should be founded on general benefit cost criteria rather than on the selection of 'priority areas' which is a second best procedure.

Ideally, this suggestion should be tied together with a change in the grants scheme. Grants should be linked directly to the net benefit of the project to Ireland. Thus the locational differential should be subsiemed within a sliding scale of grant aid. In addition, grant aid should be made contingent on the completion of the project as presented to the IDA, a procedure which is implemented in France.

Finally, more information on foreign projects should be made available to the IDA and to policy makers. Disclosure of annual records by firms in receipt of grant aid should be obligatory and more analysis of such

projects should be available to policy makers in the IDA and in Government. An ongoing review of the efficiency of FDI in achieving Governmental targets should be an essential part of policy. Such a review could keep in balance the degree of dependence on FDI and the increasing strength of the domestic sector so as to allow the latter to increase in importance.

(2) The effect of FDI on real income and growth potential

The results of the cost benefit analyses of foreign projects shows a great variability of results, as perhaps would be expected. Aggregation from the firm level to the foreign sector as a whole is difficult but it appears that the overall effect can be described as beneficial, although not outstandingly so. Table 8.1 is a schematic presentation of costs and benefits, both direct and indirect.

Table 8.1 Schematic presentation of costs and benefits of FDI in Ireland

	BENEFITS	COSTS
DIRECT	Wages of foreign enterprises	Displacement of domestic projects+
	Taxes paid	Outflow of funds
	Profits to Irish sources	Subsidies
	Price decreases +	Competition for resources with domestic sector
		Price increases (transfer prices)
INDIRECT	Demonstration effects	Pollution and environmental costs
	Spinoff including training	Loss of control of domestic economy
	Linkage effects	Technological costs
	Balance of payments improvement	Distortion of Income Distribution
	Technological and skill transfer	
	Regional distribution of income	

+ Notional only

An increase in real income for the host country can come about only by the non-appropriation of all the benefits of investment by the foreign investor. This has occured in Ireland in four main areas. Firstly, employment has been increased (over the alternative position). Secondly, transmission effects to the domestic sector has occured in various forms: linkage and demonstration effects, secondary employment creation, profits to joint venture partners and a small tax payment element. Thirdly, the operations of foreign firms have gone some way to reducing regional income disparities. Finally, the overall beneficial effects on the balance of payments have averted costly reallocation problems. Other possible benefits - notably price decreases - have been minimised because of the export orientation of foreign projects.

There have been significant costs imposed also. The domestic sector has been squeezed by its inability to compete for score resources in certain limited crucial areas - skilled labour and capital in particular. Although actual displacement of domestic projects by foreign ones has been adjudged to be small. A useful addition to policy would be a scheme to identify and help indigenous firms in such cases. Other major costs are the obvious ones - the outflow of funds in respect of FDI (dividends and royalties) and the cost of subsidies. An increase in prices due to transfer pricing of inter-mediate goods with the MNE may have affected Ireland's

import bell and tax revenues to some extent. Indirect costs arise from pollution, widening of the distribution of income when higher wages and salaries are involved and technological costs. The possible political costs of loss of control must also be included.

The cost benefit analyses, carried out by valuing as many of the above effects as possible, showed a positive contribution to real income on the assumption that a straightforward summation of individual projects is a true guide. This result occured because the major gain was wages paid to workers who would otherwise be unemployed or underemployed and this gain outweighed direct costs which were mainly subsidies plus the outflow of funds. The extra weighting applied to exports also contributed to this result.

Several provisos must be added. Despite an overall contribution to real income growth, several bad foreign projects have been accepted for grant aid. This applies to some which have failed but also to many live projects which cannot be justified on a cost benefit test. Whatever the net gains have been, they would have been greater had such projects been rejected at the outset. Some would not have given a negative result had the grant been contingent on achieving projected results, as suggested above. Others, even at full output, are a net cost to the economy and these are the ones which must be rejected when they apply for a grant.

Secondly, the permanence of the foreign owned sector of Irish industry has not yet been proven. It has been suggested that the termination of the export tax relief scheme in 1990 will result in many foreign owned firms closing down and leaving Ireland. It is unlikely that most of the firms in Ireland have so short a time horizon, even if some other form of inducement under the EECs regional policy is not applied. Moreover, those firms with heavy fixed capital equipment would have to take a very heavy loss in leaving. An informed guess would put the proportion of firms which will close under such an eventuality at below 10%, affecting a much lower proportion of investment than this figure.

Thirdly, there are several effects of FDI which have not yet been witnessed in Ireland because of the relative newness of most investment. The most important of these effects is the outflow of dividends from Ireland. The time to achieve profitability together with a relatively high rate of reinvestment has limited outflows up to now. Reinvestment rates will probably remain high with the EEC market expanding rapidly, although the outflow of funds can certainly be expected to increase. It is unlikely that Latin American proportions will be reached for many, many years, if ever, provided that currency stability is maintained.

The effect on growth potential depends on the nature of the development of the domestic sector. Here, much more

attention must be devoted to maximising the linkage effects with the domestic sector and reducing imported inputs. Partly, this can be achieved by the domestic sector itself, in that it has in the past failed to make the most of its opportunities of selling to foreign owned firms. Some consolidation and rationalisation of the domestic sector with a programme of (Government inspired) mergers would help overcome the scale barrier and the new breed of entrepreneurs are much more aware of the opportunities of selling to foreign subsidiaries. Time, IDA pressure and more careful project selection will also help. It will however be some time before the dualism even begins to decline.

*In this sense, FDI must be viewed as a 'bridging loan' until the domestic sector can undertake self generating growth in the more open economy and in the 'modern' sectors

(3) Future development strategy

Several broad alternative strategies can be delineated for the future development of Ireland. Industrialisation can be followed by continued reliance on foreign investment, with possible dangers of dependence, over capital intensive industries and large outflows of funds. Alternatively, industralisation can be pursued by reliance on domestic resources, with either the private sector or public enterprise being

given the leading role.+

Sole reliance on the domestic sector has problems: the historical record is against the success of a strategy based on domestic private industry alone. Moreover, there are severe obstacles in the way of obtaining technology and gaining access to the large foreign markets which are necessary for efficiency. The domestic capital market is not strong enough to support demands for large scale projects and skilled labour is still at a premium. Reliance on state enterprise means expanding the range of solutions similar to Nigritin Eireann Teoranta, which has proved a most successful experiment. State undertakings have been criticised for a failure to adapt quickly and such a solution seems best suited to areas with a stable technology and an established home market rather than competition in a Europe-wide market.

+ (A final possibility - that Ireland should not attempt to industrialise further, but develop tourism and agriculture only to become the 'rest centre of Europe' has not been considered because it does not appear to reflect the wishes of the population. Such a solution also condemns Ireland to being a low income, depopulated country, dependent on tourist receipts. The real question is how best to achieve further industrialisation and how best to minimise its bad effects.)

Therefore, a mix of the three solutions is the way towards defining a strategy. FDI can be regarded as filling a gap in many areas until a domestic enterprise can be created. Much more effort should be devoted to encouraging domestic solutions and to develop a domestic structure which maximises spin-off benefits from the foreign owned sector. In many sectors, FDI will continue as the major element because the package of resources it provides are available in no other form, or at least only at a higher cost. In many areas no forseeable domestic alternatives are available in the near future. Much depends on the Governments choice of discount rate for the future - industrialisation quickly must mean FDI in many sectors, a low discount rate implies a larger domestically owned share, but slower growth. The policy of greater selectivity of foreign owned projects and a formalised assessment of net benefits means a lower foreign share than the present policy. But, this policy together with a fostering of nascent domestic firms and a strengthening of links means a more integrated domestic economy, with a fuller realisation of the potential benefits of FDI.

No future development strategy can ignore the development of the EEC. The Treaty of Accession of the Irish Republic to the EEC included a special appended protocol for the maintenance of state aids to be as effective in promoting industrial development as the present system. It seems likely that there will be no extension of the export

tax relief scheme after 1990. A review of state aids within the Community is likely to find that this scheme contravenes Article 92 of the Treaty of Rome which states that aids should not 'distort competition'. Aids must also be transparent - that is, readily quantifiable. Until an agreement is reached on this point, the IDA can offer full relief until 1990 and all projects already accepted under the scheme will be allowed relief until the completion date. A full review of regional aids is at present underway. Limits on state aids were imposed on 'central areas' in 1971. Ireland has been designated as a less developed'peripheral' area and will be able to give larger incentives to attract industry. Help will be forthcoming in the form of Community funds such as European Investment Bank loans (loans and loan guarantees, for the provision of infrastructure and direct aid to industrial enterprises), the European Interest Rebate Fund (designed to cushion repayment on loans financed by the Community), cash grants for the provision of jobs and access to the European social fund, which provides for retraining and resettlement grants.

The development strategy which Ireland is likely to chose, will therefore be moulded within a European system. It will be to Ireland's benefit if the Community can prevent countries competing against each other to attract subsidiaries of MNEs. The EEC is unlikely to severely curtail the incentive scheme, although it is likely to be changed and the export tax relief system

replaced by a more transparent aid. Being part of a wide European Market has been of tremendous value to Ireland's development strategy, and will continue to be so.

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B.N.L.Q.R.	= Banca Nazionale del Lavoro Quarterly Review.
B.O.U.I.S.	= Bulletin of the Oxford University Institute of Statistics and Economics.
B.R.	= Business Ratios.
C.J.E.	= Canadian Journal of Economics.
C.J.W.B.	= Columbia Journal of World Business.
E.D.C.C.	= Economic Development and Cultural Change.
E.J.	= Economic Journal.
E.R.	= Economic Record.
E.S.R.	= Economic and Social Review, Dublin.
I.E.P.	= International Economic Papers.
J.D.S.	= Journal of Development Studies.
J.E.L.	= Journal of Economic Literature.
J.I.B.S.	= Journal of International Business Studies.
J.P.E.	= Journal of Political Economy.
J.S.S.I.S.I.	= Journal of Statistical and Social Inquiry Society of Ireland.
O.E.P.	= Oxford Economic Papers.
O.J.E.	= Quarterly Journal of Economics
R.D.P.I.I.	= Reading Discussion Papers in International Investment and Business Studies.
R.E.A.S.	= Review of Economics and Statistics.
S.E.J.	= Southern Economic Journal.
S.J.P.E.	= Scottish Journal of Political Economy.

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