

**ASPECTS OF FOREIGN DIRECT INVESTMENT IN IRISH
MANUFACTURING SINCE 1973: POLICY AND PERFORMANCE**

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1. INTRODUCTION

Any careful comparison of the Irish economy with other economies in the European Union (EU) immediately focuses on two key features of Ireland's pattern of industrial development: the enormous significance of foreign direct investment (FDI) and the very high export ratios in the Irish manufacturing sector, especially among foreign-owned companies.¹ These two features have not developed by accident, but are directly related to the industrial strategy which Ireland has pursued over the past forty years, namely, of promoting export-led-growth in Irish manufacturing through various incentives and of encouraging foreign companies to establish manufacturing plants in Ireland, producing specifically for export markets.

This paper has been written as part of a comprehensive study of foreign direct investment in Ireland currently being undertaken by the authors. The purpose of the paper is to present an overview of what has happened to FDI and foreign-owned companies in the Irish manufacturing sector since 1973, focusing on the employment performance in foreign and indigenous firms and capital expenditures by foreign firms in Ireland.² In some sense the paper can be seen as following on from the paper by Dermot McAleese (1972) to this Society in 1972, and it is also related to other papers presented to the Society over the past two decades.³ While the focus of this paper is foreign-owned firms, indigenous firms are included in part of the analysis in order to establish a benchmark against which we can assess the development in

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foreign-owned firms. However, in contrasting indigenous and foreign firms we have to keep in mind one important issue. Traditionally most FDI in Ireland has been “greenfield”, i.e., completely new investments by foreign companies. In recent years the pattern has been more varied - new foreign companies taking over existing foreign companies, and, of particular significance in the context of this paper, foreign companies taking over Irish companies, which leads to a reclassification of these companies as foreign-owned. Ruane and McGibney (1991) give some well-known examples of recent take-overs of Irish firms by foreign companies, such as Irish Distillers, Murphy’s Brewery and Maguire and Paterson. In the analysis in this paper, these companies are treated as foreign companies.⁴

The paper deals solely with the manufacturing sector. In particular, we do not analyse foreign investment in service activities, while recognising both that foreign direct investment in services in the EU has been increasing rapidly over the last decade and that rapid growth is likely to continue in the light of the technology- and market-driven globalisation of services and the reduction of barriers to service trade, as discussed briefly in Ruane and Görg (1996).⁵ In the context of the manufacturing sector we assess the development of foreign-owned industries in Ireland by focusing on the employment performance, using the *Forfás Employment Survey* data. There are several reasons for adopting this approach, the most important of which is that this is the only Irish data series which allows us to cover the whole period since Ireland joined the European Community. It also coincides with the period for which data on US capital expenditures in Ireland are available.

A consequence of taking this longer period is that we do not make use of various other measures of foreign activity such as value added, sales, or inputs purchased in Ireland, as contained in the *Forfás Irish Economy Expenditure Survey*, which only became available in the mid 1980s. While there are limitations to the use of employment data as a measure of activity, it does allow us to avoid the issue of transfer pricing which would be relevant in any analysis of output-based figures.⁶ Furthermore, we do not consider other potential benefits arising from foreign investment, such as, backward linkages through purchases by foreign companies of Irish-produced inputs,⁷ nor do we attempt to examine the costs and benefits arising from foreign investment in Ireland, or measures such as cost-per-job.

In order to give an overview of the present significance of foreign companies in Irish manufacturing, we use Census of Industrial Production data produced by the Central Statistics Office (CSO). The latest year for which data (still preliminary and subject to revision) are available is 1993. Table 1.1 shows the decomposition of net output in manufacturing by major sector and some specific sub-sector categories⁸ and by ownership, distinguishing Irish-owned and foreign-owned companies. Net Output is chosen as the standard measure of value-added, and hence of economic activity in the sector, although, in the Irish case, it can be argued that these data over-state the significance of the value-added of foreign-owned companies.⁹

Table 1.1 Net Output by Sector and Nationality, 1993

Industrial sector	Irish-owned (£ 000)	% of Irish	Foreign-owned (£ 000)	% of Foreign-owned	Total (£ 000)	% of Total	Foreign as share of Total
Food, Drink and Tobacco	1,534,872	41.6	1,694,361	21.2	3,229,233	27.6	52.5
Textiles	72,454	2.0	125,850	1.6	198,304	1.7	63.5
Clothing and Footwear	106,396	2.9	63,060	0.8	169,456	1.5	37.2
Wood and Wood Prod.	72,940	2.0	23,036	0.3	95,976	0.8	24.0
Paper and Printing	534,973	14.5	830,663	10.4	1,365,636	11.7	60.8
Chemicals	152,359	4.1	2,502,757	31.3	2,655,116	22.7	94.3
Non-metallic Minerals	298,724	8.1	55,518	0.7	354,242	3.0	15.7
Metals and Engineering	653,391	17.7	2,355,017	29.5	3,008,408	25.7	78.3
of which:							
- Electric & Electronic	116,030	3.1	1,380,990	17.3	1,497,020	12.8	92.2
- Instruments	56,066	1.5	502,072	6.3	558,138	4.8	90.0
- Transport Equipment	145,196	3.9	63,923	0.8	209,119	1.8	30.6
- Other	336,099	9.1	408,032	5.1	744,131	6.4	54.8
Miscellaneous	262,300	7.1	345,315	4.3	607,615	5.2	56.8
Total Manufacturing	3,688,409	100.0	7,995,577	100.0	11,683,986	100.0	68.4

Source: Central Statistics Office (preliminary data)

Over two thirds of total net output in 1993 was accounted for by foreign-owned companies - a percentage which clearly indicates the significance of FDI in Irish manufacturing, even allowing for some overstatement of real net output.¹⁰ This percentage has risen steadily since the early 1980s - it was 58.1 per cent in 1983, the first year for which these data are available.¹¹ Most of this increase is due to higher levels of investment by foreign companies (new and existing) in Ireland, though some small part of it at least is due to some take-overs of existing Irish companies by foreign companies, resulting in the reclassification of these companies as foreign, as discussed above.

As might be expected, both because of differences in the degree of international mobility of investment in different sectors and because of the way in which policy is

implemented, the share of total net output generated by foreign-owned companies varies quite considerably by sub-sector. Looking across sectors, we find that this share ranges from less than 20 per cent in Non-metallic Minerals to over 90 per cent in Chemicals and in the *high-tech* sub-categories of Metals & Engineering, namely, Electrical & Electronic and Instruments. To the extent that net output can be used as a measure of real economic activity, we can say that FDI in Ireland is relatively concentrated in these so-called *high-tech* sectors, which account for 55 per cent of the net output produced by all of the foreign companies in the Irish manufacturing sector. Comparison of the sub-sectoral patterns for the foreign-owned and Irish-owned companies indicates that, as would be expected, the indigenous pattern is generally more evenly spread across sectors, apart from a significant and understandable concentration in Food, Drink and Tobacco. The overall composition of net output in manufacturing in Ireland thus reflects the combination of sectorally-diffuse indigenous manufacturing companies and relatively more sectorally-concentrated foreign companies.¹²

Table 1.2 shows the export ratios for foreign-owned and indigenous manufacturing companies by broad industrial sector. As might be expected, foreign-owned firms have considerably higher export ratios than indigenous firms, indicating that they locate in Ireland primarily to serve foreign (export) markets. Almost 90 per cent of the gross output of foreign firms is exported, a percentage that is around two and a half times the comparable figure for indigenous firms. Note that the export ratios in foreign-owned companies are close to 90 per cent in most of the manufacturing sectors; only companies in the Food, Drink & Tobacco, Non-metallic Minerals and Miscellaneous (i.e., traditional manufacturing) sectors appear to serve the local market to any great extent, having export ratios of around 67 to 75 per cent. As regards indigenous industries, while the export ratios on average are considerably lower than in foreign-owned companies, one of the *high-tech* sub-sectors, namely Instruments, has an export ratio of 80 per cent. Also, the other *high-tech* sub-sector Electric & Electronic has a relatively high export ratio (in the sectoral comparison) with almost 50 per cent of gross output being exported. (This suggests that Irish-owned *high-tech* companies also export to the international market, albeit to a lesser extent than foreign-owned firms in the same sector.) The export ratio for the indigenous Chemicals sector seems lower than one would expect, given the ratio for the foreign-owned sector. However, it is in the Pharmaceuticals sub-sector that one would expect the high export ratio, and as we shall see below, this accounts for a much smaller proportion of the indigenous Chemicals sector than it does of the foreign-owned Chemicals sector. Unfortunately, the data do not allow us to analyse the export ratios at this level of disaggregation.

Table 1.2 Export Performance by Sector and Nationality, 1993
(gross output exported in per cent of gross output)

Industrial sector	Irish-owned	Foreign-owned
Food, Drink and Tobacco	38.5	72.4
Textiles	46.2	93.0
Clothing and Footwear	46.4	89.9
Wood and Wood Products, Paper and Printing	16.1	93.2
Chemicals	26.2	96.3
Non-metallic Minerals	20.0	66.9
Metals and Engineering	48.6	86.6
of which:		
- Electric and Electronic	49.8	88.2
- Instruments	80.0	94.4
- Transport Equipment	36.3	95.2
- Other	36.1	91.1
Miscellaneous	34.2	74.6
Total Manufacturing	35.2	87.7

Source: Central Statistics Office (preliminary data)

For confidentiality reasons it is also not possible to de-compose the data at this level of sectoral disaggregation into the major nationality sub-groups. However, the larger scale of US FDI allows some further sectoral decomposition. Preliminary data made available to us by the CSO show that US companies accounted for 60 per cent of total net output in Chemicals and almost 64 per cent of net output produced by foreign companies in that sector in 1993. The corresponding statistics for US companies in the Electric & Electronic sub-sector of Metals & Engineering are 64 and 70 per cent respectively. Furthermore, exports by US companies accounted for 59 per cent of total exports by companies in the Chemicals sector while 71 per cent of exports in the Electric & Electronic sub-sector were generated by US companies. These results show that not only is FDI significant in these sectors, but that US FDI is by far the dominant player.

It is evident that FDI now accounts for a very significant component in the Irish manufacturing sector. The Irish economy has developed significantly since joining the European Community and it is clearly the case that foreign direct investment has had a considerable role to play in this process. We now turn to look at how this has occurred. In Section 2 of the paper we look at policy towards foreign investment in Ireland and how this has changed over recent years. Section 3 examines the pattern of development of foreign companies using the *Forfás Employment Survey*, which provides the only accessible record of foreign-owned companies in Ireland over the period 1973-1995. In Section 3.1 we analyse firm numbers and employment while Section 3.2 examines in more detail job gains and job losses in Irish manufacturing industries over the analysed period. The employment data are undoubtedly limited as

a measure of FDI activity as they relate only to one factor input, namely labour, and even in its case they do not distinguish between the salary levels of different employees. To the extent that there have been significant relative changes in labour productivity and average salaries in foreign-owned manufacturing companies compared with indigenous companies, this measure understates the value of FDI activities to the Irish economy.¹³ Reviewing FDI activities in Section 3, it emerges clearly that US FDI is the most significant component of FDI in Ireland. Section 4 then looks at US FDI in some detail, using US Department of Commerce Survey data.¹⁴ Finally, Section 5 summarises the results of this paper and presents some concluding remarks on the future of the policy strategy towards FDI.

Because of the desirability of linking the Irish employment survey data to the US data, we use in both Sections 3 and 4 the US data classification for manufacturing, which is close to but different from the EU NACE classification which is used by the CSO. In particular, it aggregates several sectors and has a greater decomposition of other sectors than the usual ten/eleven sector Irish classification. For example, various traditional manufacturing activities, such as ‘wood and wood products’ and ‘clothing and footwear’ are combined with the sector ‘miscellaneous’ to form a very large sector ‘other manufacturing’ in the US sectoral definition. On the other hand, the ‘metals and engineering’ sector in the Irish classification is decomposed into four sectors in the US classification, namely ‘primary and fabricated metals’, ‘machinery, except electrical’, ‘electric and electronic equipment’, and ‘transportation equipment’. Details on the relationship between the two classifications are set out in Appendix 1. The analysis in Section 3 which is based on Forfás data uses a sectoral classification which is as close to the US classification as possible. Due to the different definitions, however, the two *high-tech* electronics sectors, which are ‘machinery, except electrical’ and ‘electric and electronic equipment’ in the US classification are not exactly comparable to the ones we use in the Forfás classification, namely ‘mechanical and electrical engineering’ and ‘office machinery’. The summation of both sectors, which we refer to as the ‘two engineering sectors’ is comparable, however.

2. KEY ELEMENTS IN IRISH POLICY TOWARDS FOREIGN DIRECT INVESTMENT

This section contains a brief review of Irish policy towards foreign direct investment in manufacturing. It does not attempt to be comprehensive but rather attempts to describe policy in terms that shed light on the performance of FDI in Ireland over the past twenty five years.¹⁵ Current policy issues are discussed further in Section 5.

As is well documented, Irish attitudes to FDI changed dramatically in the 1950s, from being legislatively anti-FDI (through the Control of Manufactures Acts) to being positively pro-FDI.¹⁶ In the context of adopting an overall export-led-growth strategy, foreign investors were actively encouraged to establish manufacturing plants in Ireland with the specific purpose of exporting *all* of their output.¹⁷ This

change was driven by the failure of the pre-war protectionist strategy to generate a viable manufacturing sector, which in turn manifested itself in high unemployment rates in Ireland as the falling number of jobs in agriculture were not compensated for by a rising number of jobs in industry. Thus the underlying argument for pro-actively promoting FDI came from the need to generate jobs in manufacturing, especially in the economically depressed regions of the economy and hence employment has always been seen as a key indicator of the success or failure of Ireland's industrial strategy.

This pro-action took the form of giving foreign manufacturing companies generous fiscal incentives, primarily by giving a tax holiday¹⁸ on the profits from export sales, and generous financial incentives, primarily by providing grants towards the cost of the plant and machinery which would be used to produce goods for export markets.¹⁹ These grants were discretionary and available up to certain maxima, which were determined in the legislation and implemented at the discretion of the Industrial Development Authority (IDA). While the discretionary option was scarcely exercised in the 1950s and 1960s, in the sense that the maximum grant was virtually always paid out, it has had a lasting effect on industrial policy in Ireland, in that for over forty years industrial policy has always operated in a very "hands on" manner at project level.²⁰

It is worth reflecting on just how unusual Ireland's approach has been to FDI. When Ireland adopted a positive attitude to FDI in the 1950s, most of Western Europe was at best indifferent towards FDI - the idea of heavily promoting and subsidising FDI was unique to Ireland at that time.²¹ While in the 1960s some semi-developed and developing countries adopted a positive approach to FDI, their strategies were totally different to the Irish approach as these economies sought to attract FDI specifically to produce for a local market which was typically protected by high tariffs and other trade barriers.²² In addition, the extent of "hands on" intervention at project level was negligible in these countries by comparison with the approach adopted by Ireland. In effect Ireland's strategy towards FDI was developed specifically to assist the adjustment to free trade - it was intended that the employment generated in specific foreign-owned projects would offset some of the job losses which would inevitably result as a consequence of the major tariff reductions which would be necessitated by the economy's opening up to freer trade.²³ Furthermore, by linking the incentives specifically to exporting, indigenous firms were in a sense "protected" from direct competition with local FDI firms on the home market. While there was the possibility of "crowding out" of domestic firms by foreign firms in factor markets, the export bias effectively removed any possibility of "crowding out" in local product markets.

Over the 1960s and especially the 1970s, the approach taken to FDI developed rapidly. Membership of the European Economic Community (EEC) provided a major boost to Ireland's attractiveness as an investment base for export-oriented firms, especially extra-EEC firms, re-enforcing the existing policy of promoting the

economy as an export base in manufacturing. EEC membership also resulted in the removal of the pro-export incentives at the end of the 1970s, as this bias was in direct contravention of the Treaty of Rome. Thereafter tax relief was linked directly to manufacturing projects, irrespective of whether the output was sold locally or exported. Thus all firms engaged in the production of internationally tradable manufactures became eligible for grants. While the change from *export growth* to *tradables growth* reduced the export incentives for foreign-owned firms, the pattern of exporting was already well established and, as we saw in Table 1.2 above, exporting remains the driving force behind the investment of foreign-owned firms in Ireland.

While the approach adopted in the 1970s and 1980s remained broad-based, in the sense that good projects in virtually all sectors of internationally-tradable economic activity were eligible for support, the grant system became increasingly discretionary with additional resources deployed in the IDA to select potential projects.²⁴ The first stage of this process involved identifying high-growth market niches, in which projects were internationally mobile (footloose) and in which Ireland could provide a reasonably competitive base; the second stage sought to discover the strong companies in those niches which might be considering diversifying their production internationally.²⁵ The third stage required locating project executives in those countries which were seen as potential sources of such FDI projects in order to initiate contacts with the companies identified in the second stage. Finally, the fourth stage involved getting the company to visit Ireland in the context of a specific project proposal.

In the 1970s the IDA identified the electronics and pharmaceutical sectors as being the most promising areas of foreign investment projects for Ireland. Furthermore, the US was identified as the prime market source for such projects. These sectors have been heavily targeted for over twenty years, particularly in the US, and in the late 1980s and early 1990s the targeting began to yield very significant benefits. This points to the long lead time in realising the benefits of such a strategy and the continuing need to promote and support inward investment.²⁶

The fact that grant supports were flexible up to a maximum rapidly developed into a situation where policy towards FDI projects became highly discretionary and the basis of bargaining between project executives and potential investors. While project investors argued for more grants on the basis of the attractiveness of alternative international investment locations, project executives offered higher grants for greater employment potential and for specific locations within Ireland.²⁷ The increasing scale and capital intensity of projects meant that the original grant maxima became inappropriate and during the 1980s they were revised downwards, and linked specifically to a maximum grant-per-job created.²⁸ Contracts associated with grant payments now incorporate a provision whereby a component of the grant is re-payable if the company does not meet a specific schedule of employment targets.²⁹

These discretionary grants combined very effectively with the “automatic” fiscal incentives, which in turn were backed by a carefully negotiated set of double tax agreements to maximise the benefit of the tax incentives to FDI companies.³⁰ Over the years, various surveys have concluded that the tax incentives, originally the tax holiday and more recently the preferential tax rate of ten per cent on corporate income tax guaranteed up to 2010, is the most important fiscal or financial incentive encouraging manufacturing investors to locate in Ireland.³¹

Irish policy towards FDI has not changed radically since the 1950s but rather has evolved since then, as a strategy driven primarily by the use of fiscal incentives to enhance the profitability of locating in Ireland, with grants as required to achieve a particular bargaining advantage in competing against alternative international locations.³² While the emphasis remains on using employment numbers primarily to measure the benefits from FDI, in recent years additional indicators have been used to measure the gains to Ireland from FDI, viz., the quality of such employment (in terms of remuneration, skill levels, and expected sustainability), the corporate-income tax yield, and project’s planned linkages into the Irish economy (additional economic activity generated, including through technology transfer). Recognition of the importance of employment-quality and linkages has been growing steadily since the 1960s. The yield from corporate income tax has only become relevant in recent years as so many of the major manufacturing companies were eligible for full or partial tax relief until 1990. With the move to the 10 per cent rate for all companies in 1990, the yield from corporate income tax on manufacturing activities has increased significantly and it now represents a significant component of the benefit to Ireland from FDI.³³ The apparent absence of any significant capital flight following the ending of the tax holiday could, on the one hand, suggest that it was an overly generous incentive and cost the Irish tax payer dearly through the unnecessary revenue foregone over the previous three decades. On the other hand, however, one could argue that without this incentive at an early stage Ireland might not have established itself as effectively in the marketplace as it has done. A full discussion of these issues lies beyond the scope of this paper.

The various fundamental reviews of Irish industrial strategy have led to negligible changes in the approach to FDI, although they have influenced the implementation of policy particularly through the reduction in the grant maxima and the contractual linkage of grant payments and repayments to jobs as noted above.³⁴ In particular, the recent restructuring of the agencies, involving the creation of IDA Ireland, an agency focused entirely on attracting FDI to Ireland, out of the former IDA, has led to no apparent change in strategy, but rather a naturally greater focus than previously on FDI projects. In particular, the policy of seeking out internationally traded service projects appears to have accelerated in terms of importance since 1994. Indeed, it is arguable that the recent institutional change has had much more effect on policy with regards to indigenous industry than to FDI.³⁵ On the basis of the old argument that “if it ain’t broke, don’t fix it”, this continuity in strategy may well be correct for

manufacturing. We will, however, discuss some of the areas in which continuity may be either impossible or inappropriate in the near future in Section 5.

3. DEVELOPMENT OF MANUFACTURING COMPANIES SINCE 1973: FOREIGN-OWNED VS. INDIGENOUS COMPANIES

In order to look at the empirical development of foreign-owned companies in Ireland since its accession to the European Community in 1973 we analyse and compare the performance and patterns of foreign- and Irish-owned firms in this section. We include indigenous firms here to set a benchmark against which we examine the development in foreign-owned companies. The data are drawn from the *Forfás Employment Survey* which provides annual figures on the number of firms and their associated employment for broad manufacturing sectors from 1973 to 1995.³⁶ These data obviously do not permit an analysis of foreign direct investment in its strict sense, i.e., direct investment inflows from abroad and capital expenditures by foreign-owned companies in Ireland. The analysis in this section can thus be seen as addressing the consequences of FDI, by looking at their impact on the number of firms established and the number of jobs generated in foreign-owned companies, rather than FDI itself. The numbers of firms and jobs are clearly related but somewhat different indicators. Changes in the former are indicative of an expansion or contraction in enterprise numbers; changes in the latter are the product of changes in enterprise numbers and the scale of such enterprises.

3.1 Firm Numbers and Employment in Irish Manufacturing

As regards the number of firms operating in Ireland, Table 3.1 shows that there was a 30 per cent increase in the number of foreign companies in Ireland between 1973 and 1995. Despite this increase, the share of foreign relative to total firms did not change as the number of Irish-owned firms increased at the same rate; around 13 per cent of the total number of firms in Ireland were then and are now foreign-owned. However, the nationality composition of the foreign-owned companies did change quite significantly during that period. The number of US firms almost trebled over the period and the US has become the most significant source of foreign-owned firms, accounting for almost 40 per cent of all foreign firms and some 5.2 per cent of all firms in Ireland in 1995. This growth contrasts dramatically with the decline of over 50 per cent in the number of UK firms in Ireland over the period - from 312 to 137. While the UK was the most important foreign country investing in 1973, this position has now been taken over by the US. Despite the decline in UK firm numbers, there are still more EU foreign-owned firms based in Ireland than US firms, the gain in mainland EU firms (124) making up much of the decline in UK firms (175). Firms from other non-EU countries although more than doubling in number between 1973 and 1995 accounted for less than one per cent of total firms in 1995.³⁷

These changes are not surprising given the impact of the Anglo-Irish Free Trade Area Agreement and the integration towards other EU countries following Ireland's accession to the European Union. The growing significance of US firms is also not surprising since the EU has become an increasingly attractive base for US companies. The sources of its increased attraction to US companies included its larger market after the accession of the UK, Ireland and Denmark in 1973, and the subsequent further enlargements and integration of national markets towards one EU market. Within the EU, Ireland and the UK are very attractive locations for US investors because of relatively low labour costs, highly skilled workforces, favourable investment incentives and the common language.³⁸

Table 3.1 Number of firms and total employment by nationality, 1973-1995

Nationality	1973				1995			
	Firms	% of total	Employment	% of total	Firms	% of total	Employment	% of total
Ireland	4,123	86.8	152,553	66.6	5,307	86.7	117,826	55.2
UK	312	6.6	32,227	14.1	137	2.2	12,260	5.7
Germany	63	1.3	5,623	2.5	125	2.0	9,799	4.6
Other EU	115	2.4	18,119	7.9	177	2.9	13,989	6.6
US	116	2.4	17,793	7.8	319	5.2	52,047	24.4
Other non-EU	21	0.4	2,894	1.3	56	0.9	7,611	3.6
Total	627	13.2	76,656	33.4	814	13.3	95,706	44.8
Foreign								
Total	4,750	100.0	229,209	100.0	6,121	100.0	213,532	100.0

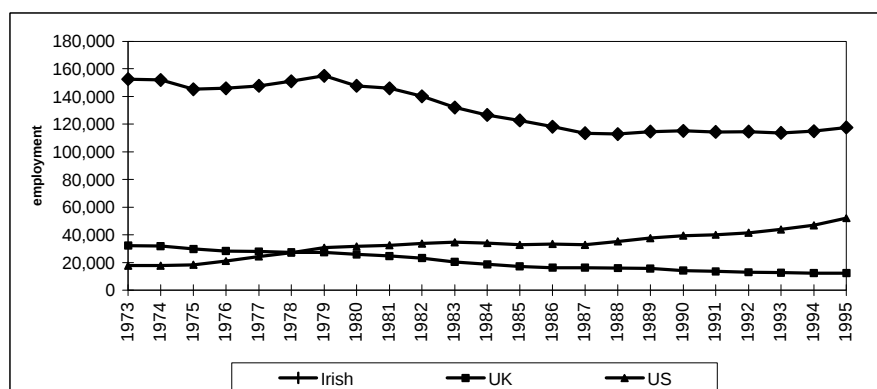
Source: Own estimates derived from Forfás Employment Survey data bank

Table 3.1 also shows employment recorded in Irish- and foreign-owned firms in the years 1973 and 1995 which allows a nationality comparison of changes in employment shares. While employment in Irish-owned firms decreased by around 23 per cent, employment in foreign-owned companies increased by almost 25 per cent over the period and accounted for some 44.8 per cent of total employment in 1995; this growth translates into an increase of more than 11 percentage points over its share in 1973. Figure 3.1 complements this picture showing total employment in firms by nationality over the period 1973 to 1995. Note that total employment in the manufacturing sector decreased by around 15,600, or roughly 6 per cent, over that period. While this is a significant decline in absolute terms, it is an exceptionally good result in comparison with the EU as a whole, where manufacturing employment decreased by some 25 per cent between 1973 and 1995 (see European Commission, 1996, p. 28).

The decline in Irish manufacturing employment is generated by two opposing trends: a decline of 23 per cent in employment in Irish-owned firms (from some 152,500 to 117,800) and an increase of 25 per cent in employment in foreign-owned companies (from around 76,700 to 95,700 over the same period).³⁹ As Figure 3.1 indicates, the pattern was not constant over the period. In particular, employment in Irish-owned firms, having experienced an expansion in the period 1975 to 1979, suffered a dramatic decline between 1979 and 1988, when employment sunk from 155,100 to 112,900, i.e., by more than 40,000 jobs net over a decade.⁴⁰ This decline was very substantial but perhaps not surprising in the context of (i) the knock-on effects of the reduction in tariffs, which no longer protected older Irish industrial firms from greater competitiveness on world markets, and the emergence of new low cost producers; (ii) increasing global use of new labour-saving technologies; and (iii) domestic fiscal policy which had a detrimental effect on industrial costs. Since 1988, employment in indigenous manufacturing companies has increased by 4.3 per cent to its 1995 level of 117,800.

In the case of foreign-owned firms we see a contrary development for employment in UK-owned and all other foreign firms, especially US firms. Employment in UK-owned firms in Ireland declined steadily during the period 1973 to 1995 by over 60 per cent, from around 32,200 to 12,300; this decline was in the same direction as but much more severe than that experienced by Irish-owned firms.⁴¹ Employment in non-UK foreign companies increased by some 39,000 jobs in the period, most of which was accounted for by the growth in employment in US firms which increased from around 17,800 to 52,000; much of this increase occurred in the period since 1987. This recent surge in employment in non-EU firms may be attributable to several factors, most notably the expectation of the completion of the European Single Market, and consequently a larger EU market by the end of 1992.

Figure 3.1 Employment by nationality, 1973-1995



Source: Own estimates derived from Forfás Employment Survey data

In the analysis of firm numbers and employment we found that, with the exception of the US, the growth in the number of firms was linked to a lower rate of increase or a decline in employment over the same period. This obviously implies that the average firm size (measured in terms of employment) declined over that period, which is confirmed in Table 3.2. The most significant reduction is found in the ‘other EU’ category, where the average firm size sank from 157.6 to 79.0 employees, but there was also a significant reduction in the average size of UK and German-owned firms. This experience is in line with a general process of “down-sizing” or “correct-sizing” of employment in companies, due to competitive pressures on the one hand and efforts to increase labour productivity through new technologies on the other hand. By contrast, US firm size increased from 153.4 to 163.2 employees per firm, which suggests an increase in the scale of US operations and an increasing commitment towards the EU market.⁴²

In terms of employment the average firm size of Irish-owned companies is considerably smaller than that of the average foreign-owned firm.⁴³ One would always expect foreign firms to be larger than indigenous establishments since foreign firms have to reach a minimum efficient scale (MES) in order to be able to produce profitably abroad. Small firms will not generally find it profitable to locate abroad due to the additional costs that are inherent in foreign production compared to production in the home country, an argument that was discussed extensively by Hymer (1976). Furthermore, the average for Irish-owned firms is brought down by the large number of small Irish-owned firms. In order to have a more meaningful comparison one ought to examine foreign- and those Irish-owned firms which exceed an appropriately set threshold size.⁴⁴ Unfortunately, the data and time available to us did not allow for a more detailed investigation of this issue.

Table 3.2 Average firm size by nationality (employment per firm)

Nationality	1973	1995
Ireland	37.0	22.2
UK	103.3	89.5
Germany	89.3	78.4
Other EU	157.6	79.0
US	153.4	163.2
Other non-EU	137.8	135.9
Total Foreign	122.3	117.6

Source: Own estimates derived from Forfás Employment Survey data

Table 3.3 gives a sectoral breakdown of the number of Irish and foreign-owned firms, using a sectoral classification as close as possible to the US sectoral classification.⁴⁵ While Ruane and McGibney (1991) point out that it “is commonly thought that the ‘modern’ sector of Irish industry is associated with considerable

foreign involvement [...] while the ‘traditional’ sector is mostly Irish” (p. 68), our results not only confirm their finding of “a significant presence of foreign firms in all and not simply the ‘modern’ sector” (p. 68) in 1990 but suggest that the ‘sectoral -owned and indigenous firms is narrowing. Note that the presence of foreign-owned companies increased particularly in the *high-tech* sectors, viz., in the chemicals, mechanical and electrical engineering, and office machinery sectors. The latter two, referred to in the remainder of the analysis as the two engineering sectors, accounted for 26.4 per cent of the total number of foreign-owned firms in 1995. The actual number of firms in these two sectors increased more than three-fold over the period, from 69 to 215, while the number of foreign-owned firms in the chemicals sector nearly doubled over the same period. On the other hand, the number of firms in the food and the other manufacturing (which contains traditional sub-sectors such as clothing and footwear, etc.) sectors actually declined between 1973 and 1995.

Table 3.3 Number of firms by sector, Irish vs. foreign-owned

	1973				1995			
	Irish	% of total	Foreign -owned	% of total	Irish	% of total	Foreign -owned	% of total
Industrial sector								
Food and kindred products	947	23.0	92	14.7	923	17.4	75	9.2
Chemicals and allied products	101	2.4	66	10.5	158	3.0	127	15.6
- <i>Pharmaceuticals</i>	17	0.4	47	7.5	27	0.5	59	7.2
Primary and fabricated metals	512	12.4	71	11.3	710	13.4	64	7.9
Mechanical and electrical engineering	209	5.1	63	10.0	527	9.9	148	18.2
Office machinery	7	0.2	6	1.0	84	1.6	67	8.2
Transportation equipment	151	3.7	30	4.8	161	3.0	52	6.4
Other manufacturing	2,196	53.3	299	47.7	2,744	51.7	281	34.5
Total Manufacturing	4,123	100.0	627	100.0	5,307	100.0	814	100.0

Source: Own estimates derived from Forfás Employment Survey data

The number of Irish-owned firms in the food sector also declined slightly, leading to a decrease of the percentage share of firms in that sector, while the number of firms in the chemical and engineering industries increased over the same period. In particular, the number of indigenous firms in the engineering sectors almost trebled between 1973 and 1995 (from 216 to 611), leading to an increase in the share of Irish-owned firms in these sectors from 5.3 to 11.5 per cent approximately.⁴⁶ It is possible that these Irish-owned engineering firms have benefited from the favourable

environment for high-technology companies in Ireland and also from spill-overs from foreign-owned firms in the same sector.⁴⁷ Other evidence suggests that some of the indigenous engineering firms are engaged in sub-supply, especially to foreign firms; this is the type of backward linkage between foreign firms and indigenous suppliers which has been promoted by the agencies.⁴⁸ However, a full interpretation of this phenomenon would require more analysis and is not possible with the data used. In general, the analysed data support the notion that a process of industrial restructuring has taken place in the Irish economy, away from the traditionally important food sector (including beverages) towards high-technology sectors, and *this is the case for both foreign- and Irish-owned firms*.⁴⁹

This process of industrial restructuring and the trend towards sectoral convergence of Irish and foreign-owned industries is also apparent in the analysis of employment data in Table 3.4, which complements the analysis of company numbers. The outcomes would not be expected to coincide because of the huge differences in firm sizes across different nationalities (as discussed above) which are not taken into consideration when looking at firm numbers only.⁵⁰ We look at the sectoral breakdown in the context of total employment in foreign-owned companies increasing by almost 20,000 between 1973 and 1995, and employment in Irish-owned companies decreasing by some 34,700 over the same period. We note that employment in foreign companies rose particularly in chemicals and engineering. In the former sector, employment more than doubled to reach some 13,100 in 1995, while employment in the two engineering sectors increased almost four-fold, reaching 30,300 jobs in the same year. This analysis and the above discussion of firm numbers suggest that the focus of industrial policy towards *high-tech* sectors (as discussed in Section 2) has contributed positively to the shift of manufacturing towards these sectors. Employment in foreign companies in the remaining sectors declined considerably between 1973 and 1995. As we will discuss in more detail below, much of this decline in employment was driven by huge net job reductions in UK-owned firms, especially in the food sector.

Employment in indigenous companies shows a trend similar to that in foreign-owned firms, especially with employment in the engineering sectors increasing by roughly 45.1 per cent from 8,200 to 11,900 during a period when overall employment in Irish-owned firms was falling. While the share of employment in chemicals rose modestly between 1973 and 1995, there was an absolute decline in employment of 19.1 per cent.

Restructuring is evident from the fact that within the chemicals sector, employment in the pharmaceuticals sub-sector increased from around 700 to almost 1,200 jobs between 1973 and 1995.⁵¹ Considering that total employment in Irish-owned firms decreased significantly during this period (as already pointed out in Table 3.1) the employment increase in these *high-tech* activities again underlines the process of

restructuring throughout manufacturing industries in the indigenous sector especially out of the traditional sectors.

Table 3.4 Employment by sector, Irish and foreign-owned

	1973				1995			
	Irish	% of total	Foreign -owned	% of total	Irish	% of total	Foreign -owned	% of total
Industrial sector								
Food and kindred products	43,843	28.7	16,166	21.1	33,787	28.7	11,005	11.5
Chemicals and allied products	4,645	3.0	5,642	7.4	3,759	3.2	13,118	13.7
Pharmaceuticals	690	0.5	3,925	5.1	1,188	1.0	4,852	5.1
Primary and fabricated metals	12,861	8.4	7,526	9.8	12,695	10.8	3,784	4.0
Mechanical and electrical engineering	8,063	5.3	6,913	9.0	10,464	8.9	21,194	22.1
Office machinery	166	0.1	680	0.9	1,437	1.2	9,146	9.6
Transportation equipment	4,474	2.9	8,315	10.8	5,114	4.3	7,816	8.2
Other manufacturing	78,501	51.5	31,414	41.0	50,570	42.9	29,643	31.0
Total Manufacturing	152,553	100.0	76,656	100.0	117,826	100.0	95,706	100.0

Source: Own estimates derived from Forfás Employment Survey data

3.2 Job Gains and Losses in Irish Manufacturing

The previous sub-section looked at firm numbers and employment figures and compared the situation in 1973 with 1995. Such an analysis provided us with a good snap-shot at particular points of time and allowed us to focus on the extent of structural change that has taken place between those two benchmark years. However, it cannot reflect the full extent of changes taking place within particular sectors over the period between the two benchmark years. We now turn to look at the job gains and losses in foreign-owned and indigenous companies in Table 3.5 in order to shed some light on the dynamics of change that resulted in fairly similar employment figures for 1995 and 1973. Job gains include all new jobs generated between 1973 and 1995 (whether or not they still existed in 1995) while job losses denote all redundancies (including redundancies in newly-established firms) during the same period.⁵²

The large numbers of job gains (398,300) and losses (414,000) in Table 3.5 indicate considerable activity of job creation and destruction taking place in the economy which is not reflected in the net figure of 15,700 net job reductions between 1973 and 1995. It is evident from the table that job gains and losses were not uniform across manufacturing sectors. Even in sectors where there were significant net gains,

there were also job losses, as, for example, in foreign-owned firms (and to some extent in indigenous firms) in *high-tech* sectors, while in sectors with significant net reductions in jobs over the period, job gains also occurred (for example, in indigenous and foreign firms in the food and other manufacturing sectors). While this indicates again the restructuring in the Irish economy out of the other manufacturing sector (which includes many traditional sub-sectors), the figures suggest that this is not a straightforward process; rather the process is one of gradual adjustment with new jobs being generated and lost in the sectors into and out of which Ireland is specialising.

Table 3.6 examines the performance in foreign-owned firms in more detail, distinguished by nationality. This distinction is important because factors influencing the decisions of foreign firms can be assumed to differ for companies based in different countries. As already indicated above, the net reduction of employment in foreign-owned companies in the food sector is primarily due to a net job reduction of about 4,300 jobs in UK-owned firms in that sector. Over half of the job losses in the foreign-owned food sector were in UK companies. On the other hand, the positive performance of foreign firms in the engineering sectors is mainly due to a net increase of 17,500 jobs in US companies in those sectors, which accounted for nearly two thirds of job gains in these two sectors.

Looking more closely at the performance by nationality, we introduce two indicators to compare the employment performance for different nationalities, which are also shown at the bottom of Table 3.6. First, we express job gains relative to the employment base in 1973 (i.e., $\text{gross gains } 1973-95 \div \text{employment in } 1973$) and second, we express the net job change relative to job gains (i.e. $\text{net gains } 1973-95 \div \text{gross gains } 1973-95$). The former measure allows us to benchmark the extent of job creation across countries that, as apparent from Table 3.1, started from very different employment bases in 1973. The second measure can yield some insights into the relationship between gross and net job creation, although this measure is *not* an indicator of job sustainability - such a measure would require calculation of survival rates of jobs, as used in Ruane and McGibney (1991) or as further refined in Killen and Ruane (1993).⁵³

Table 3.5 Job gains and losses in Irish and foreign-owned firms by sector, 1973-1995

Industrial sector	Irish				Foreign owned				Total	
	Gains	Losses	Net		Gains	Losses	Net		Gains	Losses
Food and kindred products	56,780	-66,836	-10,056		14,586	-19,747	-5,161		71,366	-86,583
Chemicals and allied products	5,836	-6,722	-886		16,007	-8,531	7,476		21,843	-15,253
- <i>Pharmaceuticals</i>	1,615	-1,117	498		9,177	-2,628	6,549		10,792	-3,745
Primary and fabricated metals	31,947	-32,113	-166		9,361	-13,103	-3,742		41,308	-45,216
Mechanical and electrical engineering	22,072	-19,671	2,401		33,051	-18,770	14,281		55,123	-38,441
Office machinery	3,529	-2,258	1,271		18,883	-10,417	8,466		22,412	-12,675
Transportation equipment	8,734	-8,094	640		13,201	-13,700	-499		21,935	-21,794
Other manufacturing	104,230	-132,161	-27,931		60,128	-61,899	-1,771		164,358	-194,060
Total Manufacturing	233,128	-267,855	-34,727		165,217	-146,167	19,050		398,345	-414,022

Source: Own estimates derived from Forfás Employment Survey data

Table 3.6 Job gains and losses in foreign-owned firms by sector, 1973-1995

Industrial sector	UK			Germany			EU			US			Other Non-EU		
	Gains	Losses	Net	Gains	Losses	Net	Gains	Losses	Net	Gains	Losses	Net	Gains	Losses	Net
Food and kindred products	5,352	-9,605	-4,253	638	-257	381	4,196	-6,734	-2,538	2,879	-1,592	1,287	1,521	-1,559	-38
Chemicals and allied products	2,219	-2,654	-435	997	-749	248	3,406	-1,882	1,524	8,045	-2,714	5,331	1,340	-532	808
- Pharmaceuticals	929	-427	502	556	-196	360	2,357	-636	1,721	5,228	-1,364	3,864	107	-5	102
Primary and fabricated metals	2,190	-3,370	-1,180	1,026	-1,269	-243	1,651	-3,264	-1,613	3,801	-3,894	-93	693	-1,306	-613
Mechanical and electrical engineering	1,539	-2,286	-747	4,643	-3,085	1,558	5,381	-4,647	734	18,667	-7,984	10,683	2,821	-768	2,053
Office machinery	472	-499	-27	1,282	-1,050	232	141	-105	36	14,303	-7,445	6,858	2,685	-1,318	1,367
Transportation equipment	931	-2,201	-1,270	5,654	-2,669	2,985	843	-3,126	-2,283	5,136	-5,067	69	637	-637	0
Other manufacturing	9,201	-21,256	-12,055	3,856	-4,841	-985	11,139	-11,129	10	29,335	-19,216	10,119	6,597	-5,457	1,140
Total Manufacturing	21,904	-41,871	-19,967	18,096	-13,920	4,176	26,757	-30,887	-4,130	82,166	-47,912	34,254	16,294	-11,577	4,717
1. gains/phase 1973	0.67			3.22			1.48			4.61			5.63		
2. net/gains	-0.91			0.23			-0.15			0.42			0.29		

Source: Own estimates derived from Forfic Employment Survey data

In the case of UK companies we find that the ratio of job gains to the employment base is 0.67 which is relatively low in the country comparison. It indicates that the new jobs generated by UK companies represent an increase of two-thirds compared to the base year 1973. The net job change to job gains measure is negative (-0.91) which indicates that the job losses were almost twice as high as jobs created (-1 would indicate that job losses were double the job gains). The only UK sub-sector to show a positive development with around 900 job gains and only 400 job losses was pharmaceuticals - even in the two engineering sectors job losses exceeded job gains. The significant net reductions in employment in the food and other manufacturing sectors mirrored the outcome in Irish-owned companies accounting for close to three quarters of all job losses in manufacturing.

The performance in German-owned firms shows job gains of 3.2 times the employment base in 1973 while the net jobs to job gains ratio is 0.23. These figures represent job gains in almost all sectors, except the other manufacturing and the primary and fabricated metals sectors where job losses exceed job gains. The positive net job to job gains ratio indicates that the significant job gains over the period translated into a net increase in jobs in German-owned companies since 1973. Analysing the sectoral distribution of jobs, we find that the most important sectors for job gains and net job increase were the two engineering sectors, transportation equipment and, to a lesser extent, chemicals. Again, we note a process of restructuring (as measured in terms of employment) of German FDI towards *high-tech* sectors.

Companies originating in other EU countries show a ratio of job gains to base employment of 1.48 which indicates a relatively low job generation process. Net employment change relative to job gains yields a ratio of -0.15 which shows that job losses have exceeded job gains over the period 1973-1995. However, note that the *high-tech* sectors (chemicals and engineering) have a positive net contribution to employment while net job reductions were in traditional manufacturing sectors. Combining the result for German companies and companies from other continental EU countries we find that the net employment contribution of continental EU companies has been virtually zero over the period - the positive contribution by German firms is outweighed by net reductions in firms from other EU countries. The sectoral breakdown indicates a trend towards net job creation in *high-tech* sectors and net job reductions in traditional sectors in both German companies and companies from other continental EU countries.

US-owned companies generated job gains between 1973 and 1995 which were more than four times the employment figure in 1973 (job gains to base employment ratio of 4.6). We find a net to job gains ratio of 0.42 which indicates that the significant job gains during the period translated into net job increases. Thus the growth in net employment in US firms is a combination of *both* high gross gains relative to base employment *and* high net to gross job gains. The engineering and chemicals sectors show the best ratio of net job change to job gains; in the former almost 33,000 jobs

were generated which led to a net increase of 17,500, while firms in the chemicals sector generated some 8,000 jobs which translated into 5,300 net job increases. This underlines, again, the importance of the *high-tech* sectors for the Irish economy.

Firms from other non-EU countries have the best ratio of job gains to base employment, but, admittedly, they started from the lowest base in 1973 in the country comparison. The net job to job gains ratio is positive (0.29) but not as high as for the US-owned firms. As in the case of all other foreign-owned firms, except UK firms, the most important sectors for net job gains were the *high-tech* sectors.

In total, around 165,200 jobs were generated in foreign-owned companies in Ireland between 1973 and 1995 while 146,200 job losses occurred. This shows that significant activities in terms of job creation and destruction are hidden behind the net increase of around 19,100 jobs in foreign-owned companies which was shown in Table 3.1. This has become obvious in the sectoral analysis which indicates that even in sectors with a negative net employment performance over the period (for example the food sector), a considerable number of jobs were generated which were, however, outweighed by higher job losses over the same period. This points to the importance of having policies which are aimed at sustaining as well as generating jobs.⁵⁴ It also cautions against presuming that efforts to attract additional investment can be reduced because of recent successes in attracting foreign companies to Ireland.

In summary, we find that total manufacturing employment in Ireland decreased by 6 per cent between 1973 and 1995, a modest fall when compared with a decrease of 25 per cent in manufacturing employment in the EU overall. This change is the result of a reduction of almost 23 per cent in employment in Irish-owned firms (still less than the EU average) while foreign affiliates in Ireland increased their employment by some 25 per cent over the same period. US firms in particular contributed to that increase. Foreign-owned firms are especially important in the chemicals and in the two engineering sectors (mechanical and electrical engineering and office machinery). The engineering sectors were also areas of employment growth for indigenous companies, possibly due to positive spill-overs from foreign firms and a very positive overall business environment particularly for these sectors. Examination of job gains and losses in foreign-owned firms in Ireland shows that UK firms recorded considerable job losses between 1973 and 1995 which resulted in a net reduction of some 60 per cent in employment in UK firms. By contrast, employment in US firms trebled over the period, from a combination of job gains of more than 80,000 jobs and job losses of 48,000 in the same period.

In effect there have been virtually no net gains in employment in companies from continental EU countries, while there has been a significant net loss in employment in UK companies. Companies from non-EU countries provided considerable net employment gains, of which roughly 88 per cent came from US-owned companies. The results of this section show how manufacturing industry in Ireland is

restructuring away from the traditional sectors (particularly food) and towards the *high-tech* manufacturing sectors. This is not only the case for foreign-owned firms, which is commonly presumed, but also for indigenous companies. Looking at the nationality of ownership we find similarities in the development of Irish-owned and UK-owned firms on one hand and foreign-owned firms from all other countries on the other hand. Within the other foreign companies, the US are by far the most important investing country in Ireland.

4. DEVELOPMENT OF US DIRECT INVESTMENT IN IRELAND SINCE 1973

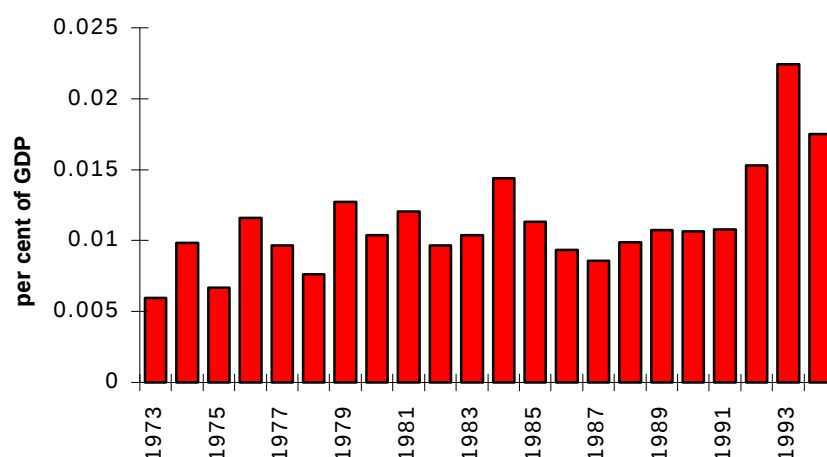
From the previous section it is evident that US firms are by far the most important foreign investors in Irish manufacturing industry, employing some 52,000 people in 319 Ireland-based US affiliates in 1995. We look at the development and the patterns of US direct investment in more detail in this section, analysing capital expenditures⁵⁵, total assets, employment and data on capital intensities and the export performance of US-owned affiliates in Ireland.

Note that capital expenditures and total assets are not equivalent to the direct investment inflows or stocks in its strict sense. “True” foreign direct investment is defined as capital transfers from the parent company to the foreign affiliate⁵⁶ while capital expenditures and total assets represent actual investment activities by the foreign affiliate only, *regardless of the source of financing of the funds invested*. For instance, multinational companies may finance their operations by taking up loans in the host economy or by using their own profits generated in the host country to fund future expenditures. In this case, it may be possible that effective foreign direct investment flows into the economy are relatively low, despite the growing presence of multinational firms. From the perspective of measuring the scale and impact of multinationals on industrial development, the actual expenditures by foreign companies in the economy may prove to be more important than the volume of foreign investment inflows, since these expenditures indicate the value of actual investment by foreign-owned companies in the economy and not only those transferred from the parent company.⁵⁷

In the comparison of patterns of capital expenditures and total assets as shown below one has to be aware of the fact that capital expenditures cover expenditures for acquisitions of tangible (physical) assets only, while total assets include all assets listed on the balance sheet, i.e., they combine tangible and intangible assets.⁵⁸ As we will discuss in more detail below, intangible assets appear to be very important in particular industries. We use data from the Bureau of Economic Analysis within the US Department of Commerce combined with employment data from the Forfás data bank, as used in the previous section. The US Department of Commerce data on capital expenditures cover the period 1973 to 1994. Data on total assets, capital intensities and exports are only available from 1983 to 1993. These data were not reported before 1983 and 1993 is the latest year for which they are available.

Figure 4.1 shows that US investment in Ireland, as measured by capital expenditures in per cent of GDP, has been very significant over the period analysed.⁵⁹ Even though the capital expenditures fluctuated from year to year, we note an overall upward trend in investment especially since 1987, which may signal the response of US firms to the European Single Market as they built up their capacities well in advance of 1993. Overall, US capital expenditures increased from an equivalent of 0.6 per cent of GDP in 1973 to 1.8 per cent in 1994, an almost three-fold overall increase. In nominal terms, capital expenditures increased from USD 41 million in 1973 to USD 925 million in 1994. The decline in capital expenditures in 1994 followed a record high in 1993 when capital expenditures by US companies were equivalent to 2.2 per cent of Irish GDP (or USD 1,061 million in absolute terms). This downturn in 1993/94 may be a sign that foreign investment in Ireland is “getting back to normal” after an outstanding high in 1993. A figure for 1995 should indicate whether Ireland faces a consolidation of US investment activity at a still very high level or if Ireland experiences a further upward (or downward) trend after the very good investment record in the late 80s and early 90s.⁶⁰

Figure 4.1 US Capital expenditures in Ireland as a % of GDP, 1973-1994



Source: Own estimates derived from US Department of Commerce data

As pointed out in Section 1, we use the sectoral classification defined by the US Department of Commerce in the sectoral analysis of US FDI. Table 4.1 indicates the change in the sectoral composition of US capital expenditures between 1973 and 1994. In 1973 chemicals was the most important sector and US companies in that sector accounted for more than 40 per cent of total US capital expenditures in Ireland. This balance has shifted in recent years towards the electric and electronic equipment sector which has become the most important sector in terms of capital expenditures since the early 1990s. These results are not surprising since these

Industrial sector	1973	1978	1983	1988	1989	1990	1991	1992	1993	1994
Food and kindred products	7.1	n.a.	6.1	7.6	6.2	4.0	6.9	19.5	4.5	2.7
Chemicals and allied products	40.5	47.1	22.2	16.1	19.6	28.6	31.6	34.7	25.2	23.2
Primary and fabricated metals	2.4	0.2	4.0	5.9	6.7	6.3	3.3	0.8	0.5	1.1
Machinery, except electrical	2.4	n.a.	20.2	25.5	26.9	14.2	23.2	12.0	8.0	7.2
Electric and electronic equipment	21.4	5.9	8.6	14.1	15.8	15.7	11.6	16.7	45.1	48.6
Transportation equipment	0.0	0.2	7.6	0.3	1.8	3.8	2.0	0.9	0.4	0.3
Other manufacturing	26.2	36.3	31.3	30.5	23.3	27.3	21.2	15.6	16.3	16.8
Total Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Note: figures for machinery and electric for 1973 are taken from 1974.</i>										
<i>n.a. = not available</i>										
<i>Source: Own estimates derived from US Department of Commerce data</i>										

sectors have been actively promoted by IDA Ireland. The significance of the growth of capital expenditures in the electric and electronic equipment sector is striking, though, as it is generally a relatively less capital-intensive sector than the chemicals sector.

The developments in the sectoral composition of US capital expenditures indicate that Ireland has been successful in attracting US electronics projects which also include US computer firms. Since the electric and electronic equipment sector can be regarded as a highly mobile (footloose) sector, it would appear that Ireland's positive performance of attracting multinationals in that sector has translated into relative advantages for the location of further foreign-owned companies in the same sector. Ireland is now in the position that many of the major US computer companies operate some kind of facility here and it is considered by those involved in promoting FDI in Ireland that the location of those companies at an early stage has attracted other companies in the same sector to locate here subsequently. Companies in the same sector can form industrial agglomerations to share a common pool of inputs, such as labour, or a common infrastructure, and the benefits arising from these agglomerations may attract new companies in the same sector to locate in Ireland.⁶¹

The data on total assets, i.e., the total capital stock, in Table 4.2 would be expected to provide a better indicator of the total scale of US investment in Ireland in particular sectors than would data on annual capital expenditures. As might be expected from the data on capital expenditures, the share of the chemical sector is very large, accounting for around 30.6 per cent of US assets in Ireland in 1993. It is, however, impossible to reconcile the figures for capital expenditures and total assets in the case of the two engineering sectors, namely, machinery and electric and electronic equipment. While the share of US capital expenditures in those sectors was 55.8 per cent in 1993, the share of total assets was 29.7 per cent. Inspection of Table 4.2 indicates a significant decline in total assets between 1989 and 1990, when total assets held by US firms fell from absolute USD 3,161 million to USD 2,496 million and a further decrease between 1991 and 1992 from USD 2,761 million to USD 2,155 million. Discussions with personnel in the US Department of Commerce and in IDA Ireland did not provide any reasonable explanation for this data phenomenon.

Also somewhat difficult to reconcile (but in the opposite direction) is the relationship between the capital expenditures and total-assets data for the food and kindred products sector. That sector is relatively unimportant in terms of capital expenditures whereas it is among the more important ones in terms of capital stock accounting for 17.6 per cent of total assets held by US companies in Ireland in 1993. This may be explicable in part, as discussed briefly above, by the fact that capital expenditures cover expenditures for tangible assets only, while total assets include both tangible and intangible assets, and the latter are likely to be significant in this particular sector.⁶²

Table 4.2 Total assets held by US manufacturing affiliates in Ireland by sector, (\$m)

Industrial sector	1983	% of total	1988	% of total	1989	% of total	1990	% of total	1991	% of total	1992	% of total	1993	% of total
Food and kindred products	612	13.7	1,581	18.1	1,188	12.6	1,318	13.2	1,708	16.8	1,997	18.0	2,148	17.6
Chemicals and allied products	1,383	31.0	2,190	25.1	2,003	21.3	2,603	26.0	2,616	25.7	3,039	27.4	3,722	30.6
Primary and fabricated metals	105	2.4	191	2.2	227	2.4	244	2.4	249	2.4	224	2.0	238	2.0
Machinery, except electrical	804	18.0	2,296	26.3	3,161	33.6	2,496	25.0	2,761	27.1	2,155	19.4	2,520	20.7
Electric and electronic equipment	228	5.1	876	10.0	825	8.8	930	9.3	692	6.8	1,180	10.6	1,094	9.0
Transportation equipment	45	1.0	60	0.7	91	1.0	90	0.9	95	0.9	100	0.9	82	0.7
Other manufacturing	1,288	28.8	1,525	17.5	1,917	20.4	2,315	23.2	2,067	20.3	2,399	21.6	2,368	19.5
Total Manufacturing	4,465	100.0	8,719	100.0	9,412	100.0	9,996	100.0	10,188	100.0	11,094	100.0	12,172	100.0

Source: Own estimates derived from US Department of Commerce data

The employment data in Table 4.3 are computed from the *Forfás Employment Survey*, and are based on a similar but not identical classification, as outlined in Section 1.⁶³ The data reflect the growing importance of the two engineering sectors (mechanical and electrical engineering and office machinery) as was apparent from the analysis of capital expenditures in Table 4.1. In 1995, some 35.6 per cent of employment in US affiliates in Ireland was in these two sectors. The chemicals sector has also remained a significant sector for jobs in US companies with around 12.2 per cent of total US employment in Ireland being in companies in that sector. Note that total employment in US affiliates increased by almost 40,000 jobs between 1973 and 1995 which was mainly due to employment growth in the two engineering sectors and the chemical sector. While employment in the former increased from roughly 2,800 to 20,300, jobs in the chemicals sector increased from 1,600 to 6,900 during that period. These results underline the importance of US-owned firms for the Irish economy in terms of employment, particularly in those sectors.

Combining data on total assets and on employment allows us to look at the capital intensity of production in US-owned affiliates across sectors.⁶⁴ Table 4.4 indicates that the Chemicals sector has a relatively high capital intensity of production compared with other sectors. Production in chemical plants is very capital intensive by its very nature; the result is therefore not surprising. Surprising at first sight, however, is the capital intensity of production in the food sector, which appears to have been even higher than in the chemicals sector in 1993.⁶⁵ These high capital intensities are due to the high total assets for firms in the food sector, as reported in Table 4.2. *A priori*, one would not expect the food sector to be particularly *physically* capital intensive suggesting that this ratio reflects the influence of intangibles in this sector, especially in the soft-drinks sub-sector, as referred to above. Note that the capital intensity of production in the electric and electronic equipment sector has risen over the period 1983 and 1993, from a capital equivalent of USD 40,000 per employee in 1983 to USD 170,000 per employee in 1993. While we have some concerns about these data, as they stand they are consistent with the growing scale of investment of US electronics companies in Ireland, especially at the more capital-intensive end of the spectrum.

In addition to the expectation that foreign companies have higher capital intensities of production than indigenous firms, another commonly-held expectation is that foreign companies are heavily export-oriented.⁶⁶ Due to the relatively small size of the Irish market one would, *a priori*, expect that US companies locate here primarily to serve foreign markets, since sales solely to the Irish market would not be profitable enough to justify the location of foreign-owned plants. Ireland's membership of the growing EU market, reinforced by the European Single Market Programme, would be expected to attract foreign companies to Ireland primarily to service the European market. In comparison with other EU countries, which would be competitors in attracting foreign firms, Ireland's advantages are particularly its relatively low labour costs, its English-speaking labour force and relatively generous tax incentives. Thus Ireland would be seen as attracting the type of investment that

Table 4.3 Employment in US manufacturing affiliates in Ireland by sector

Industrial sector	1973	% of total	1983	% of total	1988	% of total	1989	% of total	1990	% of total
Food and kindred products	742	3.9	1,637	4.5	1,641	4.3	1,657	4.1	1,586	3.7
Chemicals and allied products	1,630	8.6	3,756	10.2	4,157	11.0	4,591	11.3	4,862	11.4
- Pharmaceuticals	1,132	6.0	2,213	6.0	2,633	7.0	2,898	7.2	3,240	7.6
Primary and fabricated metals	1,738	9.2	1,506	4.1	1,735	4.6	1,874	4.6	1,907	4.5
Mechanical and electrical engineering	2,225	11.8	6,258	17.0	6,803	18.0	7,062	17.4	7,523	17.6
Office machinery	568	3.0	4,187	11.4	4,715	12.5	5,083	12.6	5,216	12.2
Transportation equipment	3,259	17.2	3,233	8.8	3,004	7.9	3,179	7.9	3,380	7.9
Other manufacturing	7,631	40.3	13,946	38.0	13,127	34.7	14,152	34.9	15,005	35.1
Total Manufacturing	18,925	100.0	36,736	100.0	37,815	100.0	40,496	100.0	42,719	100.0

Industrial sector	1991	% of total	1992	% of total	1993	% of total	1994	% of total	1995	% of total
Food and kindred products	1,627	3.7	1,723	3.8	1,943	4.0	2,060	4.0	2,029	3.6
Chemicals and allied products	5,300	12.1	5,678	12.6	6,105	12.6	6,649	12.8	6,961	12.2
- Pharmaceuticals	3,558	8.1	3,797	8.4	4,237	8.8	4,729	9.1	4,996	8.8
Primary and fabricated metals	1,713	3.9	1,626	3.6	1,595	3.3	1,585	3.1	1,645	2.9
Mechanical and electrical engineering	7,833	17.9	8,319	18.4	9,295	19.2	10,491	20.3	12,908	22.6
Office machinery	4,861	11.1	4,725	10.5	4,860	10.1	5,333	10.3	7,426	13.0
Transportation equipment	3,431	7.9	3,216	7.1	3,233	6.7	3,376	6.5	3,328	5.8
Other manufacturing	15,384	35.2	16,116	35.7	17,052	35.3	17,572	33.9	17,750	31.1
Total Manufacturing	43,707	100.0	45,200	100.0	48,320	100.0	51,795	100.0	57,043	100.0

Source: Own estimates based on Forfás Employment Survey data

Balasubramanyam and Greenaway (1992) refer to as ‘Bridgehead Investment’ or -oriented Investment’, i.e., foreign firms locate here in order to export to the larger European market, exactly as the policy over the past 30 years has intended.

The results in Table 4.5 provide a measure for what is well-known, namely, that US firms locate in Ireland primarily to export to foreign markets.⁶⁷ Exports in total manufacturing by US firms were around 90 per cent of total sales, a result that is consistent with that found by Foley (1991, p. 111) who, using the *Irish Economy Expenditures* data base,⁶⁸ found that non-EU manufacturing firms (a category dominated by US firms) based in Ireland exported some 94 per cent of total output in 1987.

**Table 4.4 Capital intensities of production in US affiliates by sector
(million US dollar per employee)**

Industrial sector	1983	1988	1989	1990	1991	1992	1993
Food and kindred products	0.26	0.56	0.40	0.47	0.95	1.05	1.13
Chemicals and allied products	n.a.	0.55	0.46	0.61	0.61	0.65	0.58
Primary and fabricated metals	0.10	0.15	0.14	0.15	0.16	0.15	0.15
Machinery, except electrical	0.16	0.39	0.45	0.34	0.41	0.31	0.35
Electric and electronic equipment	0.04	0.12	0.11	0.13	0.11	0.18	0.17
Transportation equipment	n.a.	0.09	0.07	0.05	0.06	0.06	0.05
Other manufacturing	n.a.	0.15	0.15	0.15	0.13	0.15	0.15
Total Manufacturing	0.15	0.27	0.25	0.25	0.27	0.28	0.30

Source: Own estimates derived from US Department of Commerce data

The sectoral breakdown in Table 4.5 shows that in the chemicals and the electronics sector more than 90 per cent of sales are directed to foreign markets, while all other sectors also show relatively high export ratios. The export ratio in the machinery sector was relatively low in 1993 which, under normal circumstances, may indicate a direction of sales towards the Irish market, since exports in that sector were consistently well above the 90 per cent mark between 1983 and 1992. However, until the 1994 data become available it will not be possible to determine whether this represents a real change or merely suggests some irregularity in the figure for the year 1993. In the case of the transportation equipment sector, no data other than for 1988 and 1993 were available for the period 1983 to 1993; there is therefore no basis for attempting to interpret meaningfully the dramatic change in the export ratios obtained for that sector for 1988 and 1993.⁶⁹

**Table 4.5 Export performance of US affiliates in Ireland by sector
(exports as percentage of sales)**

Industrial sector	1983	1988	1989	1990	1991	1992	1993
Food and kindred products	72.4	89.5	n.a.	84.6	87.2	90.0	88.1
Chemicals and allied products	92.9	n.a.	93.6	96.8	97.6	97.3	96.4
Primary and fabricated metals	n.a.	77.7	69.0	77.8	86.7	79.2	79.7
Machinery, except electrical	98.2	n.a.	n.a.	n.a.	99.0	96.4	88.6
Electric and electronic equipment	99.2	96.7	87.4	89.7	92.8	90.9	94.6
Transportation equipment	n.a.	93.1	n.a.	n.a.	n.a.	n.a.	41.6
Other manufacturing	n.a.	n.a.	70.8	72.5	n.a.	n.a.	77.7
Total manufacturing	83.6	94.1	75.0	81.9	90.2	91.0	88.9

Source: Own estimates derived from US Department of Commerce data

Unfortunately the data do not allow a country analysis of the destination of exports by US companies. It is possible to determine the extent to which exports are to the home country, however, since a distinction is made between exports to the US and exports to other countries. Under the assumption that Ireland's role is as a base for foreign companies to serve the EU market, it is to be expected that exports not directed to the US are going primarily to the EU market.

Table 4.6 indicates that, overall, the exports of US-owned affiliates in Ireland back to the US accounted for some 16.2 per cent of total exports in 1993. Even allowing for a considerable share of the remainder of exports going to other non-EU countries one may assume that the European market is the main destination for exports by US companies in Ireland, thus supporting the expectation that Ireland is a 'Bridgehead' to the EU market.⁷⁰ The export shares in the machinery, electric and electronic equipment, and transportation equipment sectors are high relative to the other sectors. Note, however, that the exceptionally high figure for the machinery sector in 1993 coincides with a relatively low total export ratio in the same year noted above. In order to analyse changes over time in export performance and export destinations more satisfactorily, a firm level analysis of Ireland-based multinationals would be necessary.

Table 4.6 Exports to the US in per cent of total exports

Industrial sector	1983	1988	1989	1990	1991	1992	1993
Food and kindred products	0.6	0.5	n.a.	0.8	0.7	1.2	0.2
Chemicals and allied products	7.7	n.a.	13.1	8.5	12.5	8.4	8.2
Primary and fabricated metals	10.7	17.8	18.8	15.8	10.9	14.5	14.5
Machinery, except electrical	3.6	n.a.	n.a.	n.a.	12.6	13.4	33.3
Electric and electronic equipment	34.0	13.1	24.1	28.3	32.5	27.4	25.2
Transportation equipment	n.a.	11.1	n.a.	n.a.	n.a.	n.a.	28.6
Other manufacturing	10.2	n.a.	14.4	10.1	n.a.	n.a.	10.7
Total Manufacturing	8.3	13.4	10.1	8.6	12.1	10.3	16.2

Source: Own estimates derived from US Department of Commerce data

To summarise the results of this section, the data analysed confirm that:

- US companies are particularly strong in the high-tech sectors, namely chemicals and the two engineering sectors (machinery and electric and electronic equipment). This is true in terms of capital expenditures, total assets and employment.
- The importance of the engineering sectors has increased especially since the early 1990s, particularly in electric and electronic equipment. Elsewhere (Ruane and Görg 1996) we found that Ireland's share of US investment in the EU (particularly in the *high-tech* sectors) has increased considerably over the last decade which, combined with the results in this section, supports the view that Irish industrial policy aimed at attracting US companies in these sectors has been successful. This success suggests that Ireland is enjoying and may continue to enjoy relative location advantages for foreign firms, particularly through the emergence of industrial agglomerations.
- The capital intensity of US-owned affiliates in the chemical sector in Ireland is high, which is in line with prior expectations, and it has been increasing. Elsewhere we have shown (Ruane and Görg, 1996) that the capital intensity in this sector is higher in Ireland than in most other EU countries
- The capital intensity in the electric and electronics equipment sector has been increasing, which may reflect the deepening of investment by US firms in that sector in Ireland.
- US companies in Ireland are highly export-orientated which underlines the fact that those firms do not invest here primarily to serve the Irish market but to export to foreign markets. Under the assumption that foreign firms use Ireland primarily as an export base to serve the EU we would expect the lion's share of these exports to be directed towards the European market.

5. CONCLUSIONS

This paper provides an empirical overview of foreign investment in Ireland since its accession to the EEC in 1973. Since then, the significance of foreign companies in Irish manufacturing industry has increased considerably. While employment in Irish-owned firms decreased between 1973 and 1995 by around 23 per cent (which is slightly less than the EU-wide decline of 25 per cent in manufacturing employment for the corresponding period), employment in foreign-owned firms rose by almost 25 per cent during the same period. In terms of sectoral composition, we note that a significant structural change has taken place in foreign investment, with a shift out of traditional sectors which were historically dominated by UK companies, towards *high-tech* sectors, dominated by US-owned companies. This tendency is apparent in both firm numbers and employment. We also note a similar but less marked trend in the case of indigenous industry, which may be fostered by foreign industries in the same sector, through backward linkages and technology spill-overs.

Analysing the nationality composition of foreign-owned companies our results indicate a strong decline in the significance of UK companies, which were traditionally the strongest investing nationality group in Ireland, and a steady increase in US investment in Ireland, leaving the US by far the most important investing country in Ireland in the 1990s. Employment in manufacturing companies from continental EU countries has, by and large, remained constant over the analysed period, with an increase in employment in German companies being matched by a decrease in employment in companies from other continental EU countries. Also, it is noteworthy that employment in foreign companies from other non-EU countries (including Asia) is still very low in Irish manufacturing.

These results, combined with the results in Ruane and Görg (1996), indicate that Ireland has been successful in attracting US investment, though the data do not allow us to draw similar conclusions on investment from other EU and non-EU countries. To do this we would require data on the total direct foreign investment by, say, German firms in the EU total, and thus we cannot determine whether Ireland's share of German investment in the EU has increased or declined over the period analysed. This is, however, an issue that we intend to address in further analysis in order to determine whether the absence of growth in employment in companies from EU and non-EU countries is peculiar to Ireland or simply reflects an EU-wide (or perhaps world-wide) trend of low investment activity from these countries. Should it transpire from this analysis that Ireland has been relatively less successful in attracting EU and other non-EU companies, then IDA Ireland will need to examine the implications for policy design and country focus.

While FDI, especially from the US, has grown in significance over the past two decades, the question remains as to what policy towards FDI should be in the future. We suggested in Section 2 that only negligible changes have been implemented in the light of the various reviews of Irish industrial strategy, and that present policy

would appear to be “steady as she goes”. However, we can identify at least three sectors which suggest that such a continuity in policy may be either impossible or inappropriate: (i) as 2010 approaches a new corporate tax policy, which is acceptable in domestic and EU terms, is required urgently to replace the current 10 per cent rate for manufacturing; (ii) as other countries in the EU are now actively involved in promoting extra-EU investment, especially from the US and Japan, the competition for internationally mobile projects in manufacturing is increasing; and (iii) as economic structures evolve, with correct-sizing and out-sourcing becoming the norm and with FDI being more “brown-field” rather than “green-field” in nature, it may be that the degree of separation of FDI promotion from the promotion of indigenous industry implied by the recent legislation may have to be reviewed. We consider each of these issues briefly in turn.

10 per cent corporate tax rate

Under the current legislation, this incentive will terminate in 2010. While this date may appear to be still some distance away, it is well within the investment time-frame of investing companies and a decision is required imminently as to what happens after its termination. If no action were taken, the rate of tax on manufacturing profits would revert automatically to the standard rate of corporate tax, whatever that turns out to be in 2010. The rate at present is 38 per cent, which is quite high by European standards despite having come down in recent years.⁷¹ In the light of the growth in employment in services and in the globalisation of services over the past decade, it is to be expected that by 2010 this rate will certainly be well below the present rate of 38 percent. If it is to remain an attractive incentive for FDI projects in manufacturing it will have to be significantly less than 38 per cent though *not necessarily* as low as the present 10 per cent. In any event, the gap between the standard and preferential rate should be much lower than the present 28 percentage point gap to ensure competitiveness of the sectors not eligible for the preferential rate and to avoid large-scale economic distortions from such very different rates. If the single rate of tax option is chosen and turns out to be higher than 10 per cent, then grants may have to be higher if we are to compete with other countries seeking FDI projects.

In industrial policy terms Ireland has benefited enormously from having a stable investment environment and it must be a priority now to clarify what the corporate tax regime will be up to 2030 or at least to 2020.⁷² This is a very difficult task as the interdependency of corporate tax rates across countries grows each year, with the increasing mobility of investment capital. Thus in determining a long term rate, Ireland has no idea what other countries’ rates will be and yet the impact of tax policy depends crucially on these rates. A conservative tax rate defined in “no more than” terms would probably make most sense, giving the investor a minimum assurance about the rates and yet giving the government an opportunity, should it be required, to revise the rate or rates downwards in respond to competitive changes

elsewhere, and, as noted above, the option of giving higher grants in this context should not be ruled out.

Competition for projects

As noted above, Ireland was well ahead of the field in introducing incentives to encourage FDI in the 1950s and 1960s. Now throughout the EU governments are seeking to win FDI projects by means of a range of incentives, typically offered by agencies at sub-national levels. It seems inevitable that before long this development will receive more attention from the European Commission - at present only minimal attention is paid to it in connection with Article 92. Ireland's position in this situation is rather difficult. On the one hand Ireland would like the Commission to take a firm line as it cannot afford to have competitive financial aids becoming widespread in the EU; on the other hand, Ireland would have a great difficulty if the Commission treated tax expenditures (via a reduced rate of tax) as 'state aids' which it has not hitherto done.⁷³ This points to the merits of seeking to have either a single low rate of corporate tax or at least rates which are very close.⁷⁴ Whatever policy stance is adopted in the next year, its impact will depend crucially on what is happening elsewhere in the EU and ultimately in Eastern Europe. Although hitherto there is not much evidence of competition for projects from Eastern Europe, where direct foreign investment is going more into existing commercial activities rather than into new projects, one can expect that this situation is unlikely to continue as existing opportunities get taken up and as the possibilities for EU membership rise. The issue of increasing competition for FDI projects has also been recognised in the recent Forfás (1996) report on industrial strategy, *Shaping Our Future*, which points out that "[t]he changing nature of the foreign direct investment market will [...] bring particular additional competitive pressures on Ireland's position over the next decade

Forging links between foreign and domestic industry

As noted above, the forging of links between foreign and indigenous companies has long been an objective of Irish industrial policy. The separation of the former IDA into separate agencies, namely IDA Ireland and Forbairt, to promote and support foreign and indigenous companies makes a lot of sense in its own terms, especially since, as pointed out in the Culliton Report (Industrial Policy Review Group, 1992), the structure of industrial policy reflected much more the needs of foreign rather than indigenous industry.⁷⁵ However, it does pose some difficulties as international partnerships among firms become increasingly the norm, with foreign firms seeking partners in Ireland and larger Irish companies seeking foreign partners. Thus there is the possibility that the new agency structure may not be as well placed as the previous structure to handle this developing phenomenon and there is a danger of either opportunities being lost or wastage of resources as both agencies are out in the global market seeking to link with foreign companies.⁷⁶ Furthermore, a potential for strengthening the links between indigenous and foreign companies in sub-supply

may be reduced by the separation of the agencies. A policy imperative must be to clarify how these issues will be handled and ensure that sector-wide and not simply agency goals are met.

Relatedly there is an issue of interest both to the policy making process and to the researcher studying industrial development in Ireland, namely, that in certain sectors some Irish firms with growth potential may be taken over by foreign investors. Thus companies may change their status from being Irish to being foreign-owned and their real contribution to Irish industrial development will not be readily measurable. This points to the need for records to be kept which identify the original nationality of firms and not just their current (real time) nationality. Furthermore, to the extent that Irish companies receive more aid than foreign companies, there will be an issue of what the state gets back from such a take over. This phenomenon could be interpreted as providing support for the Culliton recommendation that, when there is significant assistance given to Irish companies, this aid should come in the form of state equity rather than grants.

Finally, it should be recalled that this paper has concentrated solely on analysing foreign investment in *manufacturing industries*, while the authors recognise that in the future FDI will come increasingly in the form of investment in service-sector activities. This will raise new issues for IDA Ireland, as the quality of factor supply (specific labour skills, telecommunications, etc.) will become relatively more important. Despite the view expressed in the early 1980s that the “era of massive foreign investment in Ireland is over”, there seems little sign that it is at an end. Rather, what appears different as we approach the end of the twentieth century is that while foreign-owned industries continue to prosper, indigenous industries have also begun to prosper. What many would like to see is the *absolute* importance of FDI continuing to increase while its *relative* importance declines!

Footnotes

1. These two features have been well documented in the literature. See, for example, the relevant chapters in Foley and McAleese (1991) and O'Hagan (1995).
2. The choice of 1973 as the starting date for our analysis makes sense for several reasons: firstly, it coincides with the date of Ireland's entry into what has become today the European Union; secondly, it is the date from which two major data series emanate which make it possible to study what has happened to FDI in Ireland over the past twenty years, namely, the employment survey data, collected originally by the Industrial Development Authority (IDA) and now collected by Forfás, and a data series available from the United States Department of Commerce on US multinationals, which, as noted below, represent the most significant element of foreign direct investment in Ireland today.
3. Recent papers to the Society related to FDI in Ireland include Thornhill (1988) and Keating and Keane (1989). Also, three Symposia held by the Society discussed issues relevant to foreign investment in Ireland, namely, the Symposium on Increasing Employment in Ireland (Kennedy et al., 1975), the Symposium on Industrial Policy in Ireland (O'Connor et al., 1982), and the Symposium on the Findings of the Industrial Policy Review Group (Hitchens et al., 1992).
4. In order to track developments in the relationship between indigenous and foreign-owned companies in more detail it is essential that data be maintained which allow researchers and policy makers to distinguish the origins of companies.
5. In our view, the importance of services merits treatment in a separate paper.
6. In the case of Ireland, the problem of transfer pricing in foreign companies has been thoroughly discussed by Foley (1991a).
7. This issue is the focus of another research project related to this paper.
8. For confidentiality reasons most sub-sectors cannot readily be dis-aggregated. We have been able to obtain dis-aggregated figures for the Metals & Engineering sector which contains two of the most dynamic high-tech sub-sectors, namely, Electric & Electronic and Instruments.
9. Net output is defined as gross output minus inputs. To the extent that companies understate the value of inputs used and overstate the value of the sales generated, this measure overstates the extent of importance of FDI companies in real activity in manufacturing. Firms may try to artificially raise their net output figures in Ireland by engaging in transfer pricing in order to transfer profits to the low taxation location Ireland. These issues have been thoroughly discussed by Foley (1991a).
10. In Section 3 below we look at employment data which can be seen as providing a more conservative estimate of the significance of foreign-owned activities in Irish manufacturing.
11. Figure derived from the 1983 Census of Industrial Production.

12. One would not a priori expect identical concentration patterns across foreign and indigenous sectors of manufacturing, especially as the degree to which manufacturing activities are geographically footloose can be expected to vary across sectors.
13. On the other hand, unlike the net output measure, the employment measure does not suffer from any bias which would arise from transfer pricing, which tends to overstate the value of FDI to Ireland.
14. Data on FDI into Ireland from other countries is unfortunately very limited. EUROSTAT (1995) provides data on foreign direct investment flows in EU countries but, unfortunately, no data are published for Ireland. The EUROSTAT data are compiled from national data sources and in the Irish case, data on FDI are not yet available from the CSO, though there are plans in hand to produce such a series in due course.
15. There are various extant reviews of policy with regards to FDI, the most recent substantial one being found in Foley and McAleese (1991). Other recent commentaries include O'Sullivan (1995) and Ruane (1991).
16. This change can be seen as Ireland's managing to de-couple the link between FDI and its colonial past, as hitherto FDI meant UK companies, whose presence were seen by some to represent a failure of Ireland to establish itself as a viable economic entity. For an overview of the change, see, for example, Lee (1989), chapter 5 and O'Malley (1989), chapters 4 and 5.
17. The advantage of having FDI companies export all of their output was that they did not then compete with indigenous firms on the domestic product market.
18. Initially the tax holiday was for ten years but this was subsequently extended to fifteen years with a further five years of partial relief. The terminal date for the holiday was set for 1990.
19. While companies were not totally prohibited from selling on the domestic market, they could not do so using grant-aided equipment and the return to domestic sales was significantly lower because of the high rate of corporation tax such profits attracted (circa 50 per cent).
20. While in many countries intervention is increasingly made at a project level, in the 1950s and 1960s this was extremely rare, except in, say, the nationalised industries in the UK, and in any event, it was only likely in the case of extremely large projects, whereas in Ireland, the smallest of projects was analysed and evaluated for grant purposes.
21. The economics journals in the 1950s were dealing with the question of the taxation rather than the subsidisation of FDI, especially in the context of tariff barriers. See, for example, the classic paper by MacDougall (1960).
22. In effect these countries were adopting the very strategy which Ireland had ruled out in the 1930s, namely of allowing FDI companies to partake in the growth induced in domestic production by tariff walls.
23. As pointed out by McAleese (1971) Ireland had, by world standards, an exceptionally high rate of effective tariff protection on manufacturing in the early 1960s. Since we were committed to retaining a fixed link with sterling in the 1950s and 1960s and as Irish capital and labour markets combined domestic

inflexibility with extreme international openness, a reduction in tariffs at that time without a boost to the export growth sector would have had devastating effects on manufacturing employment in Ireland.

24. An exception to this was the tourism sector which has always been treated separately from manufacturing and other internationally traded services, presumably on the grounds that it is different since the consumers rather than the outputs move.
25. In a sense IDA personnel were collecting and responding to market information about particular firms which were likely to expand. Implicit in their approach to looking at potential foreign investment was the kind of framework developed by Dunning (1988), who suggests that foreign investment depends on (i) special firm characteristics which enable companies to produce profitably abroad, (ii) an incentive to internalise this advantage, and (iii) location characteristics in the host countries. IDA Ireland's approach involved (i) identifying industries (and firms) which had the ability to profitably locate in foreign locations, (ii) considering the means of how this foreign involvement could be achieved (in general through FDI), and (iii) analysing whether Ireland could offer locational advantages for these particular industries (and firms).
26. In the early years it was anticipated that the flow of projects would become self sustaining. There is no evidence of this, though recent successes point to the fact that early strategic promotions appear to have been worthwhile.
27. The grant maxima were higher in the designated compared with the non-designated areas and within those areas executives were in a position to respond in offering grants to particular pressures which might exist, e.g., the recent closure of a large plants at a particular location.
28. This reduction in grant maxima followed on quickly after the publication of the Telesis Report.
29. The need for such a link was long recognised by commentators on the system who noted that without such a legal clause companies had an incentive to be 'unduly optimistic' about the jobs which they expected a given project to generate. This controversial issue was raised at two symposia held by this Society - that on Increasing Employment in Ireland held in 1975 and that on Industrial Policy in Ireland held in 1982.
30. The value of a tax incentive against corporate tax in the host country depends crucially on how it is viewed by the tax authorities in the home country. Hence the importance of double tax agreements.
31. See, for example, the recent Deloitte Touche (1996) survey which indicated that almost 60 percent of foreign companies interviewed found the ten percent rate to have been very influential in their location choice. Furthermore, IDA Ireland personnel would suggest that tax incentives are particularly popular with US firms.
32. It could be argued that these grants are in effect a form of "hello" money in a competitive bargaining environment.
33. In effect the "pay back" from the grants occurs very quickly because of the tax yield from the 10 per cent rate.

34. Indeed an ex post review of whether or not the many policy changes proposed in the various reports, especially the Telesis Report (NESC, 1982), were appropriate would be worthy of a separate paper.
35. This outcome may well be exactly what is required since it has been argued in many fora that the formulation of Irish industrial policy has been dominated by the strategy of promoting FDI and that the needs of the indigenous sector would be better met by alternative instruments.
36. The employment data used relate to permanent jobs only. Temporary employment, however, has become more significant in recent years. In 1995, for example, temporary employment accounted for some 21,100 jobs in Ireland. Therefore, an analysis of permanent employment only underestimates the true employment performance. Also, our analysis does not look at the development in the internationally traded-services sector which is also eligible for investment incentives, and which has been a major focus of IDA Ireland's promotional policy over the past decade, and accounts for a significant portion of its job-creation success in recent years. Some 19,800 permanent jobs existed in internationally-traded services in 1995.
37. Of these, Japan is the most significant investing country. However, Ruane and Görg (1996) find that Ireland does not seem to be as attractive to Japanese investors as it is to US investors. They attribute this, inter alia, to cultural differences between US and Japanese investors (Japanese investors being more risk-averse and "traditional" in their investment decisions), noting that further research is required to determine the reasons for these significant differences.
38. Ruane and Görg (1996) find that Ireland received a share of six per cent of US manufacturing investment in the EU, compared with its one per cent share of total EU GDP. Thus, Ireland receives a share of US FDI almost six times as big as its GDP share in 1994. The UK, the EU state which attracts most US investment, received 28 per cent of US manufacturing investment, which compares with its 15 per cent share of EU GDP. As regards the common language, one may assume that it is attractive to US investors since it reduces considerably transactions costs which arise when locating in other non-English speaking EU countries.
39. From a regional perspective there is also evidence of opposing trends in terms of total employment. Killen and Ruane (1993), analysing a special sample of the same data set, find that the share of total industrial employment in the peripheral regions increased at the expense of the Eastern core between 1981 and 1991. However, they do not distinguish between employment in indigenous and foreign-owned firms in that part of the analysis. Drudy (1991), analysing IDA data for the period 1973 to 1989 finds that the shares of employment in both foreign and indigenous industries declined in the Eastern core at the expense of the peripheral regions.
40. These results are mirrored in other papers, e.g. Ruane and McGibney (1991) analysing IDA data for the period 1973-88, and Keating and Keane (1989, 1991), analysing CSO data for the 1980s.

41. Indeed, as we will discuss below, the UK experience is in many respects more akin to the Irish experience than to other foreign-owned companies.
42. The increase may appear small but in the context of down-sizing and world trends it is not insignificant.
43. This will generally be the case if one compares foreign-owned with indigenous firms and is not a phenomenon peculiar to the Irish economy. Howenstine and Zeile (1994), for example, find that the average plant size of foreign-owned firms is considerably larger than that of indigenous companies in the US. Young et al. (1988) obtain the same result in a comparison of foreign and indigenous firms in the UK.
44. Ruane and McGibney (1991) point out that the average size of the nine largest Irish-owned firms was 881 employees in 1988 while the comparable figure for the nine largest foreign-owned firms was 986 in the same year.
45. As pointed out in Section 1, the sectoral classification is as close to the classification used by the US Department of Commerce as possible in order to achieve comparability of the figures in Section 3 and 4. However, the definition for the two engineering sectors in Section 3, namely 'mechanical and electrical engineering' and 'office machinery' are slightly different from the definitions used in Section 4, where the two engineering sectors are 'machinery, except electrical' and 'electric and electronic equipment'. Despite this, the sum of these two sectors is comparable in Sections 3 and 4.
46. One may argue that these Irish-owned engineering firms are more likely to be engaged in basic low-tech engineering rather than high-tech. However, the sectoral aggregation of the data does not allow us to analyse the sub-sectors, hence our definition of engineering as high-tech sector.
47. See Kokko (1994) and Haddad and Harrison (1993) for recent discussions on technological spill-overs from multinational companies to the host country and empirical evidence for Mexico and Morocco respectively.
48. An extensive discussion of linkages between foreign and indigenous industries is beyond the scope of this paper but is part of our research agenda. Kennedy (1991), O'Loughlin and O'Farrell (1980), and McAleese and McDonald (1978) provide discussions of linkages in Ireland. Note, however, that these Irish-owned firms are in manufacturing and not in the business services sector, since services are not included in this analysis.
49. This notion is also supported by Brülhart et al. (1996) who, analysing intra-industry trade indices for Ireland, find that "Ireland seems to be specialising out of low-productivity labour-intensive industries and into highly productive and less labour-intensive sectors." (p. 12).
50. In this context, an analysis of output data may also underline the narrowing of the sectoral gap between foreign and indigenous firms since one may expect a consolidation within Irish companies which have to increase their size in order to be more competitive.
51. This result is consistent with the idea of increasing capital intensity, at least in part of that sector, and "down-sizing" or "correct-sizing" of employment in firms in the chemical sector.

and US Department of Commerce data which cannot readily be explained as being due to different underlying definitions since both agencies record data on majority-owned US affiliates in Ireland, i.e., affiliates which are 50 or more per cent owned by US shareholders. In general, US Department of Commerce data

record lower employment than do the Forfás data. We cannot explain this situation satisfactorily on the basis of the available data.

64. We calculate the capital intensity using US Department of Commerce data on total assets and employment and do not include Forfás employment data here. We do this in order to avoid any bias which may arise due to the differences in the data sources. While it is arguable that the capital intensity should only be analysed at plant level, there is value in looking at it at the sectoral level and in comparing different sectors. Ruane and Görg (1996) found that the capital intensities of US firms in Ireland are high relative to US firms in the UK, the Netherlands, Spain, and the EU average. Note that we do not compare the capital intensities in US and indigenous industries but look only at US companies across manufacturing sectors. One would, a priori, expect foreign firms to be more capital intensive than indigenous firms. This is not only the case in Ireland, but would be generally true of FDI world-wide. See, for example, Howenstine and Zeile (1994) for evidence that foreign-owned firms in the US are more capital intensive than its indigenous counterparts.
65. As Ruane (1991, p. 350) states, “the High-technology sector [...] is considerably less labour-intensive than the Food or Traditional sectors.” Traditional sectors are defined as those other than Food and high-tech (Chemicals and Metals & Engineering) sectors.
66. The export orientation of foreign-owned firms compared with indigenous industry is discussed in McAleese (1972, p. 79) and Foley (1991b).
67. Ruane and Görg (1996) analysed US investment in EU countries, namely Ireland, the UK, the Netherlands, Spain and the total EU and found that US firms in Ireland have by far the highest export ratios in that cross country comparison.
68. The IEE data base was at that time maintained by the IDA and is now maintained by Forfás.
69. This may be an issue on which IDA Ireland would have information but time precluded making such an inquiry.
70. Foley (1991b, p. 118) reports that overseas companies exported some 70 per cent of output to EU countries in 1987, a result that supports the assumption that foreign firms in Ireland export primarily to the EU market. His data, however, amalgamate figures for US firms and firms from other foreign countries.
71. The last decade has seen rates of corporation tax falling in most countries. Furthermore, the Irish low rate for corporation tax is not as low as it appears as the tax base in Ireland in manufacturing is among the widest in Europe.
72. There is some evidence that Ireland’s competitor countries are already taking advantage of this uncertainty in bargaining for projects.
73. In this context, another problem in the future may be the possible loss of the status of a less-favoured region within the EU.
74. If the argument made by Kay (1994) is correct, then governments will ultimately move towards taxing those activities which are easy to tax and in particular cannot avoid taxation. In this context Ireland might lose little by way of revenue by becoming at an early stage a low corporate income tax country across all sectors.

75. As a referee pointed out to us, an important reason for the separation of the two agencies was that it puts strong visible focus on improving indigenous industry performance.
76. Recently Forbairt, the agency responsible for indigenous industry, has been sending personnel abroad to seek partnership agreements.

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APPENDIX

Sectoral Classifications

1 Sectoral Classification used for CSO data

Food, Drink and Tobacco

Textiles

Clothing and Footwear

Wood and Wood Products

Paper, Printing and Publishing

Chemicals

Non-metallic Minerals

Metals and Engineering, including:

- basic metals,
- machinery and equipment,
- electrical machinery and apparatus,
- medical, precision and optical instruments,
- fabricated metal products,
- office machinery and equipment,
- communication equipment and apparatus,
- manufacture of transport equipment

Miscellaneous, including

- rubber and plastic products,
- recycling,
- furniture,
- other Manufacturing

2 Sectoral Classification used for US Department of Commerce data

Food and kindred products, including

- grain mill and bakery products
- beverages,
- other food and kindred products
- meat products,
- dairy products,
- preserved food and vegetables,

Chemicals and allied products, including

- industrial chemicals and synthetics,
- soap and cleaners,
- other chemical products
- drugs,
- agricultural chemicals,

Primary and fabricated metals, including:

- primary metal industries,
- fabricated metal industries

Machinery, except electrical, including:

- farm and garden machinery,
- construction, mining and materials handling machinery,
- computer and office equipment,
- engines and turbines,
- metalworking machinery,
- refrigeration and service industry machinery,
- special and general industry machinery,
- other machinery and equipment

Electric and electronic equipment, including:

- household appliances,
- household audio and video, and communications equipment,
- electronic components and accessories,
- other electrical machinery

Transportation equipment, including:

- motor vehicles and equipment,
- others

Other manufacturing, including:

- tobacco products,
- textile products and apparel,
- lumber, wood, furniture and fixtures,
- paper and allied products,
- printing and publishing,
- rubber products,
- miscellaneous plastics products,
- glass products,
- stone, clay, and other non-metallic mineral products,
- instruments and related products,
- leather and leather products,
- miscellaneous manufacturing industries

3 Sectoral Classification used for Forfás Employment Survey data

Food and kindred products

Chemicals and allied products

Primary and fabricated metals

Mechanical and electrical engineering, including:

- mechanical engineering,
- electrical engineering
- Office machinery, including
- office machinery and data processing machinery

Transportation equipment

Other manufacturing

DISCUSSION

In proposing a vote of thanks, Kieran McGowan congratulated the authors on a paper which contains a whole host of fascinating information in relation to inward investment over the period 1973 - 1995.

Of particular significance was the decline in UK investment and the huge growth from the United States from the same period. The decline in UK business was possibly attributable to the same kind of factors that led to job losses in the indigenous Irish sector.

He referred to the importance - pointed out in the report - of the issue of the rate of corporate tax after the year 2010 and stated that it was most important that whatever conclusion is arrived at, it be arrived at as early as possible. Many companies were pressing for a decision and given the long term nature of planning for particularly capital intensive projects, delays in themselves could lose us business.

He also referred to the new agency structure and its suitability for handling so called brown field investments. He agreed with the authors that the nature of investment was changing and that on the particular aspect of potential partnerships between Irish owned and foreign owned companies, the agencies would have to work harder to provide a streamlined response. However he felt that in the wider context, the establishment of a separate agency for the growth and development of indigenous Irish industry was a most positive development and one which was already bearing fruit.

¹ These two features have been well documented in the literature. See, for example, the relevant Chapters in Foley and McAleese (1991) and O'Hagan (1995).

² The choice of 1973 as the starting date for our analysis makes sense for several reasons: firstly, it coincides with the date of Ireland's entry into what has become today the European Union; secondly, it is the date from which two major data series emanate which make it possible to study what has happened to FDI in Ireland over the past twenty years, namely, the employment survey data, collected originally by the Industrial Development Authority (IDA) and now collected by Forfás, and a data series available from the United States Department of Commerce on US multinationals, which, as noted below, represent the most significant element of foreign direct investment in Ireland today.

³ Recent papers to the Society related to FDI in Ireland include Thornhill (1988) and Keating and Keane (1989). Also, three Symposia held by the Society discussed issues relevant to foreign investment in Ireland, namely, the Symposium on Increasing Employment in Ireland (1975), the Symposium on Industrial Policy in Ireland (1982), and the Symposium on the Findings of the Industrial Policy Review Group (1992).

⁴ In order to track developments in the relationship between indigenous and foreign-owned companies in more detail it is essential that data be maintained which allow researcher and policy makers to distinguish the origins of companies.

⁵ In our view, the importance of services merits treatment in a separate paper.

⁶ In the case of Ireland, the problem of transfer pricing in foreign companies has been thoroughly discussed by Foley (1991a).

⁷ This issue is the focus of another research project related to this paper.

⁸ For confidentiality reasons most sub-sectors cannot readily be dis-aggregated. We have been able to obtain dis-aggregated figures for the Metals & Engineering sector which contains two of the most dynamic high-tech sub-sectors, namely, Electric & Electronic and Instruments.

⁹ Net output is defined as gross output minus inputs. To the extent that companies understate the value of inputs used and overstate the value of the sales generated, this measure overstates the extent of importance of FDI companies in real activity in manufacturing. Firms may try to artificially raise their net output figures in Ireland by engaging in transfer pricing in order to transfer profits to the low taxation location Ireland. These issues have been thoroughly discussed by Foley (1991a).

¹⁰ In Section 3 below we look at employment data which can be seen as providing a more conservative estimate of the significance of foreign-owned activities in Irish manufacturing.

¹¹ Figure derived from the 1983 Census of Industrial Production.

¹² One would not a priori expect identical concentration patterns across foreign and indigenous sectors of manufacturing, especially as the degree to which manufacturing activities are geographically footloose can be expected to vary across sectors.

¹³ On the other hand, unlike the net output measure, the employment measure does not suffer from any bias which would arise from transfer pricing, which tends to overstate the value of FDI to Ireland.

¹⁴ Data on FDI into Ireland from other countries is unfortunately very limited. EUROSTAT (1995) provides data on foreign direct investment flows in EU countries but, unfortunately, no data are published for Ireland. The EUROSTAT data are compiled from national data sources and in the Irish case, data on FDI are not yet available from the CSO, though there are plans in hand to produce such a series in due course.

¹⁵ There are various extant reviews of policy with regards to FDI, the most recent substantial one being found in Foley and McAleese (1991). Other recent commentaries include O'Sullivan (1995) and Ruane (1991).

¹⁶ This change can be seen as Ireland's managing to de-couple the link between FDI and its colonial past, as hitherto FDI meant UK companies, whose presence were seen by some to represent a failure of Ireland to establish itself as a viable economy entity. For an overview of the change, see, for example, Lee (1989), chapter 5 and O'Malley (1989), chapters 4 and 5.

¹⁷ The advantage of having FDI companies export all of their output was that they did not then compete with indigenous firms on the domestic product market.

¹⁸ Initially the tax holiday was for ten years but this was subsequently extended to fifteen years with a further five years of partial relief. The terminal date for the holiday was set for 1990.

¹⁹ While companies were not totally prohibited from selling on the domestic market, they could not do so using grant-aided equipment and the return to domestic sales was significantly lower because of the high rate of corporation tax such profits attracted (circa 50 per cent).

²⁰ While in many countries intervention is increasingly made at a project level, in the 1950s and 1960s this was extremely rare, except in, say, the nationalised industries in the UK, and in any event, it was only likely in the case of extremely large projects, whereas in Ireland, the smallest of projects was analysed and evaluated for grant purposes.

²¹ The economics journals in the 1950s were dealing with the question of the taxation rather than the subsidisation of FDI, especially in the context of tariff barriers. See, for example, the classic paper by MacDougall (1960).

²² In effect these countries were adopting the very strategy which Ireland had ruled out in the 1930s, namely of allowing FDI companies to partake in the growth induced in domestic production by tariff walls.

²³ As pointed out by McAleese (1971) Ireland had, by world standards, an exceptionally high rate of effective tariff protection on manufacturing in the early 1960s. Since we were committed to retaining a fixed link with sterling in the 1950s and 1960s and as Irish capital and labour markets combined domestic inflexibility with extreme international openness, a reduction in tariffs at that time without a boost to the export growth sector would have had devastating effects on

manufacturing employment in Ireland.

²⁴ An exception to this was the tourism sector which has always been treated separately from manufacturing and other internationally traded services, presumably on the grounds that it is different since the consumers rather than the outputs move.

²⁵ In a sense IDA personnel were collecting and responding to market information about particular firms which were likely to expand. Implicit in their approach to looking at potential foreign investment was the kind of framework developed by Dunning (1988), who suggests that foreign investment depends on (i) special firm characteristics which enable companies to produce profitably abroad, (ii) an incentive to internalise this advantage, and (iii) location characteristics in the host countries. IDA Ireland's approach involved (i) identifying industries (and firms) which had the ability to profitably locate in foreign locations, (ii) considering the means of how this foreign involvement could be achieved (in general through FDI), and (iii) analysing whether Ireland could offer locational advantages for these particular industries (and firms).

²⁶ In the early years it was anticipated that the flow of projects would become self sustaining. There is no evidence of this, though recent successes point to the fact that early strategic promotions appear to have been worthwhile.

²⁷ The grant maxima were higher in the designated compared with the non-designated areas and within those areas executives were in a position to respond in offering grants to particular pressures which might exist, e.g., the recent closure of a large plants at a particular location.

²⁸ This reduction in grant maxima followed on quickly after the publication of the Telesis Report.

²⁹ The need for such a link was long recognised by commentators on the system who noted that without such a legal clause companies had an incentive to be 'unduly optimistic' about the jobs which they expected a given project to generate. This controversial issue was raised at two symposia held by this Society - that on Increasing Employment in Ireland held in 1975 and that on Industrial Policy in Ireland held in 1982.

³⁰ The value of a tax incentive against corporate tax in the host country depends crucially on how it is viewed by the tax authorities in the home country. Hence the importance of double tax agreements.

³¹ See, for example, the recent Deloitte Touche survey which indicated that almost 60 percent of foreign companies interviewed found the ten percent rate to have been very influential in their location choice. Furthermore, IDA Ireland personnel would suggest that tax incentives are particularly popular with US firms.

³² It could be argued that these grants are in effect a form of "hello" money in a competitive bargaining environment.

³³ In effect the "pay back" from the grants occurs very quickly because of the tax yield from the 10 per cent rate.

³⁴ Indeed an ex post review of whether or not the many policy changes proposed in the various reports, especially the Telesis Report, were appropriate would be worthy

of a separate paper.

³⁵ This outcome may well be exactly what is required since it has been argued in many fora that the formulation of Irish industrial policy has been dominated by the strategy of promoting FDI and that the needs of the indigenous sector would be better met by alternative instruments.

³⁶ The employment data used relate to permanent jobs only. Temporary employment, however, has become more significant in recent years. In 1995, for example, temporary employment accounted for some 21,100 jobs in Ireland. Therefore, an analysis of permanent employment only underestimates the true employment performance. Also, our analysis does not look at the development in the internationally traded-services sector which is also eligible for investment incentives, and which has been a major focus of IDA Ireland's promotional policy over the past decade, and accounts for a significant portion of its job-creation success in recent years. Some 19,800 permanent jobs existed in internationally-traded services in 1995.

³⁷ Of these, Japan is the most significant investing country. However, Ruane and Görg (1996) find that Ireland does not seem to be as attractive to Japanese investors as it is to US investors. They attribute this, *inter alia*, to cultural differences between US and Japanese investors (Japanese investors being more risk-averse and "traditional" in their investment decisions), noting that further research is required to determine the reasons for these significant differences.

³⁸ Ruane and Görg (1996) find that Ireland received a share of six per cent of US manufacturing investment in the EU, compared with its one per cent share of total EU GDP. Thus, Ireland receives a share of US FDI almost six times as big as its GDP share in 1994. The UK, the EU state which attracts most US investment, received 28 per cent of US manufacturing investment, which compares with its 15 per cent share of EU GDP. As regards the common language, one may assume that it is attractive to US investors since it reduces considerably transactions costs which arise when locating in other non-English speaking EU countries.

³⁹ From a regional perspective there is also evidence of opposing trends in terms of total employment. Killen and Ruane (1993), analysing a special sample of the same data set, find that the share of total industrial employment in the peripheral regions increased at the expense of the Eastern core between 1981 and 1991. However, they do not distinguish between employment in indigenous and foreign-owned firms in that part of the analysis. Drudy (1991), analysing IDA data for the period 1973 to 1989 finds that the shares of employment in both foreign and indigenous industries declined in the Eastern core at the expense of the peripheral regions.

⁴⁰ These results are mirrored in other papers, e.g. Ruane and McGibney (1991) analysing IDA data for the period 1973-88, and Keating and Keane (1989, 1991), analysing CSO data for the 1980s.

⁴¹ Indeed, as we will discuss below, the UK experience is in many respects more akin to the Irish experience than to other foreign-owned companies.

⁴² The increase may appear small but in the context of down-sizing and world trends

it is not insignificant.

⁴³

⁴⁴ Ruane and McGibney (1991) point out that the average size of the nine largest Irish-owned firms was 881 employees in 1988 while the comparable figure for the nine largest foreign-owned firms was 986 in the same year.

⁴⁵ As pointed out in Section 1, the sectoral classification is as close to the classification used by the US Department of Commerce as possible in order to achieve comparability of the figures in Section 3 and 4. However, the definition for the two engineering sectors in Section 3, namely ‘mechanical and electrical engineering’ and ‘office machinery’ are slightly different from the definitions used in Section 4, where the two engineering sectors are ‘machinery, except electrical’ and ‘electric and electronic equipment’. Despite this, the sum of these two sectors is comparable in Sections 3 and 4.

⁴⁶ One may argue that these Irish-owned engineering firms are more likely to be engaged in basic low-tech engineering rather than high-tech. However, the sectoral aggregation of the data does not allow us to analyse the sub-sectors, hence our definition of engineering as high-tech sector.

⁴⁷ See Kokko (1994) and Haddad and Harrison (1993) for recent discussions on technological spill-overs from multinational companies to the host country and empirical evidence for technology spill-overs in Mexico and Morocco respectively.

⁴⁸ As pointed out above, an extensive discussion of linkages between foreign and indigenous industries is beyond the scope of this paper but is part of our research agenda. Kennedy (1991), O’Loughlin and O’Farrell (1980), and McAleese and McDonald (1978) provide discussions of linkages in Ireland. Note, however, that these Irish-owned firms are in manufacturing and not in the business services sector, since services are not included in this analysis.

⁴⁹ This notion is also supported by Brülhart et al. (1996) who, analysing intra-industry trade indices for Ireland, find that “Ireland seems to be specialising out of low-productivity labour-intensive industries and into highly productive and less labour-intensive sectors.” (p. 12).

⁵⁰ In this context, an analysis of output data may also underline the narrowing of the sectoral gap between foreign and indigenous firms since one may expect a consolidation within Irish companies who have to increase their size in order to be more competitive.

⁵¹ This result is consistent with the idea of increasing capital intensity, at least in part of that sector, and “down-sizing” or “correct-sizing” of employment in firms in the chemical sector.

⁵² These data are generated by the Forfás Employment Survey which tracks gains and losses of jobs by firms in each year. Job gains and losses between survey dates are netted out (for example, a job gained in June but lost in October does not enter the survey data) but all gains and losses on survey dates are included.

⁵³ These papers computed the survival rate using a special data set provided by IDA

Ireland. They define the survival rate as the percentage of all jobs in the base year (or generated in a particular set of years) that still existed in the analysed year.

⁵⁴ As Ruane (1991) points out, these results suggest that “the industrial development policies have certainly been effective in generating new jobs; where they have not been effective is in maintaining existing jobs” (p. 352).

⁵⁵ “Capital expenditures include all expenditures that are charged to capital accounts and are made to acquire, add to, or improve property, plant, and equipment” (Fahim-Nader 1994, p. 36).

⁵⁶ These capital transfers from the parent company lead to capital inflows in the balance of payments which were the focus of McAleese (1972). We do not analyse capital inflows herein since our focus is on the actual behaviour of foreign-owned firms in Ireland and its impacts in terms of employment and actual investments on the host economy.

⁵⁷ These differences were noted by McAleese (1972, p. 77).

⁵⁸ Intangible assets are, for example, knowledge capital, human capital, goodwill, but also financial assets such as accounts receivable. See Meyler (1995) for a comprehensive discussion of the significance of intangible capital, particularly technological capital, for industries in Ireland.

⁵⁹ Note that, in using this measure, we can isolate the impact of inflation since it is the ratio of two nominal figures.

⁶⁰ The Bureau of Economic Analysis indicated that figures on capital expenditures of US affiliates for 1995 will not be disclosed before September 1997.

⁶¹ This is an issue we are analysing further in related research. Industrial agglomerations are discussed by, for example, Venables (1994). Wheeler and Mody (1992) find that the existence of agglomerations has positive impacts on the location of US multinationals abroad. Markusen (1991) also discusses issues related to the agglomeration of industries. He suggests that, in a two-period model, a country that attracts investment in the first period may gain permanent advantages from this “first move”; an advantage that, in the case of industry locations can translate into the emergence of industrial agglomerations.

⁶² Again consultation with the US Department of Commerce did not explain this very large gap.

⁶³ We analyse Forfás employment data here. Data on employment in US-owned affiliates are also available from the US Department of Commerce, however, they are not as detailed as the Forfás data. We note a discrepancy between Forfás and US Department of Commerce data which cannot readily be explained as being due to different underlying definitions since both agencies record data on majority-owned US affiliates in Ireland, i.e., affiliates which are 50 or more per cent owned by US shareholders. In general, US Department of Commerce data record lower employment than do the Forfás data. We cannot explain this situation satisfactorily on the basis of the available data.

⁶⁴ We calculate the capital intensity using US Department of Commerce data on total assets and employment and do not include Forfás employment data here. We do this

in order to avoid any bias which may arise due to the differences in the data sources. While it is arguable that the capital intensity should only be analysed at plant level, there is value to looking at it at the sectoral level and compare different sectors. Ruane and Görg (1996) found that the capital intensities of US firms in Ireland are high relative to US firms in the UK, the Netherlands, Spain, and the EU average. Note that we do not compare the capital intensities in US and indigenous industries but look only at US companies across manufacturing sectors. One would, a priori, expect foreign firms to be more capital intensive than indigenous firms. This is not only the case in Ireland, but would be generally true of FDI world-wide. See, for example, Howenstine and Zeile (1994) for evidence that foreign-owned firms in the US are more capital intensive than its indigenous counterparts.

⁶⁵

⁶⁶ The export orientation of foreign-owned firms compared with indigenous industry is discussed in McAleese (1972, p. 79) and Foley (1991b).

⁶⁷ Ruane and Görg (1996) analysed US investment in EU countries, namely Ireland, the UK, the Netherlands, Spain and the total EU and found that US firms in Ireland have by far the highest export ratios in that cross country comparison.

⁶⁸ The IEE data base was at that time maintained by the IDA and is now maintained by Forfás.

⁶⁹ This may be an issue on which IDA Ireland would have information but time precluded making such an inquiry.

⁷⁰ Foley (1991b, p. 118) reports that overseas companies exported some 70 per cent of output to EU countries in 1987, a result that supports the assumption that foreign firms in Ireland export primarily to the EU market. His data, however, amalgamate figures for US firms and firms from other foreign countries.

⁷¹ The last decade has seen rates of corporation tax falling in most countries. Furthermore, the Irish low rate for corporation tax is not as low as it appears as the tax base in Ireland in manufacturing is among the widest in Europe.

⁷² There is some evidence that Ireland's competitor countries are already taking advantage of this uncertainty in bargaining for projects.

⁷³ In this context, another problem in the future may be the possible loss of the status of a less-favoured region within the EU.

⁷⁴ If the argument made by Kay (1994) is correct, then governments will ultimately move towards taxing those activities which are easy to tax and in particular cannot avoid taxation. In this context Ireland might lose little by way of revenue by becoming at an early stage a low corporate income tax country across all sectors.

⁷⁵ As a referee pointed out to us, an important reason for the separation of the two agencies was that it puts strong visible focus on improving indigenous industry performance.

⁷⁶ Recently Forbairt, the agency responsible for indigenous industry, has been sending personnel abroad to seek partnership agreements.