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**Article**

## Export-platform foreign direct investment: The Irish experience

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## ABSTRACT

*Ireland is the most successful EU economy in attracting export-platform foreign direct investment (FDI), and the increased FDI inflows of the 1990s are widely agreed to have been one of the most important factors in generating the remarkable boom that the country experienced over that decade. The present paper considers the confluence of factors – domestic policy changes, fortuitous developments in the European and global economic environment, and the coming to fruition of policy initiatives of earlier eras – that provided the setting for the increased inflows of the period and the changes that they wrought. One of the main findings is that growth-enhancing economic policies –including fiscal prudence, the maintenance of labour-market flexibility and a focus on science-oriented human capital formation – were crucial for Ireland to derive the full benefits of its FDI-attracting low-corporation-tax regime.*

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# Export-platform foreign direct investment: the Irish experience

## 1. Introduction

Foreign-owned firms account for almost 50 percent of Irish manufacturing employment. This compares to an average figure of 19 percent for the eleven other EU member states for which OECD (2001) presents data. A higher-than-average share of Ireland's services sector is also under foreign ownership, illustrating the crucial role that foreign transnational corporations (TNCs) play in the Irish economy. This is further confirmed by the value of the stock of foreign direct investment (FDI). Per head of population, the Irish inward FDI stock for 2000 is twice the EU average.



*Frank Barry*

The foreign firms to which Ireland plays host are highly export oriented and account for the vast bulk of Irish exports. Foreign manufacturing firms export more than 90 percent of gross output, and US firms – the most export oriented – export more than 95 percent. With respect to services, Ireland is reported to be the third largest exporter per capita in the world, after Hong Kong and Singapore, and is the world's largest exporter of software. Foreign-owned services enterprises account for 89 percent of the country's service-sector exports, an even greater proportion than the 86 percent of manufactured exports accounted for by their counterparts in that sector.

The present paper charts the story of Ireland's success as a host location and export platform for foreign TNCs. Section 2 begins by outlining the history of Ireland's FDI-oriented development strategy, which came to fruition only in the 1990s – the so-called 'Celtic Tiger era'. That Ireland had been successful in attracting FDI since the 1960s illustrates that this alone cannot account for the dramatic growth performance of the last 15 years. A multitude of other factors, some exogenous and some driven by changes in Irish policy, were also crucial for Ireland's impressive economic growth. Section 3 considers the range of factors that have been instrumental in making Ireland such an attractive location for FDI. This is followed in Section 4 by a more detailed look at the sectoral destinations of the FDI inflows and the differing characteristics of indigenous and foreign-owned firms in Ireland. Section 5 discusses the impact of foreign-owned firms on Irish indigenous industry and on the Irish economy more generally. Section 6 concludes with a brief discussion of the possible effects of a move towards corporate tax harmonisation on the part of the EU.

## 2. Irish economic development since the 1950s

### 2.1 Origins of the FDI-oriented development strategy

Ireland remained protectionist for about a decade after most of the rest of Western Europe had moved towards freer trade. The post-war boom of the 1950s saw Western Europe achieving growth rates of almost 6 percent per annum while protectionist Ireland stagnated with a growth rate of less than 2 percent and an employment growth rate of less than 1 percent. The need to import the more sophisticated capital and consumer goods that the country could not produce for itself led to balance of payments crises and macroeconomic instability, exactly as happened in protectionist Spain at around this time. The depressed economy of the 1950s saw more than 400,000 Irish people emigrate, out of a total population of less than 3 million.

By the end of the 1950s, it was clear that economic policy would need to be completely overhauled. The Anglo-Irish Free Trade Agreement, which aimed to liberalise trade with the country's major trading partner of the time, the United Kingdom, came into force in 1966, and both countries acceded to the then European Economic Community (EEC) in 1973.<sup>1</sup> The move towards openness was accompanied by the introduction of a zero tax rate on profits derived from manufactured exports and a liberalisation of the law on foreign ownership of companies.<sup>2</sup> German and US companies, in particular, were quick to respond to these changes. The total stock of US FDI in Ireland was USD 6 million in 1958, with over 80 percent located in the petroleum sector and none in manufacturing. By the date of accession to the EU, the stock had risen to USD 269 million (in nominal terms), of which 90 percent was in manufacturing, with the bulk of the sector's output being exported.

FDI inflows led to particularly rapid growth in the chemicals sector, whose share of exports grew from less than half a percent at the end of the 1950s to 6 percent at the time of EU entry. Another favoured export sector (at the SITC-1 level) was "manufactured goods classified by material" (primarily textiles, clothing and footwear).

The growth in foreign industry also contributed to a substantial diversification of Irish exports away from the UK market, with the then EU-6 share of manufacturing exports rising by 10 percentage points between the late 1950s and the early 1970s.

## 2.2 From EU accession to the birth of the Celtic Tiger

*EU accession and the development of the Single European Market coincide with the two main booms in foreign direct investment in Ireland.*

EU accession and the development of the Single European Market coincide with the two main booms in foreign investment in Ireland. The number of jobs in foreign-owned industry grew by 23 percent between 1973 and 1980 and by almost 50 percent between 1987 and 2000, an era which included the creation of the Single Market and the worldwide high-tech boom. The expansion of the sector is charted in Figure 1, which also displays the path of employment in the indigenous manufacturing sector.

The mixed fortunes of the indigenous manufacturing sector are reflected in the overall pattern of developments in gross national product (GNP) per capita, measured in Figure 2 relative to the EU-15 average.<sup>3</sup>

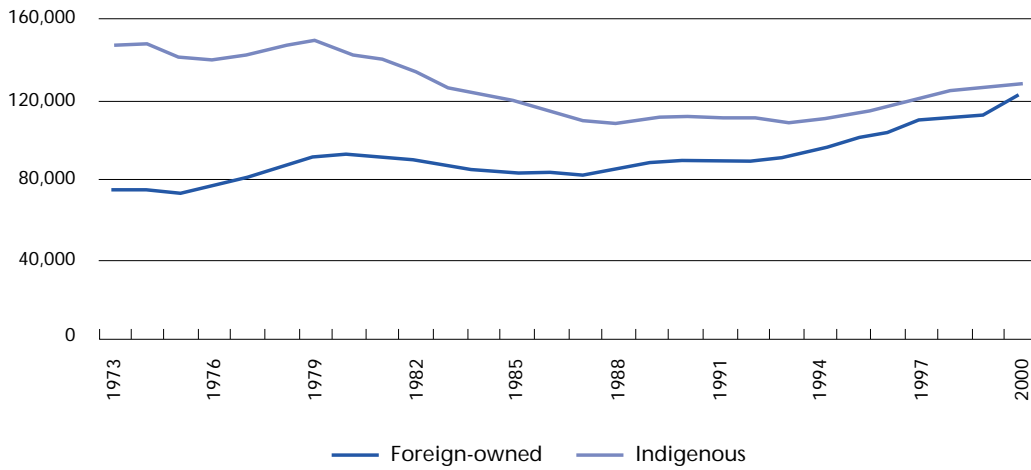
In contrast to the experiences of the other 'cohesion countries' – Greece, Spain and Portugal – Ireland experienced no gain on the EU-15 average level of income per capita over the 1960-73 period. Its failure to gain on the EU average over the period 1974-86 is replicated across all the cohesion countries, however; while all experienced some convergence over the period since then, none converged as dramatically as Ireland.

1 The degree of protection is illustrated by the fact that the average effective tariff level before the Anglo-Irish Free Trade Agreement was almost four times that prevailing in the country's trading partners. This had declined to around twice the average level in the run up to EEC entry in 1973; McAleese (1971).

2 As the bulk of the country's exports at that time were agricultural in nature, there was little diminution of the tax base when the concessionary tax rate was adopted.

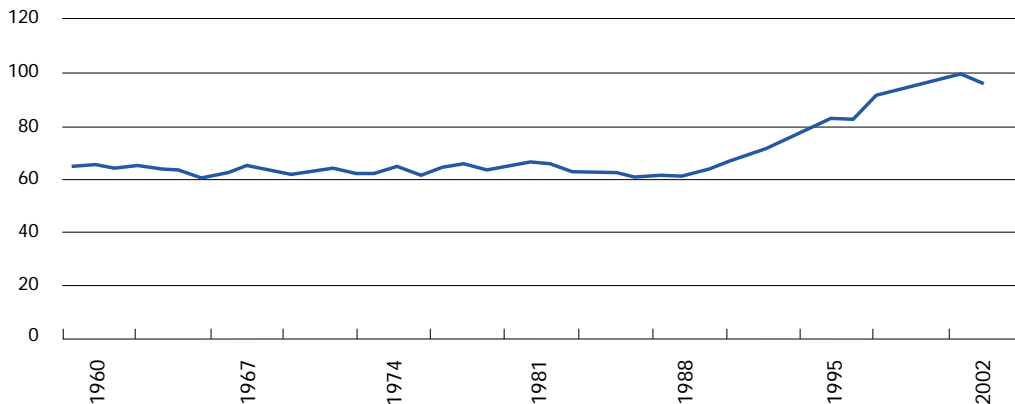
3 GNP is used rather than GDP for Ireland so as to exclude the substantial profits of foreign-owned companies located there. Irish GDP is about 25 percent higher than GNP.

**Figure 1. Employment in indigenous and foreign-owned manufacturing, 1973-2000**



Source: Annual reports of the Irish state agency Forfás.

**Figure 2. Irish GNP per capita in percent of EU-15 average, 1960-2002**



Notes: National income is measured at purchasing power standards (PPS) rather than market exchange rates.  
 Source: European Commission AMECO database for GDP per head at PPS, adjusted for the difference between GDP and GNP as given in the quarterly bulletins of the Central Bank of Ireland.

This suggests then that while most economies other than the United Kingdom were less successful than Ireland in capturing FDI over the entire period, as suggested by Table 1, other adverse factors must have been acting to the detriment of Irish economic development. Barry (2003) sets out to try to identify these factors. His analysis of the comparative economic performances of the cohesion countries in the 1960-73 period shows that Irish underperformance at that time cannot be ascribed either to poor macroeconomic policies (which were quite conservative), to the share of agriculture in the economy (which was no higher than for some of the other cohesion economies), or to an excessively prolonged protectionist stance or low educational throughput. What distinguished Ireland from the other cohesion countries over this period was the malfunctioning of its labour market.<sup>4</sup>

*The malfunctioning of Ireland's labour market largely explains why Ireland failed to catch up with more advanced countries during 1960-73 despite considerable FDI inflows.*

<sup>4</sup> Notwithstanding a high unemployment rate and a productivity growth rate below that of the other cohesion countries (and the EU-15), Irish real wages rose much more strongly than elsewhere over this period.

**Table 1. FDI inward stock per capita (USD), 1985-2000**

	Ireland	UK	Spain	France	EU-15
1980	1,102	1,119	137	415	546
1985	1,313	1,130	233	594	688
1990	1,569	3,542	1,696	1,720	2,113
1995	3,251	3,408	3,331	3,119	3,029
2000	15,623	8,079	3,567	4,401	6,271

Source: FDI stock from UNCTAD (2001); population data from Eurostat.

Labour market performance deteriorated relative to the EU-15 in both Ireland and Spain over the next period (1974-86), which saw divergence rather than convergence in levels of income per capita for all the cohesion countries. The common factor in the poor performance of the whole group, however, was the decline in the standards of macroeconomic policymaking.

The final period saw all four cohesion economies return to convergence. Common policy changes included a switch to more prudent monetary and fiscal policies, a reduction in state ownership and a strengthening of competition policy. EU aid also increased considerably of course, while wage moderation was promoted in the two traditionally high-unemployment economies: in Ireland by the “social partnership” process that began in 1987, and in Spain by the labour-market reforms of the 1994-97 period.

### 2.3 Policy reform and the Celtic Tiger era

*A series of beneficial shocks, policy- and otherwise induced, created a virtuous circle of economic progress.*

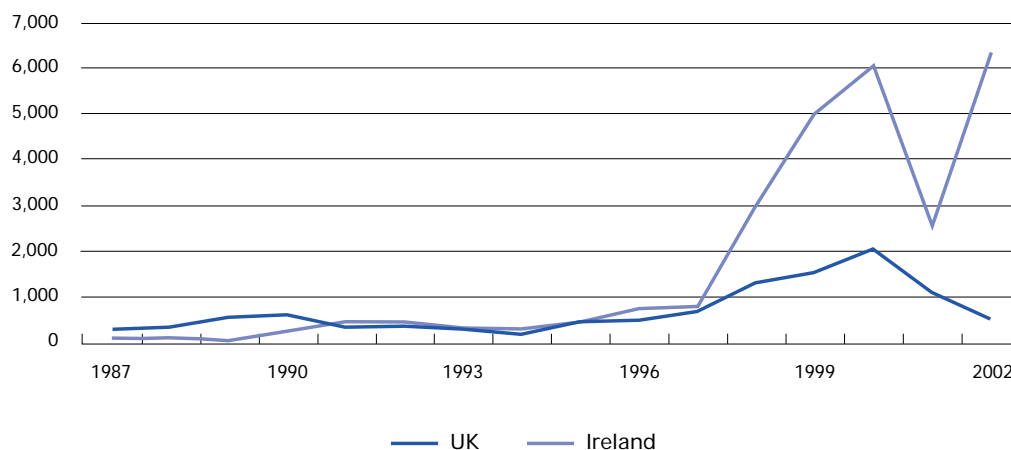
While the 1990s saw a general return to convergence among the cohesion economies, the performance of the Irish economy was particularly strong. Over a little more than a decade Irish real national income per capita rose from less than 65 percent of the EU average to achieve rough parity by the end of the 1990s. Unemployment tumbled from a high of 17 percent in 1987 to less than 4 percent in the early years of the new millennium. Employment expanded by more than 50 percent. This section considers, therefore, the series of beneficial shocks – policy-induced and otherwise – to which the economy was subjected in the late 1980s and which created a virtuous circle of economic progress.

The beneficial shocks included a change in fiscal strategy in 1987, which finally resolved the long-running crisis in the country's public finances. This allowed room for future tax reductions, which, in combination with the country's newly developed ‘social partnership model’ of wage determination, bolstered competitiveness. The doubling of the EU Structural Funds in 1989 made it possible to implement the badly-needed infrastructural projects that had been put on hold as part of the change in fiscal strategy. Airline deregulation, in 1986, facilitated a more than doubling of tourist numbers over the following decade, and, finally, the lead-up to the Single Market saw a huge increase in FDI flows both into and within Europe, of which Ireland captured a sharply increased share.

Consensus has yet to be reached on the relative importance of these various factors. Honohan and Walsh (2002) in their assessment pay little attention to the increase in

FDI inflows, illustrated in Figure 3 (with the UK position included for comparison purposes). Barry (2002) on the other hand – echoing some of the points made by Blanchard in his discussion of the Honohan and Walsh paper – argues that they were crucial.

**Figure 3. FDI inflows per capita in Ireland and the United Kingdom, 1987-2002**



Source: IMF Balance of Payments Statistics Yearbooks (various years); population data from Eurostat.

The only work to attempt an empirical evaluation of a full range of factors including education, industrial strategy, the Single Market, the EU Structural and Cohesion Funds, social partnership and the resolution of the country's fiscal crisis is forced to the conclusion that "the sources of the 'Irish miracle' of the last decade are not entirely clear" (de la Fuente and Vives 1997). In the same spirit, OECD (1999) concludes that

*There seems to be no single overriding policy that could be adopted by other countries to emulate the Irish experience.*

"It would seem that there has been no 'silver bullet' – no single overriding policy that could be adopted elsewhere in order to emulate the Irish experience. Rather the breaks in trend, first around 1987 when the deterioration ceased and performance improved, and then around 1994 when the boom began, are attributable to the confluence of a series of favourable changes in the environment and other exogenous factors, as well as prudent planning and a range of policy shifts that lay the foundations for the pickup in growth. Most of the items that have contributed to the improvement are well known to other policy makers, but other countries' situations may not be so propitious as to allow such a strong response, even to fully appropriate incentives and institutional arrangements."

We now provide a brief discussion of the factors that are generally agreed to have been of importance in triggering the era of rapid growth.<sup>5</sup>

To start with fiscal policies, successive Irish governments had struggled throughout the 1980s to overcome the debt crisis that had resulted from inappropriate pro-cyclical fiscal

<sup>5</sup> For a more detailed analysis of the events and policies behind the birth of the Celtic Tiger see Barry (1999) or the summary in Barry (2000).

expansion at the end of the previous decade. The attempt to close the deficit via high taxation proved unsuccessful – because it was by necessity pro-cyclical (in a contractionary direction) – while workers responded to the tax increases by raising wage demands.

A new approach was tried in 1987-89, when government expenditure was reined in as an alternative to further tax increases. Rather than being pushed into recession, as many would have predicted, the economy expanded. Barry and Devereux (1995) reject the expansionary-fiscal-contraction hypothesis developed to explain episodes like this, concluding instead that “the factors which were working in the direction of recovery – buoyant world demand, improvements in cost competitiveness and an inflow of foreign investment in the lead-up to the Single European Market – more than outweighed the short-run contractionary effects of fiscal contraction”. The competitiveness gains alluded to arose not just from the preceding sharp devaluation of the currency (in 1986) but also from the simultaneous development of the ‘social partnership’ approach to wage determination.

The social partnership approach brings government, unions and employers together every three years to agree a general path for wages and working conditions over the course of the agreement. Successive governments have used the process to purchase wage moderation via the promise of future tax cuts, and these tax cuts have accounted for about one-third of the rise in real take-home pay since the partnership process began.<sup>6</sup> These income tax cuts have continued for well over a decade, leaving Ireland with one of the lowest shares of tax revenues and government expenditures relative to GDP in the entire EU.

*The “social partnership” approach, under which the government, unions, and employers agree on the general path for wages and working conditions, seems to have been key in reducing unemployment.*

The partnership approach has been argued by one of its architects to have promoted a shared understanding of key economic mechanisms and relationships between the parties to the agreements, and there can be little doubt, on the strength of the strike activity data presented in Barry (2000), that it helped to promote industrial peace. Baccaro and Simoni (2002) argue furthermore that partnership has changed the wage leadership process. While wage increases in Ireland pre-1987 were driven by the rapid productivity growth of the foreign-owned sector, wage increases in the partnership period have been driven instead by the much slower productivity growth of the indigenous sector, which has led to substantial reductions in overall unit costs.

Turning to the role of Structural and Cohesion Funds, there is no doubt that the level of EU regional aid increased substantially in the 1990s. More specifically, between 1989 and 1999 aid flows to Ireland through the Structural and Cohesion Funds amounted to almost 3 percent of GDP per annum, an amount similar to that accruing through the Common Agricultural Policy. But careful analysis suggests that the direct effects on GDP of these EU regional aid programmes would have been moderate – adding about half of one percentage point per annum to the GDP growth rate of the 1990s.<sup>7</sup>

6 The standard and top rates of income tax both fell by around 10 percentage points between the late 1980s and the late 1990s, and the thresholds at which they applied were raised in real terms.

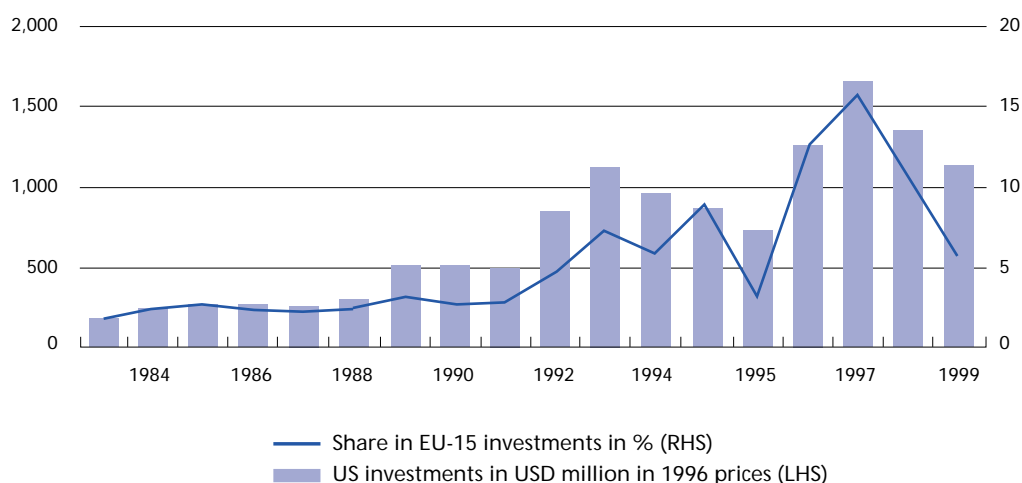
7 As the OECD (1999, footnote 32) points out however, even this apparently modest effect nevertheless represents quite a respectable internal rate of return, of 6 to 7 percent per annum, on the funds invested.



EU support may have had indirect beneficial effects, however. One that is widely recognised concerns its impact, through promoting the introduction of rigorous evaluation procedures, on the efficiency of the overall system of public administration.

Another relates to the fortuitous timing of the increased aid flows, allowing the implementation of badly-needed infrastructure projects that had been postponed during the fiscal contraction in 1987-89. Infrastructural constraints would have emerged far earlier in the boom, and would have choked it off, had the new infrastructure not been on stream. Besides expanding the level of FDI inflows that the economy could handle, the aid is likely to have impacted on the type of FDI that Ireland was able to attract. The increasingly high-tech FDI inflows of recent decades rely on ready supplies of skilled labour, to which the human-resource programmes of the Structural Funds contributed.<sup>8</sup> Finally, the aid flows may have facilitated the social partnership agreements by relaxing the government budget constraint through the tax revenues associated with the increased FDI inflows that aid flows made possible.<sup>9</sup>

**Figure 4. Investment by US manufacturing companies in Ireland, 1983-99**



Source: US Department of Commerce, Survey of Current Business (various issues).

This takes us, finally, to the direct role of FDI in the birth of the ‘Celtic Tiger’. Arguably, the Irish economy boomed on the back of substantially increased FDI inflows, as the low corporate tax strategy in place since the late 1950s came into its own in the 1990s with the increased globalisation of business and the development of the Single Market.

*Ireland's low-corporate-tax strategy, in place since the 1950s, showed its full effect in the 1990s with increased globalisation and the creation of the Single European Market.*

8 It is not clear whether simply increasing educational throughput in an economy with as open a labour market as Ireland's will necessarily lead to industrial development (see, for instance, Markusen 1988). Ferreira and Vanhoudt (2002) argue plausibly that the increased throughput – especially given the vocational/technical slant of the skills provided at third level – and the sectoral (high-tech) composition of the increased FDI inflows were self-reinforcing factors that proved decisive for the Irish boom.

9 It would nevertheless be incorrect to conclude that EU aid generated the Irish boom by facilitating income tax reductions. Corporate taxes are the most important taxes relevant to the country's ability to attract FDI, and this has actually increased over time, from the zero tax rate on profits stemming from manufacturing exports (introduced in the late 1950s) to a standard rate of 12½ percent today.

*In the 1990s, US investments in Europe increased substantially, and Ireland captured a growing share of these investments.*

This period saw US investments in Europe increase substantially, and Ireland captured a growing share of these investments (see Figure 4). MacSharry and White (2000) explain this growth in the Irish share by describing how restrictive public procurement policies on the part of some of the larger EU member states used to offer a strong incentive to transnational corporations to locate there rather than in Ireland. With the outlawing of these practices under the Single Market initiative, the attractiveness of Ireland as a destination for FDI increased.

### 3. Key factors in attracting FDI to Ireland

Ireland's success in attracting export-platform FDI has been referred to earlier in the introduction. A recent cross-country study by Slaughter (2003) examines the determinants of US FDI in Europe and allows us to pinpoint some key factors behind Ireland's success. He finds geographical proximity to the United States to be a significant determinant of the overall level of FDI attracted, while EU membership is found to be particularly significant for FDI in manufacturing and financial services. Smaller markets unsurprisingly attract export-platform activity rather than production for local markets, and US affiliate production tends to be concentrated in low-tax countries. This section of the paper explores the effects of some of these factors on FDI in Ireland in greater detail. More specifically, we will discuss the role of corporate taxation, the Industrial Development Agency, the skill level of the Irish workforce, and of agglomeration and demonstration effects.

#### Box 1. The evolution of Ireland's corporation tax regime

- 1956: Finance Act introduces Export Profits Tax Relief (EPTR), primarily for manufacturing industry, with 50 percent tax remission on profits (increased to 100 percent two years later). The measure provided full relief for 15 years and tapering relief for a further five years.
- 1969: EPTR extended to 1989-90.
- 1978: Government abolishes EPTR and replaces it with a special 10 percent rate of corporate profit tax for all manufacturing industry from 1981-2000. Those qualifying for export-tax relief before 1981 continue to benefit until 1990.
- 1987: Financial Services Act establishes International Financial Services Centre in Dublin. Profits of qualifying activities carried out from the Centre are taxed at 10 percent until 2005.
- 1990: Government extends the 10 percent corporate profit tax rate to 2010.
- 1998: Agreement with European Commission on universal 12<sup>1</sup>/<sub>2</sub> percent corporate tax for all trading companies from 2003. All existing commitments to the 10 percent tax rate for manufacturing industry are to be honoured until 2010. The 28 percent standard rate applying to most services to be reduced by 4 percent annually in 2000-02, and by 3<sup>1</sup>/<sub>2</sub> percent in 2003, giving a 12<sup>1</sup>/<sub>2</sub> percent rate at that date.

Source: MacSharry and White (2000).

The importance of Ireland's low corporate tax regime in kick-starting FDI inflows has already been alluded to. The country's corporate tax regime has remained amongst the most generous in Europe since the adoption of the low tax strategy in the late 1950s,

and remains a critical ingredient in the country's development strategy.<sup>10</sup> The tax regime has undergone occasional changes over the years, generally at the behest of the European Commission. The major changes are charted in Box 1. Export Profits Tax Relief, for example, began to be phased out in 1978, to be replaced by a special 10 percent profit tax rate for the manufacturing industry. From 1987, this special rate was extended to qualifying activities carried out at the newly opened International Financial Services Centre in Dublin. Most other market services meanwhile continued to be subject to the standard 32 percent rate that prevailed at that time. In the face of European Commission pressure to harmonise rates across sectors, the government agreed in 1998 on a harmonised rate of 12 1/2 percent to be instituted from 2003, resulting in a substantial decline in the tax burden on the services sector.

The decision to harmonise at the low 12 1/2 percent rate means that Ireland remains the state with the lowest effective corporate tax rate in the EU. Table 2 is illustrative in this regard. It reports a measure of the average effective corporate tax rates on US overseas investments for 1997 as well as recent standard rates of tax.<sup>11</sup> Ireland's effective rate comes out at a little over 9 percent, compared to an average rate of over 20 percent for the other EU countries shown.

*Ireland remains the EU state with the lowest effective corporate tax rate.*

**Table 2. Effective and standard corporate tax rates in selected EU countries (in%)**

	Effective tax rate on US TNCs (1997)	Standard corporate tax rate (2003)
Ireland	9.1	12.5
Netherlands	17.2	29.0
Sweden	20.6	28.0
Spain	24.6	35.0
UK	24.9	30.0
France	29.0	34.3
Germany	33.7	39.6

Sources: Effective tax rates from Desai *et al.* (2002), standard rates from National Competitiveness Council (2003).

Empirical evidence on the importance of corporate taxes in determining FDI flows is presented by Gropp and Kostial (2000), who focus on total FDI inflows and outflows, and Altshuler *et al.* (2001) who concentrate on the location decisions of US firms.<sup>12</sup>

<sup>10</sup> Financial incentives are also available but are being scaled back in line with EU restrictions on state aid. In 2001, state aid to Irish manufacturing came to 1 1/2 percent of value added, just slightly above the EU average; [http://europa.eu.int/comm/competition/state\\_aid/scoreboard/](http://europa.eu.int/comm/competition/state_aid/scoreboard/). Industrial Development Agency incentive payments in the form of grants and equity came to 0.3 percent of GDP in 2000, down from 0.54 percent in 1990.

<sup>11</sup> The effective rate measures the ratio of the sum of profit taxes of foreign-owned firms to the sum of net income and profit taxes of foreign-owned firms in each country. Rates are constructed in this way, rather than as a percent of taxable income, in order to capture the effects of differences in tax base definitions, special investment incentives such as accelerated depreciation and other important aspects of tax systems that are not reflected in statutory tax rate differences. Various other cross-country measures of effective rates are also available. While the rankings of some countries change with the different measures, Ireland invariably comes out with the lowest effective rate in the EU.

<sup>12</sup> Though the US authorities levy taxes on the global profits of US firms (i.e. irrespective of where in the world they are generated), low-tax environments are attractive for two reasons. The first arises because US firms are not eligible for a tax rebate from the US authorities when foreign taxes in excess of the US tax rate are levied. Since all foreign income and foreign taxes paid are added together in the computation of the foreign tax credit issued by the US authorities, low-tax environments allow US firms to operate in other foreign high-tax environments without penalty. The second reason arises because foreign profits are taxed in the United States only when repatriated. Firms with tax-haven profits can therefore earn interest on their residual US tax liability for as long as they defer repatriation of these profits (see Hines and Rice 1994).

The estimated tax elasticity of US FDI flows suggests that the stock of US manufacturing investment in Ireland is 70 percent higher than it would have been if Ireland had a tax rate equal to the next lowest EU rate. The effect is even more dramatic compared to the average EU tax rate. Gropp and Kostial (2000) come to a similar dramatic conclusion, suggesting that some 80 percent of Ireland's net FDI inflow would disappear if rates were harmonised at the average EU level.

*Besides the low corporate tax regime, another decisive factor in attracting FDI to Ireland has been the Industrial Development Agency (IDA).*

Besides the low corporate tax regime, another decisive factor in attracting FDI to Ireland has been the Industrial Development Agency (IDA). In fact, Ireland was one of the first countries in the world to adopt an FDI-based development strategy, and the IDA has consequently amassed a huge amount of experience in this regard. The history of the organisation is related by MacSharry and White (2000) – the authors of which are former Finance Minister and EU Commissioner Ray MacSharry and former IDA Managing Director, Padraic White.

They describe how the organisation in its early days was willing to deal with almost any foreign firm that expressed an interest in coming to Ireland. We saw earlier that many of the early movers were in the textile and clothing sector. This sector, however, could not withstand the cheap imports that later began to flood the European market, while the synthetics segment was devastated by the oil shocks of the 1970s. The IDA began to realise that though job creation would remain crucial, it was necessary to shift the focus to sectors that would be more insulated from competition from lower wage locations, and that jobs might better be created through backward linkages rather than labour-intensive processes.

MacSharry and White (2000, p. 207) summarise the *modus operandi* that ultimately emerged within the IDA as follows. First, the sectors and sub-sectors experiencing international growth – and that were thought to provide a good fit for Ireland's resources and development aims – were identified. To some extent this process of identification, which some might term industrial targeting, is interactive. Having attracted several computer and components firms in the 1970s, for example, and being favourably impressed by their performance *in situ*, electronics and computer software were among the industries listed as meeting these criteria in 1983, when an all-out campaign to develop Ireland as a major European location of such activities began.

In some cases, the identification of niche targets clearly demonstrates the prescience of the policy-makers. In the late 1980s, a policy paper argued that a combination of factors – including global deregulation of financial services and the emergence of an electronic marketplace thanks to improvements in telecommunications – had created an opportunity for a regional location like Ireland to become a player in the international financial services industry. The national advantages were identified as location, language, education and technology. Though the commercial development officer of the Isle of Man, which had created a well-established niche for itself in this sector, cautioned that “Dublin would be better building on its own resources, which do not particularly include financial services”, a little over a decade later Dublin's International Financial Services Centre had grown to become one of Europe's largest off-shore financial centres, employing around 8,500 people and managing funds worth over USD 150 billion.

After the identification of target niches, the next step in the IDA process involves identifying the strongest companies in these sub-sectors and approaching them with a view to persuading them to locate in Ireland. Intel, for example, was pursued by the IDA for over a decade before it decided in 1989 to open a plant in Europe, with Ireland ultimately emerging as the chosen location. Moreover, IBM strategists had traditionally shied away from export-platform locations. The IDA, after maintaining contacts with the company for more than two decades, eventually persuaded them that such a move could be beneficial through the success of the Software Development Centre that the company had set up in Ireland to meet its in-house development needs.

The agency of course learns more about an industrial sector once some firms in that sector have located in Ireland. It then assesses whether further processes might be successfully targeted or linkages developed. The key players in the packaged computer software sector in Ireland (including Microsoft, Lotus, Oracle, etc.) first established low-skill software manufacturing facilities in Ireland in the mid-1980s, duplicating and shrink-wrapping simple copies of the software programmes that their parent companies supplied, and arranging for the printing and assembly of manuals. Over time, with the encouragement of the IDA, they added the higher-skilled localisation element (involving translation and reprogramming) and later developed Ireland as their European distribution hub.

It is also worth pointing out that the development agencies (comprising the IDA, Forfás – the research and policy arm, and Enterprise Ireland, which deals with indigenous companies) simultaneously have an influence in the development and upgrading of the human capital and physical infrastructure required to facilitate the country in ascending the ladder of comparative advantage. This brings them into realms not traditionally recognised as lying within the industrial policy remit. In Ireland, they played a major role, for example, in forcing through the modernisation of the country's telecommunications infrastructure in the late 1970s to early 1980s and in convincing the government to use part of its Structural Funds allocations to institute conversion courses to furnish science graduates with electronics qualifications.

The skills and experience of the IDA have come to be widely recognised internationally, and it is frequently commissioned by developing countries to assist them in setting up their own industrial development agencies.

We have just touched upon the skill levels of the Irish workforce, but there is more to note on this matter. Executives of foreign-owned companies rank the availability of appropriate skills as one of Ireland's important advantages. Ireland has been successful in implementing a science-based education strategy that enhances its attractiveness to foreign firms. To illustrate, although still lagging behind the OECD average in terms of the proportion of the cohort group aged between 25 and 34 that has attained at least upper-secondary education, Ireland has converged in terms of attainment of at least a university degree or equivalent, and has surpassed the OECD in terms of the proportion attaining third-level diplomas or their equivalent – a segment of the education market of particular interest to TNCs in Ireland (see OECD 2001). In this context, it should be noted that the extra Irish throughput in tertiary education concentrates in natural sciences and related fields. More specifically, UNESCO (1998) data reveal that 40 percent of Irish tertiary graduates are in natural sciences, agriculture and engineering – which compares to an EU average of only 28 percent.

*Executives of foreign-owned firms rank the availability of appropriate skills as one of Ireland's important advantages.*

*The presence of key market players influenced the location choices of newcomers, suggesting that agglomeration and demonstration effects contributed to Ireland's ability to attract FDI.*

Turning finally to agglomeration and demonstration effects, there is evidence that they have also contributed to Ireland's ability to attract FDI. Barry and Bradley (1997), for example, note that surveys of executives of newly arriving foreign companies in the computer, instrument engineering, pharmaceutical and chemical sectors indicate that the presence of key market players in Ireland strongly influences the location choice of the newcomers. Krugman (1997), focusing on the classic Marshallian external economies, mentions the availability of high-quality specialist services in Ireland and of a pool of workers with requisite skills, and notes the likelihood that technological spillovers have also been important, given the clustering of high-technology industries in the country. Barry *et al.* (2003) provide empirical evidence on the importance of both agglomeration and demonstration effects as determinants of FDI.

To summarise, we have identified Ireland's tax regime, intelligent FDI promotion and support policies – including the development of the labour skills sought by foreign investors – and agglomeration effects as key factors that help explain Ireland's success in attracting foreign investors. But it is clear that non-policy reasons have been important as well. That Ireland and the United Kingdom proved to be particularly attractive locations for US corporations, with the highest levels of US FDI relative to GDP in the EU, was probably also due to strong cultural connections with the United States. Like the United Kingdom, Ireland is English-speaking and represents a geographical bridge between the United States and the EU.<sup>13</sup> Proximity between FDI home and host locations remains a statistically significant determinant of FDI inflows, as seen in gravity models such as that presented by Slaughter (2003) for example. Krugman (1997) emphasises that the reason why distance remains of importance today is likely to arise because of the impediments it places on the speed and ease of communication, meaning that the United Kingdom and Ireland are likely to remain favoured locations for US investors in Europe.

There are other aspects of the general business environment that are also likely to be of importance. These include labour market conditions, the quality of public infrastructure, and the efficiency of the public administration system. Wage costs remain low in Ireland relative to most other EU countries (as seen in Table A1 of the Annex), while the incidence of industrial disputes has fallen to very low levels since the late 1980s, as shown in Barry (2000). Ireland's public infrastructure, which was seriously deficient two decades ago, has also improved substantially with the aid of EU structural funds, particularly in the telecommunications field (see Burnham 1998, for instance).

In closing this section, we shall take a brief look ahead. Given the recent EU enlargement, it is of interest to ask how Ireland fares relative to some of the new EU member states in terms of the international business community's perceptions of the attractiveness of various locations. In this regard, we discuss some data drawn from the work of the Institute for Management Development (IMD). For comparison purposes, data on Portugal and Spain are included as well as on Hungary, the Czech Republic and Poland.

In its 2002 annual report, IMD (2002) assesses 49 countries. Among the countries considered here, Ireland is by far the best positioned across most of these criteria. Exploring the

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<sup>13</sup> Kraemer and Dedrick (2002) point out that when Dell Computers first moved into Europe, the company was attracted by locations that were similar to the United States in terms of language and business culture.

perception of various aspects of government efficiency, for instance, Ireland ranks among the top quartile with regard to most of the criteria (for details see Table A2 in the Annex), coming out well ahead of the five other EU members considered here. This is also true when looking at human capital as a determinant of FDI (Annex Table A3). This is not the case, however, in terms of the business community's perceptions of the quality of basic infrastructure. As Annex Table A4 shows, Ireland is ranked close to the bottom of the countries surveyed in terms of infrastructure planning. A reason as to why this is so is provided by the May 2003 report of Ireland's National Roads Authority, which records that the cost of the national roads programme had escalated by over 50 percent since 1999, and the expected completion date had shifted to 2010 – four years behind target.

All in all, however, Ireland remains well placed as an attractive destination for FDI. What, though, are the characteristics of the foreign investments that have come to Ireland and for which the country is likely to remain a profitable location in the years to come? This is the next question to be addressed.

#### 4. Characteristics of Ireland's inward FDI

To begin with the sectoral composition of FDI in Ireland, Table 3 shows total employment in each industrial sector as well as sectoral employment in foreign-owned firms. Office and data processing equipment (which in Ireland consists largely of computers), chemicals, and medical and optical equipment record the highest levels of foreign employment in individual sectors, and, in addition, these sectors are almost completely foreign-dominated.

The food, drink and tobacco sector comes next, though domestic firms dominate here. Radio, TV and communications equipment followed by electrical machinery and apparatus appear next in the hierarchy, and these are again strongly foreign-dominated. The table thus reveals the dualistic structure of Irish manufacturing.<sup>14</sup> While the share of total employment in modern, high-tech sectors is high in Ireland relative to most other EU economies, this is seen to be entirely due to the large involvement of foreign direct investors in the country.

Exploring a little further, we note that Ireland's foreign industry includes clusters in information technology, pharmaceuticals, and medical and optical devices. In information technology, for instance, Ireland plays host to world market leaders such as IBM, Intel, Hewlett Packard, Dell and Microsoft. In pharmaceuticals, nine of the top ten companies in the world – including Glaxo, Johnson and Johnson, Pfizer, and Merck – have operations in Ireland, while 13 of the world's top 25 medical devices and diagnostics companies also have bases there.

*Ireland's foreign-owned industries include clusters in information technology, pharmaceuticals, and medical and optical devices.*

But what explains the precise sectors in which Ireland has been successful in attracting FDI? The answer is likely to reveal a close match between the characteristics of the sectors

<sup>14</sup> In some services sectors, the share of foreign-firm employment is also high. This applies, for instance, to internationally traded services (excluding software), computer software, and financial services; in 2000, employment in these sectors stood at about 18 500, 16 000, and 6 500, respectively.

*Ireland's Industrial Development Agency had an effect on the country's factor endowments and thus its comparative advantage.*

attracted and the characteristics of the host location, and this is so even if one believes the industrial targeting practices of the IDA have been important. Why so? The first point to note is that even if the IDA had chosen to target a sector with characteristics ill-suited to the Irish environment, it is unlikely that it could have achieved such success as to affect appreciably the sectoral structure of the economy. We will provide examples from the aerospace and motor vehicles industries below that illustrate this. A second point is that – as the stories related above about the transformation of the country's telecommunications infrastructure and the emphasis on science graduates with electronics qualifications reveal – the IDA itself has had an effect on Ireland's factor endowments and hence on its comparative advantage. Lipsey (2003) makes the point that “exports depend not only on the factor endowments and advantages of the country as a geographical entity, but also on the firm-specific advantages of the firms producing there.” By attracting such firms, Ireland's comparative advantage has also been transformed. A final point relates to the *modus operandi* of the organisation, as described earlier. Firms were pursued with a view to persuading them to locate in Ireland only if their activities were thought to provide a good fit for Ireland's resources and development aims.

**Table 3. Manufacturing employment (total and in foreign-owned firms) by sector, 2000**

	Total employment	Sector share (in %)	Employment in foreign-owned firms	Foreign employment in % of sector total
Food, drink and tobacco	48,102	18.8	13,170	27.4
Textiles, clothing and footwear	10,989	4.3	3,703	33.7
Wood and wood products	6,249	2.4	1,111	17.8
Paper and printing	23,816	9.3	7,457	31.3
Chemicals	23,198	9.1	17,874	77.0
Rubber and plastics	10,846	4.2	3,951	36.4
Non-metallic minerals	11,166	4.4	1,584	14.2
Metal products	16,884	6.6	3,554	21.0
Machinery and equipment	14,396	5.6	6,436	44.7
Office and data processing	20,723	8.1	18,303	88.3
Electrical machinery and apparatus	15,141	5.9	9,438	62.3
Radio, TV and communications	14,993	5.9	12,785	85.3
Medical and optical equipment	18,110	7.1	15,335	84.7
Transport equipment	9,610	3.8	5,365	55.8
Miscellaneous	11,421	4.5	2,912	25.5
<b>Total</b>	<b>255,644</b>	<b>100.0</b>	<b>122,978</b>	<b>48.1</b>

Source: Irish Census of Industrial Production (2000).

Given these explanations it is not difficult to see why FDI in Ireland should be concentrated in particular sectors. Let us consider the high-tech nature of the predominant sectors first of all. Their classification as high-tech sectors is based on their research and development (R&D) intensity worldwide, not on their R&D intensity in Ireland. Manipulation of transfer prices in order to shift profits to low-tax locations is easiest in R&D- and advertising-intensive sectors because these factors make it difficult to locate the



exact source of value added. According to Davies and Lyons' (1996) categorisation, such advertising and R&D-intensive sectors accounted for over 65 percent of foreign employment in Irish manufacturing in 2000, up from 45 percent of a much smaller base in 1973. This increasing share can be ascribed either to changes in factors other than the tax rate – such as the economy's increasing stock of human capital – or to a possible increase in the elasticity of FDI flows with respect to corporate tax rates, for which Altshuler *et al.* (2001) provide evidence.

Ireland's geographical location on the periphery of Europe is also likely to have impacted on the types of foreign industry that the country could have attracted. Interesting evidence on this comes from a recent study by Midelfart *et al.* (2000). They isolate the 12 industries (out of a total of 36) that were most concentrated in the EU 'core' in the early 1970s (C) and the 12 industries that were most dispersed (D) across the entire EU at that time. They then divide the concentrated sectors into those that retained their concentrated status into the mid-1990s (CC) and those which had become more dispersed (CD), and equivalently divide the dispersed sectors into those that remained amongst the most dispersed in the mid-1990s (DD) and those that had become more concentrated (DC).

The sectors that have remained amongst the most concentrated (CC) include ones that are characterised by strong plant-level economies of scale, such as the motor vehicle and aircraft industries. The dispersed industries that have become more concentrated (DC) tend to be low-skill-intensity sectors such as textiles, clothing and footwear, which have become concentrated in the poorer EU cohesion countries.

The main sectors of interest to us are those that concentrated in the EU core in the early 1970s, but have become more dispersed since then – the CD group. These industries (which include office and computing machinery; professional instruments; radio, TV and communications; and machinery and equipment) all have relatively high skill intensities, medium as opposed to high economies of scale, and relatively low transport costs. This makes them suitable for relocation to high-skill peripheral regions. Ireland has developed particularly successfully into all of these sectors, as seen in Table 4 (as has Finland, with the exception of professional instruments). To illustrate, in 1973-76, sectors that were geographically concentrated (but are now more dispersed) accounted for around 11 percent of manufacturing employment. By 2000, the employment share of these sectors had increased to almost 30 percent. At the same time, the CD group accounted for almost half the jobs in foreign-owned firms, and close to 80 percent of the jobs in the CD sectors were in foreign-owned firms.

*High skill-intensity, moderate economies of scale, and low transport costs characterise industries that are suitable for relocation to high-skill peripheral regions such as Ireland.*

Targeting by the IDA helped capture these sectors for Ireland rather than having them go elsewhere, and the agency played a crucial role in advertising Ireland's advantages, in convincing potential investors that apparent difficulties could be overcome, and in capturing the important "flagship projects" that are of importance in cluster development. Had the agency instead tried to target sectors such as aerospace and motor vehicles – sectors found not to have become more mobile – the chances of success would have been very much poorer.<sup>15</sup>

<sup>15</sup> The Potez aerospace company represents a case in point. This project was supported for years by the Irish development agencies but never proved successful. Nor did the DeLorean automobile venture in Northern Ireland.

**Table 4. Shares of Irish manufacturing employment, by group of sectors (in %)**

Sector group	Employment share of group in total manufacturing employment		Proportion of total "foreign" manufacturing jobs (2000)	Proportion of "foreign" manufacturing jobs in each group (2000)
	1973-76	2000		
CC	9.5	13.5	18.9	67.5
CD	11.1	29.5	47.3	77.5
DC	19.3	6.7	3.9	27.9

Notes: CC = manufacturing industries that were geographically concentrated in the 1970s and remain so today; CD = manufacturing industries that were concentrated in the 1970s, but are dispersed today; DC = manufacturing industries that were geographically dispersed in the 1970s, but are concentrated today.

Source: Eurostat Daisie database for 1970s; Irish Census of Industrial Production for 2000.

Is FDI in Ireland of the horizontal or vertical type? To recall, horizontal FDI duplicates the activities in which a firm engages in its home location and is undertaken to gain an advantage in supplying local or regional markets. Vertical FDI on the other hand entails the fragmentation of production, with different parts or components being produced in different locations. Until recently, the consensus has been that most FDI is of the horizontal type, as most FDI flows are between developed countries with relatively similar factor endowments. In practice, however, it is very difficult to distinguish between the two types of FDI. For example, most R&D occurs at the firm's home base and does not need to be replicated elsewhere.

*Ireland is an export platform for transnational corporations and attracts both horizontal and vertical FDI.*

What can we say of the Irish case? Activities in which US corporations use Ireland as a production base from which to export into the EU should best be regarded as horizontal. In the information technology sector for example, most of the computers produced by Dell and the packaged software products produced by Microsoft at their Irish plants are bound for markets in Europe, the Middle East and Africa. In the case of electronic components however, produced in Ireland by Intel and a number of other firms, the United States is as important an export destination as the EU. Further evidence suggestive of vertical FDI comes from Görg (2000) who focuses on inward processing trade between the United States and Europe. This is a procedure whereby goods can be imported into the EU for processing and subsequent re-export beyond the EU without payment of EU duties. He shows that by the latest date in his analysis, 1994, a full 44 percent of Irish imports from the United States were in this category, by far the largest proportion of any EU country. Thus both types of FDI would appear to be important in the Irish case.

We will close this section with a brief comparison of foreign-owned and indigenous firms.<sup>16</sup> To begin with, the operations of foreign manufacturing plants in Ireland are substantially larger than those of Irish indigenous plants. They employ on average six times as many workers, and have a capital-labour ratio 2.3 times that of indigenous plants.

<sup>16</sup> Because of the paucity of services-sector data we confine ourselves here to a comparison of the characteristics of manufacturing firms.

Furthermore, the average wage paid by foreign firms is 1.3 times that paid by domestic firms. In part, this is due to higher average skill levels. Administrative and technical staff comprise 16 percent of employment across all manufacturing, but account for 25 percent and 20 percent respectively in such foreign-dominated sectors as chemicals and electrical and optical equipment. The average wage of industrial workers in these sectors is 1.3 and 1.9 times the average across all manufacturing industries.<sup>17</sup> In this context, it is also worth pointing out that training expenditures per employee in foreign firms are five times the levels prevailing in indigenous firms while R&D expenditures per employee are one and a half times greater.<sup>18</sup>

Foreign firms are also more globalised in terms of export-orientation and sourcing of inputs. 57 percent of inputs used by foreign industry are imported compared to a figure of only 27 percent for indigenous industry. Foreign firms export on average 92 percent of gross output, compared to the indigenous average of 31 percent.<sup>19</sup> Thus Ireland serves primarily as an export platform for the foreign companies. US firms are the most export-oriented, exporting 96 percent of gross output, while German firms export 92 percent and UK firms only 55 percent.

Finally, while the United Kingdom is more important than continental Europe as a destination for indigenous exports (40 vs. 35 percent of indigenous exports) – and is much more important for UK-owned firms operating in Ireland – the situation is reversed for aggregate foreign industry: only 18 percent of overall foreign-industry exports go to the United Kingdom while almost 50 percent go to the rest of the EU.

In sum, the main characteristics of Irish inward FDI include a high concentration of foreign activities in modern, high-tech, high-skill sectors, with clusters in information technology, pharmaceuticals, and medical and optical devices. But what does all this mean for the performance of the Irish economy? We try to answer this question in the next section.

## 5. The contribution of FDI to the Irish economy

We have shown earlier the levels of direct employment in foreign-owned industries. If there were a closed and market-clearing labour market, additional employment in foreign-owned sectors would come at the expense of employment losses elsewhere in the economy. The Irish labour market is far from closed, however and, as mentioned above, the prevailing unemployment rate in 1987 was 17 percent. In these circumstances, foreign industry can create further knock-on employment effects through, for instance, backward linkages, spending effects, spillovers to indigenous firms, and increased tax payments. When large enough relative to the economy, as is the case in Ireland, all this can also have discernable effect on economic growth. These are the issues to which we now turn our

*In an open labour market, such as Ireland's, foreign industry can create knock-on employment effects through a variety of channels.*

<sup>17</sup> However, it is unclear due to data deficiencies whether these differences in skills and wages are related to industry or ownership characteristics.

<sup>18</sup> On a sector-by-sector basis, however, R&D expenditures per employee in Ireland are low. It is thought that the low corporate tax environment might inhibit R&D, since R&D costs can be written off against higher tax rates elsewhere.

<sup>19</sup> The difference is not so extreme in the case of one of the services sectors – computer software – for which such data are available. In 2002, foreign software firms in Ireland derived 95 percent of their revenues from exports, while the equivalent figure for domestic software firms was 85 percent.

attention, focussing on the impact of inward FDI on indigenous industries, on economic growth and on the corporate tax revenues of the Irish government.

*There can be positive or negative interactions between indigenous and foreign-owned firms.*

In principle, there can be both positive and negative interactions between indigenous and foreign firms. Foreign presence can have negative implications for indigenous firms when the latter are crowded out of either product or factor markets. Positive interactions can arise when indigenous firms act as sub-suppliers to foreign-owned firms, or when productivity spillovers occur.

There is little product-market competition between indigenous and foreign firms in the Irish case. Firstly, since the foreign-owned sector is almost completely export oriented, there is little product-market competition on the home front. Secondly, the sectoral origins of foreign and domestic exports are quite different. Over 80 percent of foreign-company exports came from the chemicals and electrical equipment sectors, which account for only a little over 10 percent of indigenous exports. Thirdly, the export destinations of foreign and indigenous firms are quite different, with the bulk of foreign-sector exports shipped to EU countries other than the United Kingdom while most indigenous-firm exports go to the United Kingdom. This suggests that the dominant form of crowding out will come through the labour market.

Barry *et al.* (2002) present some indication of such crowding out. They explore the impact of foreign presence on productivity and wages in larger indigenous companies. Since sub-supplying to foreign companies is unlikely to be of great importance to these firms, the main interaction might be expected to operate via the labour market. Consistent with a model in which foreign firms compete against indigenous exporting firms in the market for skilled labour, foreign presence is found to reduce wages and labour productivity in indigenous exporting firms (averaged over skilled and unskilled workers). By contrast, there is no evidence of such a negative effect on wages and labour productivity in indigenous firms producing for the local market, essentially because they primarily employ less skilled labour, which is not in high demand by foreign firms.

Let us now consider possible positive interactions between foreign and indigenous firms. We first look at input-output linkages. The Irish state agency, Forfás, regularly publishes an Irish-economy expenditures survey which distinguishes between indigenous and foreign firms and provides data on wages, Irish materials and services purchased, indigenous-firm profits and the profits tax revenues received from foreign firms.

Based on these data, Barry *et al.* (1999) show that real Irish-economy expenditures per employee rose by around 50 percent between 1983 and 1995 for both types of firms. While Irish-economy expenditures per employee are lower for foreign industry, the employment that the latter creates is estimated to be higher because of the greater share of spending directed towards services – in contrast to the case of indigenous firms for whom the bulk of spending goes on materials. A ballpark estimate is suggested of around one hundred service sector jobs and ten indigenous manufacturing jobs created via backward-linkages per one hundred foreign manufacturing employees.

Of course, these interactions between upstream and downstream sectors can impart an important dynamic to the economy, as Markusen and Venables (1999) suggest. They point

out that foreign TNCs create additional demand for domestically produced intermediates, which – in the presence of scale economies – can lead to a decrease in average costs and an increase in firm entry. The resulting fall in the price of intermediates can, in turn, induce entry into the final-goods sector. Görg and Strobl (2002) provide empirical support for these effects in the Irish case, demonstrating that indigenous-firm entry is positively affected by foreign-firm presence in the same sector and in industries downstream of that sector.

Foreign presence can also give rise to technological spillovers, a topic explored for the Irish case by Görg and Strobl (2003). They posit that technological spillovers reduce the recipient firm's average production costs, yielding a positive effect on the firm's survival rate. Using the equivalent of sectoral dummies to take into account the fact that TNCs tend to locate in high-productivity sectors, they find that foreign presence does indeed have a life-enhancing effect on domestic firms, though only in high-tech sectors. They find no such evidence for domestic low-tech plants, speculating that this may be due to a lack of absorptive capacity on their part.

The impact of foreign presence on the entry rate of Irish indigenous manufacturing firms may also be related to their role as “incubators” for new entrepreneurs. A recent study on the Irish indigenous software sector, for example, finds that one-third of entrepreneurs had worked in foreign firms immediately before the start up of the new firm, while two-thirds had worked in foreign firms at some stage in their careers; O’Gorman *et al.* (1997). The study also argues that foreign firms in Ireland have been an important source of demand – with a requirement for high standards – in the early stages of new indigenous start-ups.

But what do all these effects imply for the macroeconomic bottom line, i.e. real economic growth? FitzGerald and Kearney (2000) explore the impact of Ireland's increased FDI inflows with simulations of a macroeconomic model of the Irish economy. Because the bulk of FDI inflows to Ireland comes from the United States, Irish GDP is influenced particularly strongly by US GDP. One way to represent the effects of the increased inflows of the 1990s is to increase the elasticity of Irish GDP with respect to US GDP from 1990 onwards. This econometric specification allows the model to track the improved performance of the Irish economy adequately over that period.<sup>20</sup> To explore the role of the increased FDI inflows in this setting, FitzGerald and Kearney (2000) leave the elasticity of Irish with respect to US GDP unchanged at its 1990 level to generate a picture of how the Irish economy might have looked in the absence of the increased FDI inflows.

This simulation shows a reduction by 1998 of over 17 percent of GDP relative to the benchmark, amounting to a reduction in the annual average growth rate of around two percentage points. Moreover, employment would have been 12 to 15 percent lower by the late 1990s, as would the level of skilled wages. Emigration would have replaced the substantial immigration that actually characterised the period. Unskilled wage rates in the

*Evidence for positive spillovers from foreign to indigenous firms in Ireland include an increase in indigenous firms' productivity and the creation of new firms by former employees of foreign-owned firms.*

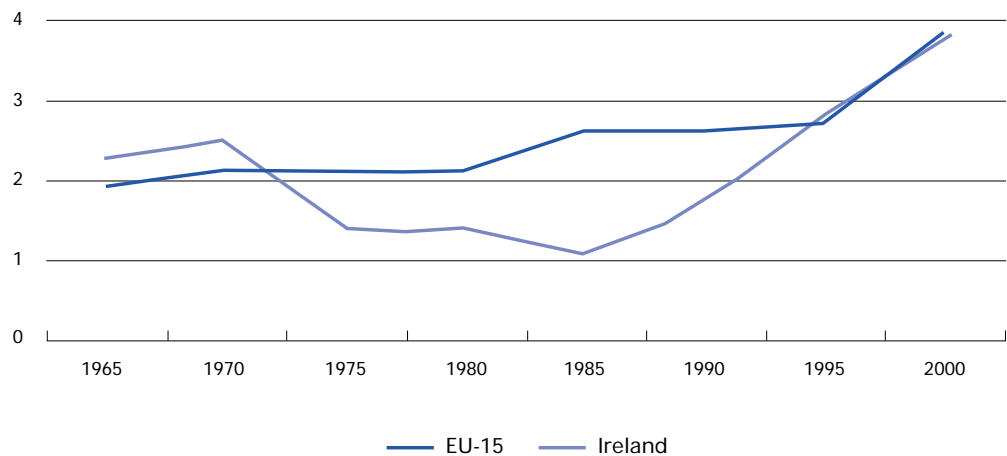
<sup>20</sup> Of course this might simply be a proxy for omitted variables that are important in explaining the boom. Another criticism is that this approach focuses only on the supply of FDI as influenced by US market conditions and fails to take into account the impact of EU-market conditions on the demand for export-platform FDI. Jarrett (1999), former head of the Ireland desk at the OECD, also concludes however – along with FitzGerald and Kearney (2000) – that the role of FDI in Ireland's employment growth is best proxied by US real growth (and stock market outcomes).

model are fixed by the level of unemployment benefits and, with no unskilled migration, unskilled unemployment would have been almost five percentage points higher by the end of the period.

While it is clear that the specification of FDI is overly simplified in these simulations, they nonetheless serve as an illustration of the possible importance to the Irish economy of the increased FDI inflows.

A positive impact of FDI on economic growth can also be expected to boost tax revenue. Indeed, notwithstanding the low effective corporate tax rate, the high level of profits recorded in Ireland ensures that corporate tax receipts as a proportion of GDP, at 3.8 percent in 2000, is at the same level as the EU average (Figure 5). Furthermore, foreign companies paid some 44 percent of the total corporate tax take in 2001, a figure that is likely to be surpassed today given the decline in the tax rate levied on the domestic services sector, as seen earlier.

Figure 5. Corporate tax revenue (% of GDP) in Ireland and the EU-15, 1965-2000.



Source: OECD Revenue Statistics, 1965-2001.

## 6. Concluding comments

*The experience of Ireland suggests that attracting FDI must be accompanied by sound economic policies to be fully beneficial.*

Ireland was one of the first countries in the world to adopt an FDI-oriented export-platform development strategy. By 1980, if not far earlier, the country's relative success in attracting FDI was apparent. Yet Ireland had barely converged on EU living standards over the previous two decades. Clearly, success in the FDI stakes is insufficient to guarantee real income convergence.

Other adverse factors had inhibited convergence over the decades of the 1960s, the 1970s and most of the 1980s. Irish real wage growth was far more rapid than in the other cohesion countries in the 1960s for example, even though the country exhibited higher

unemployment and lower productivity growth than elsewhere. This experience can be taken as evidence of the corrosive effects of labour-market rigidities on growth and convergence prospects.<sup>21</sup> Poor macroeconomic policymaking in the 1970s and the legacy of debt this left in the 1980s would seem – in line with Fischer's (1993) analysis – to have inhibited convergence still further.

The more benign circumstances of the late 1980s allowed a resolution of these problems. The emergence of a broad political and social consensus against a backdrop of rapid growth in the neighbouring UK economy allowed fiscal cutbacks to be implemented without tipping the economy into recession. Social partnership purchased wage moderation in exchange for the promise of future income tax reductions, after almost a decade of the most rapid tax increases in the OECD. The difficulties were being sorted out just as the pool of FDI expanded in Europe with the advent of the Single Market and the US high-tech boom.

Ireland then found itself in a uniquely favourable position to capture a substantially increased share of these flows. Corporate tax rates remained the lowest in Europe, the country's Industrial Development Agency was vastly experienced in identifying and attracting potential investors, the country itself has a strong track record in hosting increasingly high-tech FDI and its third-level educational system was uniquely geared towards matching the skills of its graduates with the needs of such investors. It is this that caused the OECD in its 1999 report on Ireland to conclude that "most of the items that have contributed to the improvement are well known to other policy makers, but other countries' situations may not be so propitious as to allow such a strong response, even to fully appropriate incentives and institutional arrangements" (OECD 1999, p.10).

*Following the economic policy reorientation of the late 1980s, Ireland was in a strong position to capture a substantially increased share of expanding FDI flows to Europe.*

What now of the threats on the horizon? Many of the countries of Central and Eastern Europe have kept a sharp eye on Ireland's success and a number of them have followed down the road of low corporate tax rates. It appears at present more likely that these countries will integrate into existing EU production networks – at least in the sectors in which Ireland has achieved such success so far – than that they will divert FDI sharply away from Ireland.

A graver threat is posed by the possibility of EU-wide corporate tax harmonisation, driven by concerns over a "race to the bottom". This argument has most force, however, in the case where countries are symmetric, in the sense that each offers equal attractions – other than tax rates – to transnational corporations. This is not likely to apply in practice. Imagine to the contrary that at harmonised tax rates the attractions of "core" locations – good infrastructure, locations close to the main centres of purchasing power in Europe, strong systems of national innovation etc. – dominate the attractions of the periphery, which consist largely of lower wage costs. Core countries could then exploit these rents via higher corporate tax rates. One could argue that this is exactly the type of equilibrium that prevails today in Europe.

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<sup>21</sup> Daveri and Tabellini (2000) present econometric evidence on this, and similar results emerge from the simulations of Barry *et al.* (2003).

*If Ireland's foreign industry were to disappear suddenly, for instance because of EU tax harmonisation, much of the economic progress could well disappear along with it.*

What if the EU were to push ahead with tax harmonisation regardless of these considerations? Some estimates were presented earlier of how much FDI Ireland might stand to lose. Adjustment would be very difficult if the country were forced to rely on its own domestic-industry resources. Only 10 percent of indigenous manufacturing employment is in high-tech sectors, compared to 56 percent of jobs in the foreign sector. Indigenous manufacturing firms export less than one-third of their output, which is quite low by EU standards, and are heavily concentrated on the UK market, making them vulnerable to currency fluctuations. They spend little on R&D and the sector has a poor record in developing patentable processes or inventions. Furthermore, Irish-owned TNCs are disproportionately located in non-traded sectors, such as construction and paper and packaging, and do not exhibit the type of "created asset" intensity – derived from R&D and strong product differentiation – that has been found for Korean or Taiwanese TNCs by Dunning *et al.* (2001). If Ireland's foreign industry were to disappear precipitously, much of the economic progress made over the boom period could well disappear along with it.



## Annex

Table A.1 Hourly compensation costs for production workers in manufacturing (in USD)

	1975	1980	1985	1990	1995	2000
United States	6.4	9.9	13.0	14.9	17.2	19.7
Austria	4.5	8.9	7.6	17.8	25.3	19.5
Belgium	6.4	13.1	9.0	19.2	27.6	21.6
Denmark	6.3	10.8	8.1	18.0	25.0	21.5
Finland	4.7	8.3	8.3	21.3	24.3	19.5
France	4.5	8.9	7.5	15.5	19.4	15.7
Germany	6.3	12.2	9.5	21.8	30.3	23.0
Greece	1.7	3.7	3.7	6.8	9.1	n.a.
Ireland	3.1	6.0	6.0	11.8	13.8	12.5
Italy	4.7	8.2	7.6	17.5	16.2	14.0
Luxembourg	6.3	11.5	7.5	16.0	23.5	17.7
Netherlands	6.6	12.1	8.8	18.1	24.1	19.1
Portugal	1.6	2.1	1.5	3.8	5.4	4.8
Spain	2.5	5.9	4.7	11.4	12.8	10.8
Sweden	7.2	12.5	9.7	20.9	21.4	20.1
United Kingdom	3.4	7.6	6.3	12.7	13.8	16.5

Notes: West Germany to 1990, thereafter unified Germany.

Source: US Bureau of Labor Statistics (August 2003).

**Table A.2 Competitiveness factors: government efficiency (2002)**

	Portugal	Spain	Ireland	Hungary	Czech Republic	Poland
The legal framework is not detrimental to competitiveness	3.53 (42)	5.85 (24)	6.91 (12)	5.93 (23)	4.25 (34)	2.91 (46)
Real corporate taxes do not discourage entrepreneurial activity	3.94 (39)	5.73 (19)	7.96 (2)	6.59 (9)	4.50 (32)	2.96 (48)
Economic policies adapt quickly to changes in the economy	2.85 (45)	5.64 (12)	6.53 (4)	5.56 (13)	4.67 (25)	3.13 (42)
Government decisions are effectively implemented	2.70 (46)	5.58 (15)	6.32 (8)	5.56 (16)	4.67 (26)	3.03 (44)
Transparency of government policy	3.07 (46)	5.94 (18)	6.19 (15)	3.41 (43)	4.40 (32)	3.20 (45)
Bureaucracy does not hinder business activity	1.69 (44)	3.82 (21)	5.32 (8)	3.63 (23)	3.00 (26)	1.26 (48)
Personal security and private property are adequately protected	6.48 (23)	6.33 (26)	7.37 (18)	5.70 (32)	5.67 (33)	2.86 (42)
Foreign companies are not discriminated against by domestic legislation	8.44 (16)	8.18 (23)	9.37 (3)	7.93 (27)	8.28 (19)	6.88 (44)
Labour regulations are flexible enough	2.50 (47)	3.82 (33)	6.04 (12)	7.19 (6)	5.44 (16)	2.52 (45)
Access to local capital markets is not restricted for foreign firms	8.85 (12)	8.38 (26)	9.05 (10)	8.52 (21)	8.72 (17)	6.68 (43)
Investment incentives are attractive to foreign investors	6.39 (24)	6.46 (23)	8.60 (2)	7.56 (8)	8.83 (1)	4.60 (40)
Venture capital is easily available for business development	4.58 (28)	4.89 (22)	6.67 (5)	3.48 (35)	3.17 (40)	3.42 (37)
Banking services are widely developed	7.92 (26)	8.03 (25)	8.07 (24)	7.11 (32)	5.89 (41)	6.38 (37)
Stock markets provide adequate financing to firms	4.25 (34)	6.25 (17)	6.04 (22)	3.63 (41)	2.17 (46)	3.97 (37)
Image abroad supports the development of business	4.78 (34)	6.39 (21)	8.32 (3)	6.67 (19)	6.25 (23)	3.82 (39)

Notes: The evaluation ranges from 0 (representing the worst competitive position) to 10 (representing the best); values in brackets represent the ranking in a total of 49 countries.

Source: IMD (2002) and Crespo *et al.* (2004).

**Table A.3 Competitiveness factors: human capital (education and sciences) (2002)**

	Portugal	Spain	Ireland	Hungary	Czech Republic	Poland
PISA test score (number of points): reading literacy	470 (22)	493 (15)	527 (3)	480 (19)	492 (16)	479 (20)
PISA test score (number of points): scientific literacy	459 (22)	491 (16)	513 (7)	496 (13)	511 (9)	483 (18)
PISA test score (number of points): mathematical literacy	454 (21)	476 (18)	503 (12)	488 (17)	498 (14)	470 (19)
Total public expenditure on education in % of GDP	5.6 (20)	4.5 (28)	6.7 (12)	6.3 (15)	4.2 (30)	5.9 (18)
The educational system meets the needs of a competitive economy	3.03 (44)	4.89 (25)	8.00 (2)	6.67 (10)	5.64 (20)	3.64 (40)
University education meets the needs of a competitive economy	3.89 (45)	5.14 (32)	8.04 (3)	6.96 (13)	6.03 (22)	3.94 (44)
Economic literacy	3.53 (42)	4.77 (30)	7.02 (8)	5.78 (22)	5.11 (28)	2.90 (47)
Qualified engineers are available in labour market	5.53 (42)	6.95 (26)	7.29 (22)	8.30 (4)	7.67 (16)	6.63 (30)
Knowledge transfer between firms and universities	2.86 (45)	3.36 (36)	5.65 (11)	4.44 (25)	4.42 (27)	2.72 (46)
Total expenditure on R&D in % of GDP	0.753 (31)	0.897 (28)	1.608 (20)	0.806 (30)	1.352 (23)	0.700 (33)
Science in schools is adequately taught	3.25 (45)	4.58 (32)	5.09 (25)	7.00 (3)	6.39 (10)	3.79 (40)
Information technology skills are readily available in labour force	6.11 (40)	6.06 (42)	7.93 (10)	7.26 (26)	6.72 (32)	6.59 (33)
Labour relations are generally productive	5.53 (33)	5.88 (30)	7.26 (11)	6.74 (18)	6.17 (27)	4.76 (43)
Worker motivation is high	4.53 (40)	5.42 (32)	7.16 (8)	5.85 (25)	5.56 (30)	3.71 (46)
Skilled labour is available in labour market	5.07 (43)	6.33 (36)	7.05 (26)	7.11 (23)	7.33 (18)	6.38 (34)

Notes: Unless otherwise indicated, the evaluation ranges from 0 (representing the worst competitive position) to 10 (representing the best); PISA results (15 years of age) are from 2000 and cover 23 countries; values in brackets represent the ranking in a total of 23 and 49 countries, respectively.

Source: IMD (2002) and OECD (2001).

**Table A.4 Competitiveness factors: basic, technological, health and environment infrastructure (2002)**

	Portugal	Spain	Ireland	Hungary	Czech Republic	Poland
Maintenance and development of infrastructure is adequately planned and financed	4.97 (28)	6.12 (18)	4.32 (31)	4.22 (32)	4.97 (28)	2.65 (45)
Quality of air transportation is adequate and efficient	6.82 (27)	6.48 (31)	5.75 (39)	5.93 (38)	7.00 (23)	4.55 (45)
The distribution infrastructure of goods and services is efficient	6.03 (28)	6.15 (26)	3.54 (46)	4.89 (36)	5.67 (30)	3.68 (43)
Energy infrastructure is adequate and efficient	6.28 (30)	5.18 (38)	5.86 (33)	6.69 (26)	7.94 (15)	5.57 (35)
Adequacy of communications (availability, reliability, cost)	6.47 (34)	6.06 (38)	6.48 (33)	7.19 (26)	7.17 (27)	4.93 (47)
New information technology and its implementation meet business requirements	6.64 (33)	5.76 (45)	6.49 (36)	6.81 (30)	7.14 (27)	4.70 (49)
Suitable internet access (availability, speed, cost) is provided	6.92 (34)	6.09 (44)	6.00 (46)	6.07 (45)	6.94 (31)	4.16 (49)
Fixed telephone lines (number of main lines per 1000 inhabitants)*	441 (28)	460 (26)	503 (22)	368 (32)	378 (30)	296 (34)
Mobile telephone (number of subscribers per 1000 inhabitants)*	823.1 (7)	731.4 (14)	753.5 (12)	484.5 (28)	676.4 (21)	258.6 (35)
Number of computers per 1000 people*	178 (31)	231 (27)	461 (14)	176 (32)	179 (30)	122 (34)
Number of internet users per 1000 people*	190 (31)	199.3 (29)	289.5 (24)	168.8 (33)	198.3 (30)	125.5 (35)
Health infrastructure meets the needs of society	3.53 (39)	7.15 (13)	4.63 (30)	2.15 (47)	6.50 (22)	2.38 (46)
Environmental laws and compliance do not hinder the competitiveness of business	6.11 (24)	6.48 (17)	6.56 (14)	6.52 (16)	5.61 (35)	4.41 (48)
Quality of life	6.00 (29)	8.58 (15)	7.93 (19)	5.19 (35)	6.33 (25)	3.51 (44)
National culture is open to foreign ideas	8.00 (11)	6.85 (34)	7.65 (19)	6.89 (32)	6.61 (38)	5.85 (45)
Values of the society support competitiveness	5.64 (39)	5.76 (35)	7.54 (10)	6.59 (25)	5.72 (37)	4.61 (46)
Office rent – total occupation cost (USD per sq. metre per year)*	302 (21)	461 (38)	568 (44)	254 (15)	284 (19)	413 (31)

Notes: Unless otherwise indicated, the evaluation ranges from 0 (representing the worst competitive position) to 10 (representing the best); values in brackets represent the ranking in a total of 23 and 49 countries, respectively.

Source: IMD (2002); \* values in 2001.

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