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**Foreign Direct Investment in Ireland**

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# Foreign Direct Investment in Ireland

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## **1. Introduction**

Using any of the standard indicators, such as in net output, exports, employment, etc., Ireland's economic performance during the 1990s was exceptional in EU and even world terms. This performance, following so rapidly on a period when Ireland's economic prospects were viewed as being very grim,<sup>2</sup> inevitably generated considerable interest among policy makers across a range of countries<sup>3</sup> and a growing economics literature.<sup>4</sup> Furthermore, in the context of preparing Ireland's National Development Plan 2000-2006, further substantial analyses have been produced, both for and by the government (see, in particular, the National Development Plan (1999) and the key analysis underlying it by the Economic and Social Research Institute (Fitz Gerald et al. (1999)). Leaving aside the more official publications, the academic literature has battled to explain what has happened and how it could have happened so quickly and what would happen if the economy were to slow down. In terms of *what has happened*, some authors have been quite sceptical, seeing the aggregate figures as representing more a mirage than a miracle (e.g., Murphy (1998), O'Sullivan (1999)). Other have suggested that what has happened has merely been a "catch up" – in other words that the 1990s simply made up for the disastrous 1980s when Ireland should have achieved greater convergence towards European living standards (See Gray, 1997, Braunerhjelm et al, 2000). **Figure 1**, which shows five-yearly growth rates for Ireland and the EU

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<sup>1</sup> This paper draws on joint work done with Holger Görg, Allan Kearns, Julie Sutherland and Ali Ugur. I am grateful to Ali Ugur and Julie Sutherland for assistance in preparing the paper and to the Central Statistics Office in Dublin for access to data used in the paper

<sup>2</sup> It was suggested in the later 1980s that Ireland could become "North Dakota of Europe". Guiomard (1995) provides a critical analysis of the limitations of the policy process operating in Ireland in the early 1990s in terms of its ability to embrace change and deal with the challenges of that time.

<sup>3</sup> Delegates have visited Ireland very extensively from CEE countries and from the smaller LDCs in an attempt to ascertain what the secret of Ireland's success has been.

<sup>4</sup> The reader is recommended to look particularly at Barry (1999) for a wide-ranging analysis of the issues, and to Clinch et al. (2002) for a discussion of Irish growth prospects in the light of the recent downturn in the global economy. Other relevant references include Sweeney (1997), Gray (1998), O'Hearn (1998) and O'Sullivan (2000).

over a thirty-year period, can be interpreted as supporting this view. It shows that the average growth rate over the 30 years, while significantly higher than the EU average for the period, is particularly higher in the past decade. Others see the data as indicating that considerable structural change has actually occurred and concentrate on attempting to understand *how it could have happened so quickly*, by attempting to identify the causes of the sudden and rapid growth (e.g., Barry (1999), Mac Sharry and White (2000), and Duffy et al. (2001)). In this context, they focus on the recent growth in employment and the inter-sectoral reallocation of labour out of agriculture and into industry and market services, as shown in **Figure 2**, and the intra-manufacturing reallocation, out of traditional manufacturing and into high-technology sectors, as shown in **Figure 3**. An interesting attempt (Gray 1997) to have some of the world's leading economists explain the phenomenal growth rates served to confirm that local economists and policy makers seemed to have identified the key issues correctly as (a) improved domestic macro policies based on national social partnership (government/employers/unions) agreements and supported by EU structural and cohesion funds, (b) trends towards globalisation which reduced the effective costs of Ireland's geographic peripherality and improved its terms of trade,<sup>5</sup> (c) European integration which, supported by Irish industrial policies, enhanced the attractiveness of Ireland as a base for foreign direct investment (FDI) in both traded goods and services,<sup>6</sup> and (d) an improved labour force, reflecting the benefits of investments in the education and training systems over three decades.<sup>7</sup> All commentators would agree that these factors interacted positively in generating growth and bringing about structural adjustment in the economy.

In this paper, I will examine the role of FDI in Ireland's growth process. While I emphasise the more recent decade because of the better data coverage in the recent decade, I will outline the industrial policy context in which FDI has grown, both in terms of the objectives of that policy and how the policy regarding the promotion of FDI has been pursued in practice. I will concentrate on the manufacturing sector (which exceptionally in Ireland has been growing at a substantial rate in recent times, primarily because of FDI), as data on services and consequently research on services is much more limited.<sup>8</sup> I will examine the issues under discussion regarding FDI in Ireland at

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<sup>5</sup> See Görg and Ruane (1999)

<sup>6</sup> See Ruane and Görg (1996), Barry and Bradley (1997) and O'Sullivan (2000).

<sup>7</sup> See Fitz Gerald (1999).

<sup>8</sup> This is not to understate the increasingly importance of FDI in internationally traded services.

present, in a changed EU environment and how policies are evolving in this context. The paper concludes with a discussion of which, if any, parts of Ireland's strategy, are relevant to other countries.

## **2. Ireland's Traditional Industrial Policy Objectives**

Perhaps of all EU countries, the Republic of Ireland has been most pro-active in fostering economic development using industrial-policy type tools in an increasingly free-trade environment, and the promotion of FDI has played a central role in this process for over four decades. Since the late 1950s, Ireland's economic development strategy has focused on employment creation and has been characterised by actively promoting:

- (i) the development of a modern export-led-growth manufacturing sector (and latterly internationally traded services) through financial and fiscal supports,
- (ii) new greenfield investment by foreign companies in the manufacturing and internationally-traded service sectors, producing output specifically for export markets,
- (iii) the establishment of up-stream linkages between foreign and indigenous companies,<sup>9</sup>
- (iv) the deliberate creation of industrial clusters by foreign and indigenous companies in certain sub-sectors of manufacturing and internationally traded services, and
- (v) a pattern of economic development that would bring private sector investment to the less-developed (Western) areas of the country.<sup>10</sup>

Effectively Ireland's industrial development strategy was driven by the need to create employment, in order to reduce historically high rates of unemployment and net out-migration.<sup>11</sup> The strategy has centred on using industrial incentives to promote export-led growth, driven by FDI firms (in manufacturing, and more recently, internationally traded services) locating a production base in Ireland from which to serve the European

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<sup>9</sup> In this approach the policy makers had implicitly the type of indigenous/foreign relationship anticipated by and formalised in Markusen and Venables (1999)

<sup>10</sup> The development strategy was introduced gradually at the end of the 1950s when the Irish-owned manufacturing sector was orientated towards the domestic market (heavily protected by tariffs and quotas) and the only significant foreign-owned projects were pre-independence investments. The pro-FDI strategy, which followed on a period when foreign direct investment (FDI) was heavily controlled, arose from widespread recognition of the real failure of the protectionist strategy, which lasted from the early 1930s to the mid-1960s. Key to the strategy adopted around 1960 was that the economy should move to free trade and that foreign investment should play a key role in this process, being entitled to the same treatment as indigenous industry.

<sup>11</sup> Ireland suffered population decline for over 100 years and one of the most acute periods of emigration was during the 1950s.

market. Throughout the period industrial development policy has been highly centralised<sup>12</sup> but with a regional dimension – in effect, with industrial dispersal being promoted where it is consistent with the financial viability of the enterprise. Thus industrial development and regional development have been interconnected through the location of mobile projects in less developed regions, with regional infra-structural investments being linked to the developing economic base in the different areas of the country.<sup>13</sup> Since FDI is particularly mobile, it can potentially play a major role in this regard.

This strategy of promoting market-led activities and following, rather than leading, with major infra-structural investments has operated since the early 1960s in an evolving, consistent manner. In the past decade EU regional policy resources have supplemented funds both for regional infrastructures (roads, bridges, ports) and for regional industrial incentives, at a time when the fiscal resources of the national government were highly constrained. Until recently EU policy has impacted on the detail rather than the substance of the evolving strategy, primarily because of Ireland's designation, until 2000, as an Objective 1/Article 92(3)(a) region; this allowed Ireland considerable leeway in granting aid to industry. Nonetheless, the impact of the Commission on Irish industrial policy has been considerable through the formal process of planning and on the preferential support that it has given to the use of particular incentives.<sup>14</sup> As Ireland began to reach full employment in the late 1990s and as it became re-designated as an *Objective 1 region in transition*, industrial development policy, with regards to both FDI and indigenous companies began to change. We return to this below.

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<sup>12</sup> Historically there have been two exceptions to this centralisation. The Midwest region has had much greater regional autonomy (with its own development agency) as has the Gaeltacht (Irish speaking) area. However, in terms of the issue of regional incentives, their approaches have essentially followed that used throughout Ireland by the centralised agencies. In very recent time, there has been some further regional decentralisation under the EU structural funds programmes, with certain very limited funds being made available to local enterprise boards to support local initiatives.

<sup>13</sup> In essence industrial policy has been the driver of regional development with infrastructure following rather than preceding industrial location decisions. Examples include the location of regional institutes of technology (formerly regional technical colleges) to build up human capital in the regions and the development of Cork harbour in tandem with the location of a cluster of pharmaceutical and chemical firms in the 1970s.

<sup>14</sup> For example, over the 1970s Ireland provided a lot of support for industrial development in the form of advance factories. This was not approved of by the European Commission and hence disappeared as an incentive during the 1990s.

### **3. Industrial Policy Approach: 1970-2000**

While projects in all manufacturing and internationally-tradable service sectors were in principle eligible for financial support under Ireland's industrial development policy,<sup>15</sup> the level of support given varied widely, according to project characteristics, sector and location. Over the past two decades, the approach has become increasingly proactive and selective. Since it was expected that FDI would lead the process of modernisation in the Irish manufacturing sector, investments were sought in new sectors with global growth potential and where FDI opportunities were strong.<sup>16</sup> In the early 1970s the electronics and pharmaceutical sectors were identified as providing the most promising opportunities for foreign investment projects for Ireland.<sup>17</sup> Furthermore, the US was identified as the most likely market source for such projects and Ireland was very aggressively promoted as an export base for US companies within the EU.<sup>18</sup> Already in 1991 the share of total employment in FDI manufacturing companies accounted for by US-owned enterprises was almost 45 % and this share rose to over 61% by 1999, over which period employment in US-owned companies increased by over 90%. As the policy developed, the deliberate creation of industrial clusters (in effect, the generation of agglomeration economies) especially in electronics and pharmaceuticals became increasingly important,<sup>19</sup> with strong links among the FDI companies and with outsourcing linkages to domestic firms in these sectors.<sup>20</sup> A specific proximate operational target of policy with regards to extra-EU FDI companies was to have the Irish operation become the sole or key production/distribution centre within the EU, ideally involving headquarter, marketing and R&D functions.<sup>21</sup>

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<sup>15</sup> Activities in other sectors (agriculture, tourism, minerals, utilities) are not eligible for support under this policy.

<sup>16</sup> By the mid 1970s it was seen as preferable to seek new FDI projects to replaced unprofitable indigenous projects in stagnant sectors rather than attempting to shore up these projects. Similar policies used in the 1960s (to assist Irish firms so that they could compete with the imports following the removal of tariffs) were very unsuccessful, merely delaying rather than avoiding job losses and firm closures.

<sup>17</sup> These were sectors exhibiting high growth rates and for which transportation costs were relatively low – arguably the ideal projects for a peripheral, island location in Europe (see Görg and Ruane, 2000, for a further discussion).

<sup>18</sup> Görg and Ruane (1999) show that Ireland received a disproportionate scale of global and EU investment by US companies in these sectors during the 1990s.

<sup>19</sup> The success of this strategy is noted in Krugman (1997).

<sup>20</sup> Görg and Ruane (2001) find that foreign electronics firms are increasingly sourcing material inputs in Ireland. However, because of data limitations, they cannot identify the extent to which these purchases are from other FDI companies (likely because of the large share of foreign companies in the sector) or from indigenous companies.

<sup>21</sup> This is seen as important from the point of view of achieving high-income jobs and of encouraging a deepening of the companies' commitment to Ireland.

The process of project selection evolved naturally from the identification of key sectors. Within these high growth sectors, agency personnel initiated contacts with the companies, for whom investment in Ireland could be a credible strategy, and sought to persuade them to visit Ireland in the context of a specific project proposal.<sup>22</sup> The discretionary financial support system (see below) led inevitably to a bargaining process between state-agency executives and potential investors,<sup>23</sup> subject to maximum limits; when the absolute amount of support was large, Cabinet approval was required. Information on the amount of financial support given to companies is eventually in the public domain, so that transparency is assured about the final out-turn of the negotiations but not about the process of arriving at it. In practice, however, the tradition of publishing the amounts given annually to individual companies disappeared during the 1980s because it was seen as revealing too much information to competitive countries seeking FDI.

With increasing pro-activity and selectivity, the role of government institutions in the process has become greater. (The institutional structures have changed several times in the past decade; at present *IDA Ireland* deals with foreign-owned industry and *Enterprise Ireland* deals with indigenous industry, while a third agency, *Forfás*, is responsible for developing the policy framework in which these other agencies promote FDI and indigenous industry in a complementary manner.) In the case of indigenous companies, institutional supports have increasingly taken the form of assisting the establishment of SMEs and building the capability of larger medium-sized firms through the provision of information, supporting of networks, etc. Associated with this is often the provision of ‘soft’ financial supports, as well as, increasingly, support for linkages into foreign sub-supply chains.<sup>24</sup> In the case of foreign firms, the institutional approach has been to facilitate the establishment of the company in Ireland, by minimising bureaucratic costs, providing information, contacts with sub-suppliers, etc.<sup>25</sup> As a consequence of the financial support system (see below), there is an on-going

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<sup>22</sup> Implicit in the approach adopted to looking at potential foreign investment was the type of framework subsequently 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.

<sup>23</sup> While foreign project investors argued for more support on the basis of the attractiveness of alternative international investment locations (usually in the EU), Irish state-agency executives offered support by reference to the attractiveness of the project to Ireland and the levels of support given to other projects.

<sup>24</sup> We return to this issue below.

<sup>25</sup> In effect IDA Ireland provides a “one-stop-shop” for foreign companies, whereby all aspects of establishing in Ireland are handled in the agency. Legislation in August 1999 provides additional powers to the relevant ministry to ensure that planning delays as minimised for strategic projects seeking to locate in Ireland.

relationship between the foreign-owned companies and *IDA Ireland*, which agency personnel use to promote the development of clusters and agglomerations. This is effected by having potential investors visiting plants already operating in the same sector in Ireland. Incumbent plants facilitate these visits (often by their competitors in global product markets) as they expect to benefit from the further agglomeration. *IDA Ireland* operates informal mechanisms to ensure that a newly establishing plant does not poach labour excessively from any existing plant, thereby avoiding inter-firm tensions as the agglomeration develops. In addition, to foster linkages, information on sub-supply is provided to both foreign-owned and indigenous firms, and potential for sub-supply linkages contributes to favourable treatment for financial supports. Since the late 1990s, the linkage programme has developed to take account of global out-sourcing trends – we return to this development below.

#### **4. Industrial Policy Instruments: 1970-2000**

The pro-active development strategy adopted in Ireland involves a combination of *fiscal incentives* and *financial incentives*.

##### ***Fiscal Incentives***

As far as FDI manufacturing companies locating in Ireland are concerned, the main industrial incentive is a highly favourable regime of corporate taxation. Starting in the mid-1950s, all companies establishing in Ireland were entitled to a full tax holiday for up to 15 years on profits associated with export sales.<sup>26</sup> Because of its export bias, this incentive was deemed incompatible with the Treaty of Rome and in 1980, it was replaced with a preferential tax rate of 10 percent on all corporate profits in manufacturing, independently of whether the output was an export or an import-substitute (i.e., was trade-neutral).<sup>27</sup> While this incentive did not legally constitute a state aid in terms of EU competition policy,<sup>28</sup> its continued operation was subject to

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<sup>26</sup> The standard rate of corporate tax during the 1960s and 1970s was 50 per cent. During the 1980s, this tax rate was reduced to 45 per cent.

<sup>27</sup> Given the small size of the Irish market and Ireland's membership of the European Economic Community (EEC), the switch to a trade-neutral incentive away from a pro-exporting incentive had little effect on the behaviour of foreign firms in particular, with exporting remaining the driving force behind their investments in Ireland. Its removal facilitated the development of clusters based on production linkages between FDI companies resident in Ireland, in that it no longer penalised them in terms of higher tax rates for selling on the local compared with the international market

<sup>28</sup> Thus it is not factored into any of the calculations of state aids in determining whether assistance to companies (foreign or domestic) in Ireland falls within the allowed maxima. The Commission treats the International Financial Services Centre in Dublin and the Shannon Airport Free Trade zone as exceptions to this rule without the agreement of the Irish government.



agreement between the Irish government and the European Commission, which, in the early 1990s, indicated that the pro-trade bias inherent in the two-tier tax rate was no longer acceptable.<sup>29</sup> The essence of a new agreement in the late 1990s was that a standard rate of tax of 12.5 per cent would come into operation for all corporate income from 2003, with the 10 per cent rate "grand-parented" up to 2010 for all companies already in operation.<sup>30</sup> The corporate tax rate on the non-traded sector has been reduced annually since the mid 1990s and reached 16 percent in the 2002 budget, in preparation for the reduction to 12.5 per cent in 2003. The low corporate tax rate is widely recognised as the crucial instrument in attracting mobile FDI projects to Ireland<sup>31</sup> and remains so despite the general reductions in rates of corporate tax in the EU in recent years. In the context of European tax harmonisation, the low tax rate in Ireland, while not a state aid, is under continued discussion and scrutiny within Europe, with high-tax countries protesting to the Commission about its impact on their ability to attract FDI projects. The Irish response has been that (a) tax policy is a national and not an EU issue, and (b) while the differences between nominal tax rates in Ireland and elsewhere in the EU is low, the differences between the effective rates is much less as Ireland has a much wider corporate tax rates (fewer tax allowances) than found in other EU countries. In recent times several of these countries (UK and Germany) have significantly reduced their corporate tax rates, so that differences continue to decline.

### ***Financial Incentives***

The financial incentives to support investment have traditionally been in the form of cash grants, which are non-repayable as long as companies meet the initial targets agreed by them and the state agencies. In the 1960s and early 1970s these operated as *automatic* investment grants, paid as a fixed percentage of the cost of the new plant and machinery, and available to higher maxima in the *designated areas*, reflecting regional policy objectives. Over the past two decades, the system has operated in a more *discretionary* manner.<sup>32</sup> Firstly, the range of financial aids has widened to meet the specific needs identified by the project promoters; the policy package available to

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<sup>29</sup> While the 10 percent tax rate met the EU criterion of neutrality in not favouring exports over import substitutes, it failed to meet the criterion of overall tax neutrality, i.e., as between traded and non-traded goods and services.

<sup>30</sup> The agreement also allowed for a limited number of new projects to be established annually until 2003 at the ten per cent tax rate.

<sup>31</sup> IDA Ireland personnel suggest that tax incentives are particularly popular with US firms. A Deloitte Touche Tohmatsu survey (Deloitte Touche, 1996) found that almost 60 per cent of foreign companies interviewed found the 10 per cent rate to have been very influential in their location choice. Similar results were also found by Hannigan (1998).

<sup>32</sup> The grants are implemented at the discretion of the relevant state development agencies.

foreign (and domestic firms) has included, along with investment grants, training grants, subsidised rents, low-interest loans, technology-transfer supports, R&D grants, etc.<sup>33</sup> Secondly, the scale of actual grants given has varied widely, based on fairly precise evaluation criteria. A formal process of project evaluation is used,<sup>34</sup> and the allowable maxima are set in terms of “grant per sustainable job equivalent” as well as “grant per unit investment”. This dual approach, reflecting the historic emphasis on job generation in Irish industrial policy, is seen as addressing previous concerns by economists that the grants were capital biased, which was not appropriate given the concern with employment.<sup>35</sup> Although the grant is paid ostensibly towards capital, the grant has to be repaid should the associated job targets not be met in the agreed time-frame, thereby ensuring that the grant per job maximum figure is not violated. For this reason, the agencies continuously monitor all supported investments, with annual surveys (on employment, output, export behaviour, expenditure, etc) and regular plant visits.

The increasingly discretionary, project-centred approach adopted by Irish policy makers has resulted in a policy culture that focuses on the requirements/demands of the companies, and underpins the establishment of separate agencies in the 1990s to handle foreign and domestic industry. Perhaps because of its company-centred approach, Irish policy has, relative to that in other countries, emphasised the importance of both minimising the bureaucratic costs associated with establishing a business in Ireland and establishing policy certainty for incoming and indigenous investors. Policy certainty has been achieved primarily through policy continuity.<sup>36</sup> Fiscal certainty has been achieved by providing the investing firms with a long and certain time horizon, with tax incentives fully grand-parented,<sup>37</sup> while financial uncertainty has been minimised by the

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<sup>33</sup> See Yuill et al (1997) pp 299-318.

<sup>34</sup> In practice, the supports offered are based on an *explicit* form of cost-benefit analysis, which takes account of factors such as employment potential (in terms of both job numbers and skill mix), location of the projects within Ireland, the profits tax potential and the strategic potential of a particular project to Ireland’s development process. Thus a key investment project, such as Intel, might expect to receive a higher rate of grant than a routine project in the electronics sector. See Honohan (1998).

<sup>35</sup> See, for example, Ruane and John (1984).

<sup>36</sup> The continuity in policy has been possible primarily because there is exceptionally widespread consensus in Ireland on the strategy of promoting FDI and on the use of the financial and fiscal incentives in that process. All of the major political parties, and the unions and employers groups have supported the FDI strategy over the past 40 years. Thus changes in government have had not serious impact on the policy environment faced by FDI companies located in Ireland.

<sup>37</sup> Thus, for example, firms locating in Ireland in the 1960s were given a fifteen year tax holiday and those locating in the 1980s were assured that the corporate tax system which they would face would be unchanged until 2000; in 1990 this was extended to 2010. Furthermore, policies have always ‘grand-parented’, i.e., once granted, an individual firm always holds its tax status.

payment of the cash grant up-front, with repayment required only if the company fails to meet its agreed employment objectives.<sup>38</sup>

## **5. Have Irish Policy Objectives been met?**

We now look at the impact of Ireland's FDI policy in terms of the objectives set out in Section 2.

### **1. Export-led-growth in the Irish manufacturing sector** (and latterly internationally traded services)

Ireland has succeeded in developing a rapidly growing export-based manufacturing sector. As noted above, **Figure 3** shows how the sectoral composition of employment within manufacturing has changed since 1960 towards high-tech sectors and away from food processing and traditional manufacturing. **Table 1** shows internationally comparable data for the ratio of merchandise trade to GDP for Ireland and other EU countries over the period 1970-2000. Ireland's ratio at 67% in 2000 is the highest in the EU, apart possibly from Belgium/Luxembourg. This reflects the high degree of openness in the economy. The export-output ratio in manufacturing is high and continues to grow. In 1999 x% of manufacturing output was exported, compared with y% in 1991. (Data to be added) **Table 2** shows the changed profile of exports since 1960, with reduced dependence on the traditional export market, namely the UK, which took 75% of Irish export in 1960, and increased emphasis on markets outside the EU area, which in 1999 took 35% of Ireland's exports.

### **2. New green-field investment by foreign companies** in export-oriented manufacturing and internationally traded sectors

The success in winning FDI companies is reflected in several ways. **Table 3** shows comparative capital outflow and inflow data (relative to GDP) for several countries, and the scale of flows in Ireland, which are dominated by inflows over the past three decades, is striking. **Table 4** provides a perspective in terms of the scale of US direct foreign investment in manufacturing which went to Ireland during 1998 – in the context where Ireland has less than one percent of the EU GDP, this figure is quite remarkable.

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<sup>38</sup> The government's money is secured by linking the payment to fixed assets lest the project fail. Recent examples of major grant repayments arose with the relocation of a Seagate plant to Hungary and part of

In terms of the manufacturing sector domestically, the importance of FDI is evident in terms of the growth of the sector overall and in its changing sectoral composition.<sup>39</sup> In 1999, the latest year for which data are available, foreign companies accounted for 85 per cent of net output in the manufacturing sector and 49 per cent of total manufacturing employment; the corresponding figures for 1991 are 70 and 44 per cent respectively. See **Table 5**. While FDI companies are represented in all sectors, it is clear that they dominate all of the high-tech sectors both in terms of net output and employment. The share of total net output generated by foreign-owned companies varies sectorally (from 17 per cent in Other Non-metallic Minerals to over 98 per cent in Chemicals and Office Machinery & Computers (two of the main targeted *high tech* sectors)), reflecting differences in the degree of international mobility of investments across sectors and the selective approach to policy implementation. The sectoral composition of FDI overall is highly concentrated in high-tech sectors; over 55% of jobs in foreign companies are in high tech sectors whereas the corresponding percentage for indigenous jobs is less than 10%.<sup>40</sup> Both employment and output figures confirm the importance of the *high-tech* sectors, with three out of every four jobs in the Chemical and Electronics related sectors accruing to foreign-owned companies.<sup>41</sup>

Not surprisingly, the export ratio of FDI companies in Ireland is very high, given that the economy has been promoted as an export base within the EU. On a comparative basis, FDI companies have export ratios three times the average of Irish owned companies. In all but five sectors the export ratio is above 90% and in only one sector (non metallic minerals) is the ratio below 70%.

Turning to **Table 6** we see that over the 1990s net output grew by almost 300% in real terms, while the corresponding increase in employment was just 41%.<sup>42</sup> This difference reflects the expansion of sectors with very high labour productivity, such as Office Machinery and Computers and Pharmaceuticals. Employment in foreign firms in the promoted electronics sectors increased doubled in the period 1991 to 1999, following a

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Fruit of the Loom to Morocco.

<sup>39</sup> Unfortunately we do not have corresponding data available for internationally traded services.

<sup>40</sup> Ruane and Ugur (2002) show that the correlation between employment growth across sectors between foreign and Irish firms is only 25%.

<sup>41</sup> The foreign share of net output by sector exceeds the foreign share of employment in all but one sector. These differences could be due to (i) differences in sub-sectoral activities, (ii) differences in factor intensities in the same sectoral activity, resulting in foreign firms being less labour intensive than indigenous firms, or (iii) transfer pricing. Because of the latter, employment shares rather than net output shares are a preferred indicator.

relatively modest increase (11 per cent) in this sector in the previous decade; this reflected a restructuring of the electronics sector in Ireland in this period with significant gross job gains and losses. Employment in FDI companies in the Chemicals (including Pharmaceuticals) sector increased by 75% in the same period. In both sectors export ratios are exceptionally high – with Chemicals and Electronics FDI companies are exporting 98 and 94 per cent of their outputs respectively. A feature of the past decade has been that employment in indigenous firms has increased – in the previous two decades employment fell in Irish owned firms giving rise to the issue of whether foreign firms were crowding out indigenous firms though increased competition in the Irish factor markets.<sup>43</sup>

The employment stock data hide a considerable amount of job creation and destruction, as discussed by Strobl *et al.* (1998) and Walsh and Whelan (1999). Even in the high-tech sectors targeted by industrial policy, foreign firms have experienced very high rates of job gains and losses over the last two decades. This suggests that, if the Irish economy is to continue to pursue a policy of fostering growth through expansions of high tech companies, continuing policy activity may be required if Ireland is to retain its present scale of FDI activity. The present recession shows evidence of this as data from IDA Ireland for 2001 indicate that job gains continue at a high level but that job losses (especially in Electronics) have surged with the global downturn. As a result, net job creation was negligible in 2001.

### **3. Establishment of up-stream linkages between foreign and indigenous companies**

The potential for local linkages has increasingly been used as an argument for fostering foreign direct investment in economies seeking to develop more quickly.<sup>44</sup> Ireland has directly pursued this strategy for over thirty years, and with particular emphasis in the electronics sector during the 1990s. The policy up to the late 1990s was considered to have been quite successful, with a three-fold increase in local sourcing of raw materials by foreign companies between 1988 and 1998. In the late 1990s, Forfás reported that

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<sup>42</sup> The corresponding increase in employment in indigenous firms in the same period was 15%; combined with the performance of the FDI companies, this resulted in an increase in manufacturing employment overall of 26%.

<sup>43</sup> Since foreign sales were predominately on export markets, there was no issue of crowding out in the domestic product markets. There has been some concern in the literature that indigenous firms may have been crowded out by multinational companies (Barry and Hannan, 1995). The contrary argument is that, even if some crowding-out has taken place, MNCs have assisted a necessary structural change in the Irish manufacturing sector, away from traditional sectors to *high-tech* sectors (Ruane and Görg, 1997).

approximately 20 per cent of total raw materials were sourced in Ireland, compared with 15 per cent in 1988.<sup>45</sup> However, as pointed out by Görg and Ruane (1999), it is not possible to identify from the data whether these linkages are between downstream FDI firms and upstream indigenous firms; given the scale of multinational presence in many sectors in Ireland, it is to be expected that at least some of the linkages are between upstream and downstream MNCs.<sup>46</sup> The present policy is to maintain and to increase this share where possible, recognising both that the scale of backward linkages by foreign companies is much less in employment terms than that of indigenous companies<sup>47</sup> and that in an increasingly integrated international economy, global rather than local outsourcing is likely to undermine some of the outsourcing arrangements which have developed over the 1990s.<sup>48</sup>

#### **4. Creation of industrial clusters in certain sub-sectors of manufacturing and internationally traded services**

As already noted, the sub-sectors identified for development were in electronics and pharmaceuticals. Since the late 1980s and early 1990s this targeting has begun to yield very significant benefits especially with US companies in the electronics and health care sectors.<sup>49</sup> The clusters are both horizontal and vertical, the latter elements relating to the policy of promoting outsourcing linkages. Thus in electronics the aim of developing activities across the full range of production from upstream (e.g., semi-conductors, PCBA) to downstream (computers, consumer electronics, software production) has been achieved very successfully,<sup>50</sup> and in recent years, significant numbers of indigenous

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<sup>44</sup> See UNCTAD *World Investment Report 2001: Promoting Linkages*

<sup>45</sup> These data relate to non-food manufacturing, since the bulk of its raw material comes from the agricultural sector.

<sup>46</sup> Görg and Ruane (1999) conclude, on the basis of a firm level econometric study of the electronics sector that individual foreign firms increase their linkages over time, generating additional sales for and employment in indigenous firms. Görg and Strobl (2002) present econometric evidence that supports the conclusion that foreign firms in Ireland have had positive a positive effect on the entry of indigenous firms, through this linkage mechanism.

<sup>47</sup> See O'Malley *et al.* (1998).

<sup>48</sup> Ruane (2001) outlines the evolution of Ireland's linkage policy which is focussed increasingly on helping FDI companies to find sub-suppliers in Europe generally and not just in Ireland, and in helping indigenous companies to find and on occasions fund global sub-suppliers where they recognise that they will not be able produce inputs competitively as Irish wage rates increase in real terms.

<sup>49</sup> For example, many of the high profile investors that located in Ireland in the late 1980s and early 1990s, such as, Intel, Hewlett Packard, Dell, Compaq and Microsoft, had been targeted by *IDA Ireland* over many preceding years, with regular presentations made as to why they should locate in Ireland and what assistance they would receive, etc. It would appear that there is a lead-time of at least five year between the first presentation of a case to the senior management in these companies and the eventual decision to locate a plant in Ireland. .

<sup>50</sup> Görg and Ruane (1999) estimate the spread of employment in the electronics sub-sectors of multinationals for 1995. They find the following: Semiconductors (17%), Peripherals & Media (13%) PCBA (4%) Instrumentation (4%), consumer electronics (6%) computers (12%), components (7%)

firms have entered those sub-sectors where local linkages are possible.<sup>51</sup> As part of the post-2000 EU restrictions on state aids, significant resources have been earmarked to support strategic R&D in Ireland by third level institutions. These investments are focused on Biotechnology and Informatics and Communications Technologies (ICT) and a specific part of their remit is to support the emerging clusters of FDI companies over the next decade by enhancing relevant human capital.

## **5. A pattern of development that brings investment to the less developed areas of the country.**

Reviewing the 1990s, this is probably the least achieved policy objective, primarily because with high levels of unemployment nationally for most of the decade, it did not get priority. Arguably the gap between the incentive support between the more developed areas – now referred to as the South & East (SE) region – and the less developed areas – now referred to as the Border, Midlands & West (BMW) region - did not capture the relative disadvantages of location. Data for the period 1991-1999 show that net output in FDI manufacturing companies grew at more than three times the rate in the developed SE region compared with the less developed BMW region, while employment grew at almost twice the rate. The failure to achieve a better regional distribution of economic activities is seen as a cost to the single region designation, as manufacturing industry in Ireland appears to have become more geographically concentrated over the past decade. Ironically, this may in part be due to the successful development of strong clusters in electronics in the more developed areas of the country – in effect success in achieving one policy objective (clustering) was at the expense of the second (regional dispersal). In terms of the distribution of manufacturing jobs across regions, the role of FDI historically has been very important, with some of the largest concentrations of employment in peripheral regions being in FDI companies that in 1999 accounted for 49 percent of manufacturing jobs in the BMW region.<sup>52</sup>

The limiting of full Objective 1 status to the BMW region has raised the importance of regional aids to project location in Ireland. The present strategy is to seek FDI projects

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Telecommunications (9%) Software production (14%) Software developments (14%) and Services (5%). This contrasts with the regional development strategy in other regions of the world that have developed horizontal clusters only (e.g., Kyushu in Japan which has semiconductor firms only).

<sup>51</sup> Görg and Ruane (1999) find evidence of new indigenous firm start-ups in all sub-sectors apart for semi conductors.

<sup>52</sup> While the proportion of manufacturing jobs that are in FDI companies is virtually the same in the SE region, the high and growing levels in the BMW regions has given rise to some concerns about excessive local dependency if investments which are exceptionally large run into difficulty, because of the high dependency of the BMW regions on employment in manufacturing.

that can locate successfully outside Dublin.<sup>53</sup> These are inevitably projects for which the economic benefits of clustering are less, and internal transportation costs are lowest.<sup>54</sup>

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<sup>53</sup> Project viability is seen as crucial; Killen and Ruane (1998) find evidence that the success rates of MNCs in the Western periphery are no lower than in the Eastern core.

<sup>54</sup> In this context, the location of international call-centres has recently been promoted by *IDA Ireland*.



## **6. Policy Evaluation**

In evaluating Ireland's recent economic success in winning FDI projects increasingly over the past 15 years, it is important to note its modest success in winning such projects prior to Ireland's entry into the EEC in 1973. This suggests that Ireland, as an individual small economy on the periphery of Europe, had very little to offer to FDI projects directly and that its success in attracting them has much to do with the growth and integration of the European market. Undoubtedly Ireland's entry into the EU gave the economy a new role as an English-speaking, politically stable, export base within the EU market, making it especially attractive to US companies. While the 1970s could be seen as a successful decade in terms of FDI investment, the 1980s saw a strong downturn, followed by an exceptional upturn in the 1990s. Indeed, it is striking, and maybe ironic, that this recent FDI growth has taken place at a time when the relative impact of Ireland's incentives has been eroded both by domestic reductions in incentives and by the increasing use of regional incentives elsewhere in the EU.<sup>55</sup> Since there were no major changes in the industrial policy regime, and such changes as have occurred have reduced Ireland's relative attractiveness, one has to look elsewhere for the source of the recent surge in FDI.

There are several *external factors*, which enhanced the effectiveness of Ireland FDI strategy during the 1990s:

- (i) the spectacular world-wide growth of the high tech sector (which Ireland has promoted since the 1970s), well above what might have been expected;
- (ii) the fall in global telecommunication and transport costs, which reduced the real costs of peripherality *per se*;
- (iii) the exceptional boom in the US economy, which effectively translated into a boom in the Irish economy, and
- (iv) the provision of substantial EU funds to support regional investments and incentives at a time when the Irish economy could not have provided these resources without undermining its corrective macro policies.<sup>56</sup>

All four have combined to support the development of Ireland as an ideal production base for Non-EU, and especially, US companies engaged in producing "weightless products" primarily for the EU market. **Figure 4** shows in very simple terms how the

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<sup>55</sup> These point to the fact that while incentives may have been necessary to Ireland's success in winning FDI projects, they have not been sufficient.

<sup>56</sup> Undoubtedly the small size of the Irish economy has been a contributory factor, as the impact of a given volume of US investment can be expected to have had a greater impact than it would have had on a larger European economy.

composition of manufacturing employment has changed over the 1990s, with the bulk of employment growth in the Non-EU MNCs, and virtually no growth in EU MNCs during the same period, while local companies (LCS) grew by 15%. The export patterns of the different groups are shown in **Figure 5**. For all groups exports increased over the 1990s, but in the case of Non-EU MNCs the share of output exported outside the EU grew most rapidly, in line with expectations in an environment where manufacture is becoming increasingly globalized.

Three *direct policy factors* seem to have worked exceptionally well:

- (i) the strategy of deliberately creating horizontal and vertical agglomerations, a strategy which lay outside the realm of what economists generally would have recommended;
- (ii) the timely extension of incentives to cover internationally traded services, an extension which would not have been favoured generally by economists, and
- (iii) the generation by Ireland over several decades of a pro-FDI reputation based on a pro-active, efficient and consistent industrial policy, an effect which would not have been valued highly by most economists.

In terms of *general economic policy factors*, factors which were seen as crucial to creating an environment attractive to FDI, were:

- (i) the establishment of appropriate macro policies and a restrained wage-setting environment (which recognised the country's labour market problems) in the late 1980s,
- (ii) the introduction of competition policy and deregulation (which is increasing cost competitiveness) in the early 1990s, and
- (iii) the rapidly improving physical and human capital infrastructure (as a result of major investment in telecommunications and education in the 1970s, 1980s and 1990s).

While no individual policy could explain Ireland's recent success in winning FDI, what seems to have happened was that various policies worked in a reinforcing manner, starting in the late 1980s. And, as pointed out by Krugman (1997), Ireland was also lucky. To use the US vernacular, its strategy of wooing Intel and Microsoft has *paid off in spades*, providing the basis for the consolidation and growth of the electronics sector. In the absence of these two investments the performance of the Irish economy over the past decade might be less spectacular and more akin to that of Portugal and Spain, which have also experienced convergence within the EU but at a more modest rate.<sup>57</sup>

## **7. Future Policy Objectives**

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<sup>57</sup> See European Commission (1997a) and Braunerhjelm et al (2000).

The dramatic increase in employment in the late 1990s, has, for the first time since the 1950s, raised real questions for policy makers about the long-standing focus on employment as a policy goal for industrial policy in general and for promoting FDI as a strategy in particular.<sup>58</sup> If employment is no longer the target, what should the target be? Should the target reflect economic welfare more generally, say by focusing on *per capita* income? What about labour productivity or total factor productivity? Should Ireland move to more proximate targets, relevant to industrial development, e.g., increasing the scale of BERD (Business Expenditure on Research and Development) in Irish industry, expanding the scale of product innovation (as measured, for examples, in terms of patents),<sup>59</sup> extending the degree of export diversification, etc. In addition, Ireland's success in attracting FDI over the past decade has raised questions such as: Has it generated too much dependency? Is it wise to have 49% and 85% of employment and net output in manufacturing in FDI firms? Are the present levels of sectoral and nationality concentration in FDI investment appropriate, or are we simply ahead of many of our European neighbours in terms of being truly globalised?<sup>60</sup> Is it a source of concern that many of the young indigenous companies that are being established in the high tech sectors are likely to be "taken over" by global companies in the same fields? Has the linkage policy increased the overall dependence of the indigenous sector on FDI firms – and are these relationships increasingly vulnerable to global outsourcing?

## **8. Future Policies**

If new targets can be agreed, what policies should be pursued to achieve these? Are the traditional state aids completely redundant for FDI companies even in Objective 1 regions, given the preferential 12.5 per cent corporate tax rate? Is there any merit to having some bargaining aid, if this is compatible with EU policy? Might the absence of such aid reduce agency-FDI company contacts, damaging the networks currently in place to aid the process of attracting and assimilating successfully FDI plants?

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<sup>58</sup> This increase has occurred simultaneously with a reduction in unemployment and evidence of increasing immigration by non-nationals.

<sup>59</sup> See O'Sullivan (2000)

<sup>60</sup> Three quarters of all FDI is in the Electronics and Chemical sectors and over one quarter of all jobs in Irish manufacturing are now in US owned companies. (In recent years US companies have accounted for over eighty per cent of all new jobs created by multinationals.)

As the economy increasingly hits capacity constraints, should policy shift away completely from project-based incentives towards improving the domestic infrastructure, in terms of both physical and human capital, in order to make Ireland a competitive environment for FDI?<sup>61</sup> Would this risk losing an element of the strategy that has arguably been important over the past decade, namely, the close link between policy agencies and individual enterprises? If, as the *National Development Plan* seems to suggest, there should be more expenditure on both public and private R&D, is there a need to ensure, through policy intervention, that the mechanisms in place will result in the anticipated growth in innovations and continuing modernisation in the industrial sector? While, as Fitz Gerald et al (1999) point out, the labour force is becoming increasingly skilled (through the increased rate of participation in education), is there still a need for government involvement in actively supporting training and skills generation in the industrial sector, given the traditionally low investment pattern by companies in upgrading the skills of their workforces?

The widespread use of state aids has been limited since January 2000 for most of the country and for the Eastern region in particular. While state aids continue to be allowed, they no longer have EU regional policy funding and their maxima are set to a net grant equivalent of at most 20 per cent (compared with 45 per cent previously) for FDI and 30 per cent for SMEs. In the Western region, Objective 1 status continues to apply, but the net grant equivalent maxima have fallen to 40 per cent for FDI and expansion of large indigenous companies and 55 per cent for SMEs. Since the current levels of grants lie well within these new maxima, the impact of the changes in terms of financial support have not been very large in practice. In the case of FDI, the greater impact of the change may be reflected in a shift towards horizontal aid rather than regional aids, especially in the context of the stated emphasis on R&D expenditure.

## **9. Future Policies**

To what extent, if any, is Ireland's apparent success as winning FDI relevant to other environment? I would argue that much of the rapid success of the recent decade has been a feature the very special circumstances in the world economy and we must wait and see how well these will be sustained during the next decade. Furthermore, some of

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<sup>61</sup> This is evident in recent policy debates that focus on the importance of the environment facing industry (e.g., the impact of high income taxation on wage demands, the need to provide more skilled labour for domestic industry, the need to improve the road network, etc.) See Forfás, 2000.

the factors that worked in Ireland's favour cannot be ignored: close links with the US, English as the first language, changes in technology that reduced the cost of regional peripherality. However, there are some features of what Ireland has done that I think are relevant to other countries:

1. Maintaining policy consistency is important – winning FDI is not done on the basis of policies that change mid-stream, irrespective of how attractive these policies are;
2. Pursuing openness rather than protectionism, both in terms of trade policy and in terms of seeking replacement projects rather than seeking to shore up existing projects where these become unprofitable;
3. Focusing on the international (perhaps regional) rather than the national market, in an increasingly globalized era (even if the scale of increase will slow down) leads to greater likelihood of having more sustained FDI. This points to winning FDI which has an export focus from the beginning and is not simply there to gain domestic market share;
4. Establishing where the country has comparative advantage and working as far as possible with that – or at least avoiding developments which run against comparative advantage;
5. Ensuring the incentives are appropriate and at least partially performance-based – this is the key advantage of low corporate tax rates, in that they only benefit profitable projects;
6. Generating an overall environment for FDI is positive – there is little sense in trying to attract FDI if national attitudes are hostile and the institutional framework is full of red tape; and
7. Providing an economic environment (taxes, prices, infrastructure) that is workable – to provide financial aid at a project level to compensate for broadly deficient infrastructure simply does not make sense.

Finally, if sectoral selectivity is being pursued, ensure that this is market driven, broad based in terms of companies, and that there is a project-evaluation system in place. While Ireland may have looked as if it picked winners, in reality it followed the market – by the time Intel and Microsoft came to Ireland, they were global companies – in effect we invited winners! In this context it is always important to recall that the environment is dynamic – not all projects will survive and thrive, and the scale of assistance they are given should not presume that they would.

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## Tables

**Table 1: Ratio of average merchandise exports and imports to GDP, 1970-2000(%)**

Country	1970	1980	1990	1998	2000
France	13.0	18.9	18.9	20.7	23.0
Germany	17.4	23.5	25.1	23.7	28.0
Italy	13.1	19.9	16.1	19.8	22.1
Netherlands	42.8	50.4	45.5	50.9	55.7
Belgium-Luxembourg	45.5	56.9	60.9	66.2 <sup>a</sup>	--
United Kingdom	16.7	21.0	21.0	21.6	21.8
<b>Ireland</b>	<b>33.8</b>	<b>48.7</b>	<b>48.8</b>	<b>67.5</b>	<b>67.8</b>
Denmark	24.0	26.6	25.3	26.7	28.7
Sweden	20.5	25.6	24.3	34.1	35.1
Austria	21.6	26.7	28.3	30.9	35.1
Norway	24.5	28.0	26.5	26.0	27.9
United States	4.2	8.9	8.2	9.9	10.3
Japan	9.4	12.8	8.8	8.8	9.0
Australia	12.5	13.8	13.8	16.5	17.3

*Notes:* <sup>a</sup> This figure for Belgium-Luxembourg refers to 1997 due to unavailability of data.

*Source:* Merchandise export and import figures from International Monetary Fund (2001). GDP figures up to and including 1998 are from the website related to Lane and Milesi-Ferretti (2001). GDP figures for 2000 are from the OECD website.

<b>Table 2: Market Restructuring 1960-99: Destination of All Exports (%)</b>					
	UK	Rest of Europe	USA	Other	Total
1960	75	6	8	11	100
1970	62	11	13	14	100
1980	43	32	5	20	100
1990	34	41	8	17	100
1999	22	43	15	20	100

Source: Forfás

**Table 3: Ratio of average inflows and outflows of FDI in merchandise goods to GDP per period, 1970 – 2000 (%)**

Country	70-74	75-79	80-84	85-89	90-94	95-00	70-00
France	0.7	0.8	0.9	1.8	3.5	6.3	2.3
Germany	1.2 <sup>a</sup>	0.8	0.7	1.3	1.3	5.0	1.7 <sup>b</sup>
Italy	0.6	0.4	0.6	0.7	0.9	1.4	0.8
Netherlands	5.2	3.7	4.3	5.6	7.5	18.3	7.4
Belgium-Luxembourg	2.2	2.1	1.5	4.4	7.4	22.8	6.7
United Kingdom	3.2	3.4	3.0	6.0	4.1	12.0	5.3
<b>Ireland<sup>c</sup></b>	<b>0.7</b>	<b>2.0</b>	<b>1.1</b>	<b>0.3</b>	<b>2.8</b>	<b>8.1</b>	<b>2.5</b>
Denmark	0.9	0.3	0.4	1.3	3.0	10.8	2.8
Sweden	0.8	0.7	1.4	4.1	4.5	14.3	4.3
Austria	1.8	0.4	0.5	0.7	1.4	3.4	1.2
Norway	1.1	1.4	1.0	2.0	1.7	5.6	2.1
United States	0.7	1.0	0.9	1.6	1.6	3.2	1.5
Japan	0.3	0.3	0.4	1.0	0.8	0.6	0.6
Australia	2.0	1.2	1.6	4.2	2.5	3.5	2.5

<sup>a</sup> Refers to 1971-74.

<sup>b</sup> Refers to 1971-2000.

<sup>c</sup> Inflow and outflow data for Ireland from 1998 onwards have been amended to take account of changes in the methodology and coverage.

*Source:* Inflow and outflow data and GDP data up to and including 1998 are from the website related to Lane et al. (2001). Data for 1999 and 2000 for inflows and outflows come from the IMF 2001 and data for GDP come from the OECD website.

**Table 4 : Ireland's share of U.S. FDI outflows, 1998**

	% of FDI to Europe	% of FDI to World
Manufacturing	7.0	4.4
Chemicals	15.4	9.1
Electronics	39.2	15.3

Source: Department of Commerce.

**Table 5 Significance of Foreign Firms in the Irish Manufacturing Sector, 1999**

Sector	Total Net Output*		Total Employment		Exports as percentage of output**	
	Sectors as % of Total	Foreign as % of Sector	Sectors as % of Total	Foreign as % of Sector	Irish-owned firms	Foreign-owned firms
Food, Drink and Tobacco	10.9%	66%	10.3%	26%	32.3	71.4
Textiles and Clothing	0.6%	50%	3.6%	35%	48.0	90.3
Wood and Wood Products	0.2%	34%	0.9%	19%	10.9	73.9
Paper and Paper Products	0.3%	32%	0.7%	19%	18.2	76.1
Publishing and Printing	11.2%	86%	5.5%	34%	11.9	97.1
Pharmaceuticals	7.5%	92%	5.5%	82%	73.6	98.7
Chemicals	39.5%	98%	9.6%	80%	30.1	99.3
Rubber and Plastics	0.5%	46%	3.5%	40%	30.6	78.3
Other non-metallic Minerals	0.3%	17%	1.3%	15%	18.6	53.9
Basic and Fabricated Metals	0.7%	37%	3.1%	24%	23.2	90.7
Machinery and Equipment	1.2%	60%	5.4%	46%	42.1	94.8
Office Machinery and Computers	11.7%	98%	14.4%	88%	44.6	96.5
Electrical Machinery	1.9%	80%	8.3%	70%	43.6	93.5
Radio, Television and Communications	7.9%	97%	9.7%	89%	83.1	90.5
Medical, Precision and Optical	4.3%	91%	11.6%	85%	52.5	96.1
Motor Vehicles and Transport	0.7%	71%	4.2%	54%	43.8	91.3
Manufacturing n.e.c.	0.7%	40%	2.4%	27%	53.1	94.1
Total Manufacturing	100%	85%	100%	49%	31.6	93.2

Notes: \* Net output in 1985 prices \*\*Ratios relate to 1998 data

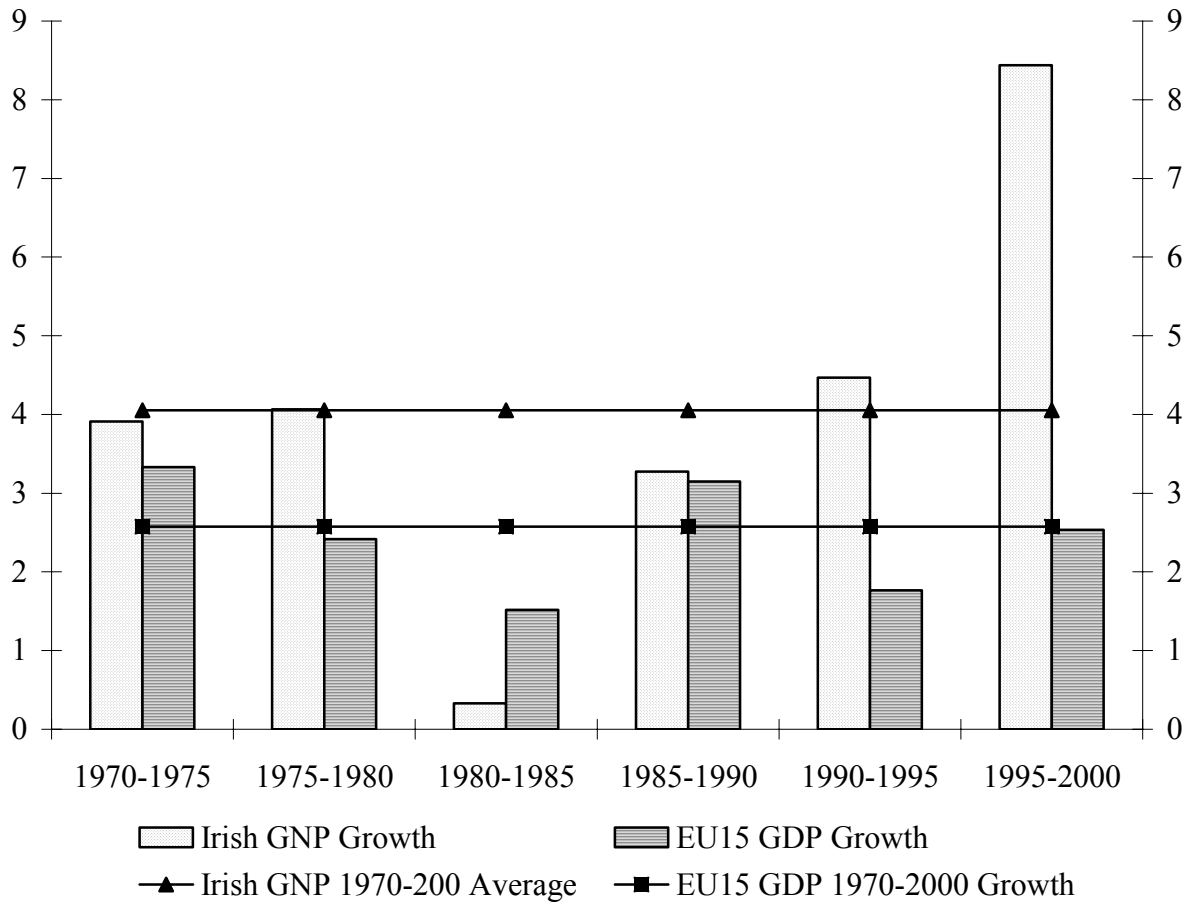
Source: CSO data from the Census of Industrial Production, 1999.

<b>Table 6: The FDI Sector: Growth of Employment, Net Output and Firm Numbers, 1991-1999</b>									
Sectors	Employment			Net Output (£000)			Number of Firms		
	1991	1999	1991-1999	1991	1999	1991-1999	1991	1999	1991-1999
Food, Drink and Tobacco	12,683	12,580	-1%	1,369,413	2,684,931	96%	77	76	-1%
Textiles and Clothing	9,733	4,379	-55%	162,340	139,364	-14%	79	32	-59%
Wood and Wood Products	480	1,094	128%	18,363	49,999	172%	7	8	14%
Paper and Paper Products	1,113	888	-20%	33,297	69,118	108%	15	12	-20%
Publishing and Printing	2,223	6,670	200%	430,518	2,775,662	545%	22	33	50%
Pharmaceuticals	3,085	6,742	119%	240,509	1,859,566	673%	34	40	18%
Chemicals	8,261	11,720	42%	1,484,661	9,763,021	558%	100	116	16%
Rubber and Plastics	4,360	4,267	-2%	125,500	134,493	7%	58	49	-16%
Other non-metallic Minerals	1,848	1,545	-16%	60,060	85,252	42%	22	18	-18%
Basic and Fabricated Metals	3,637	3,809	5%	129,330	172,148	33%	59	47	-20%
Machinery and Equipment	7,001	6,616	-5%	246,928	291,034	18%	66	57	-14%
Office Machinery and Computers	6,767	17,602	160%	902,005	2,898,665	221%	35	36	3%
Electrical Machinery	7,811	10,138	30%	215,517	466,470	116%	57	58	2%
Radio, Television and Communications	4,128	11,855	187%	185,706	1,944,336	947%	27	31	15%
Medical, Precision and Optical	8,554	14,114	65%	429,232	1,064,277	148%	69	67	-3%
Motor Vehicles and Transport	1,590	5,146	224%	34,107	169,403	397%	18	20	11%
Manufacturing n.e.c.	3,595	2,966	-17%	149,240	167,263	12%	33	28	-15%
Total Manufacturing	86,869	122,131	41%	6,216,727	24,735,002	298%	744	688	-8%

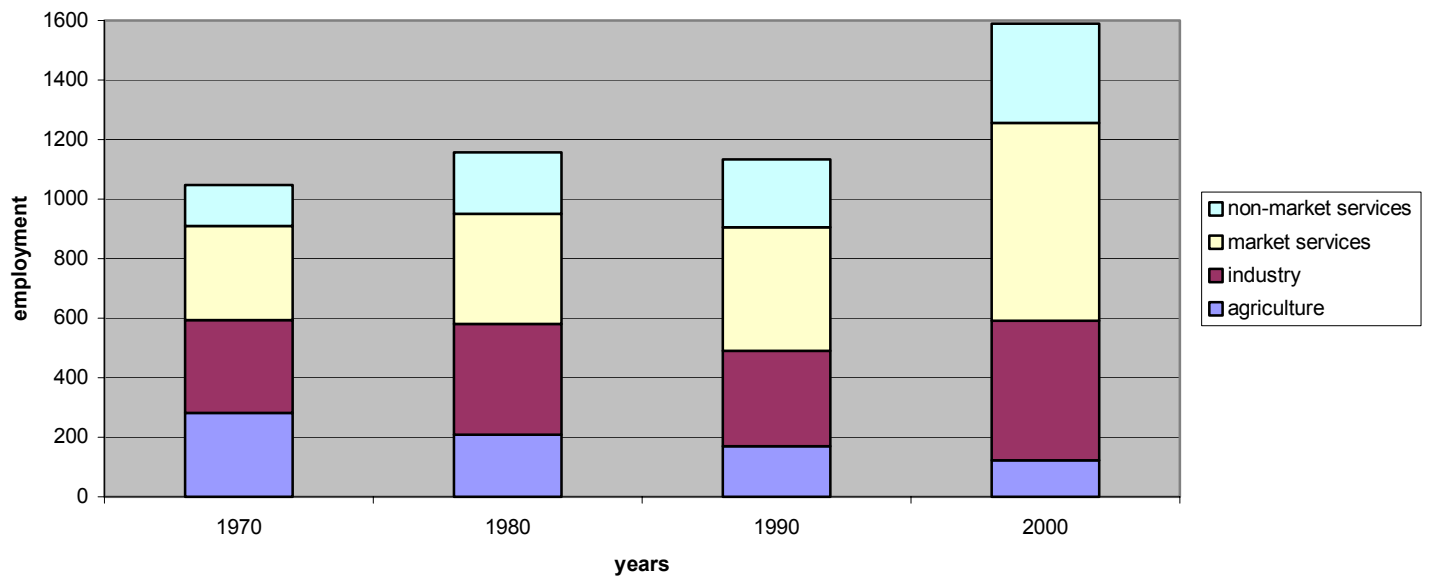
Source: CSO data from the Census of Production, 1991, 1999. Growth in Net Output is in terms of 1985 prices

## FIGURES

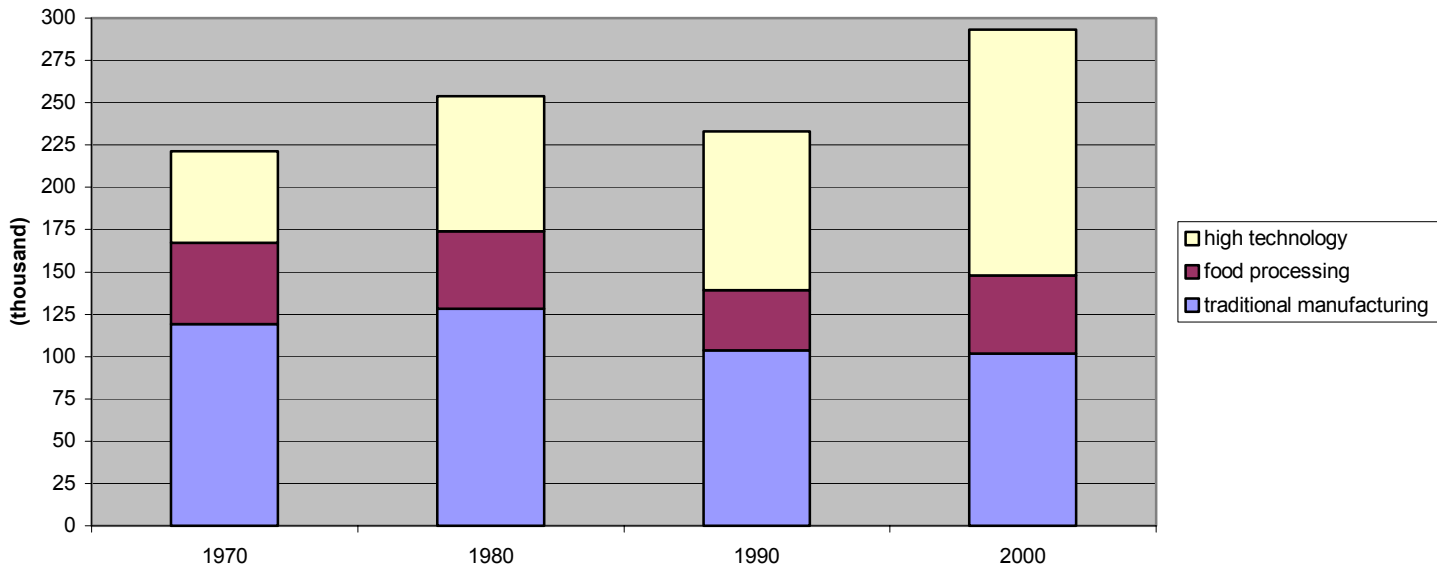
Figure 1: Comparison of Irish and EU growth rates, 1970-2000.



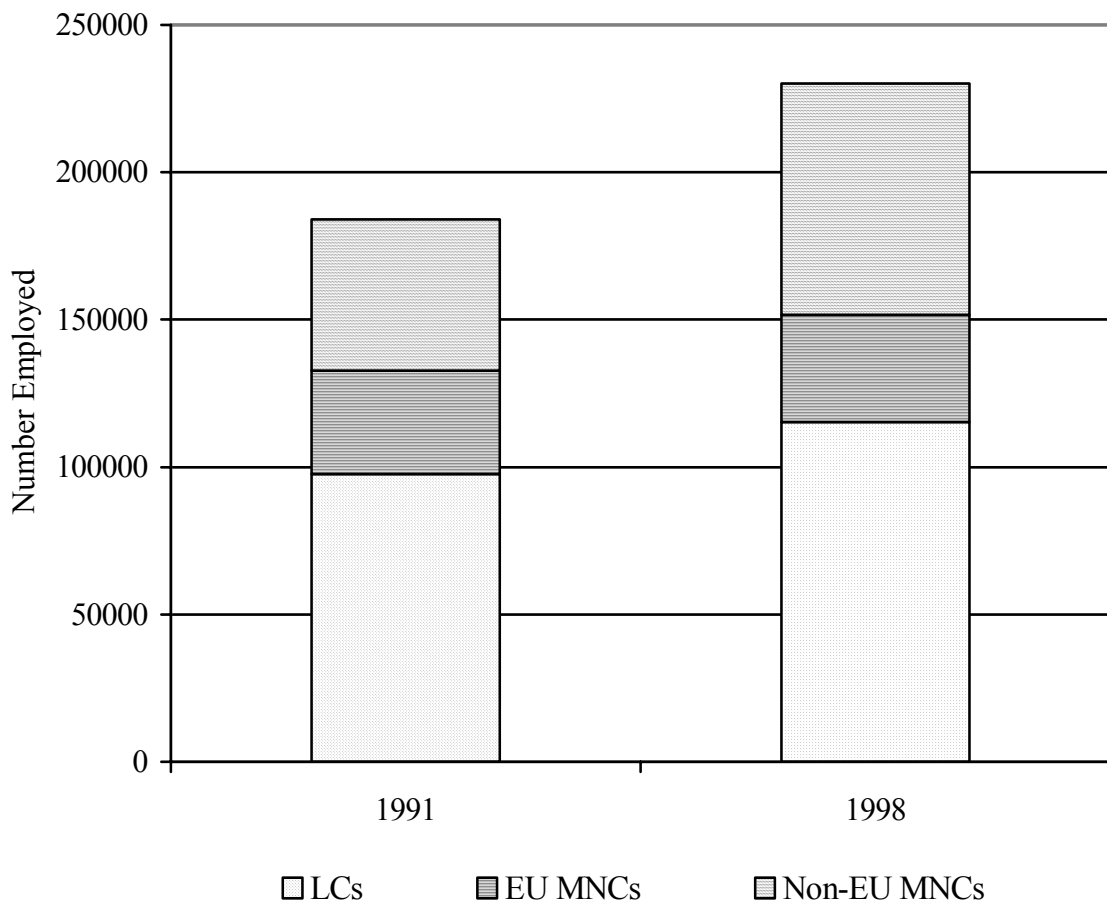
**Figure 2: Sectoral Employment Shares  
(Absolute Figures)**



**Figure 3: Sectoral Employment Shares in Manufacturing (Absolute Figures)**

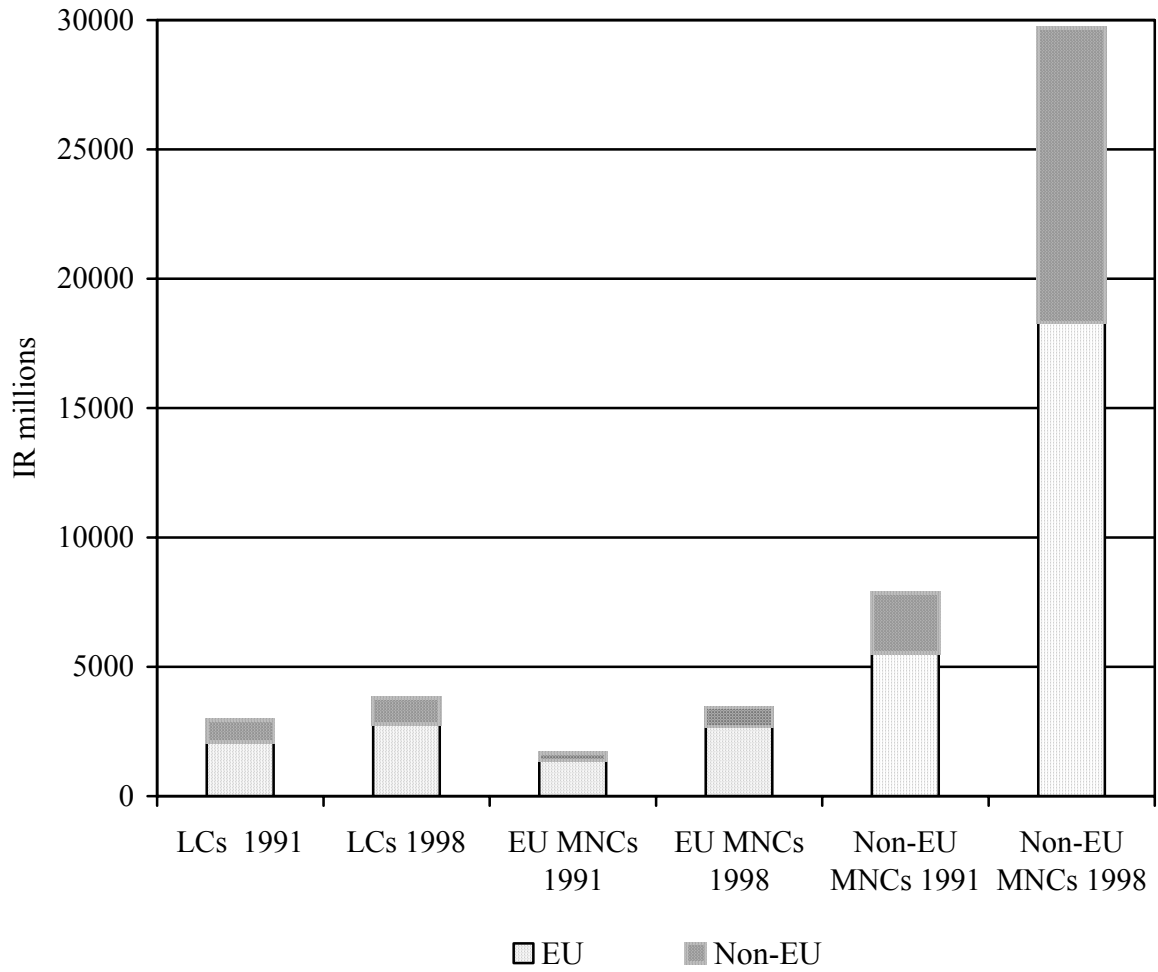


**Figure 4: Distribution of employment in Manufacturing, by ownership, 1991-8.**



Source: Ruane and Sutherland (2002) based on CSO Census of Local Units.

**Figure 5: Distribution of Irish manufacturing exports by ownership and destination, 1991-98.**



<sup>a</sup> Deflated where appropriate, 1985=100.

Source: Ruane and Sutherland (2002) based on CSO Census of Local Units.