

**The Revival of Irish Indigenous
Industry 1987-1997**

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I INTRODUCTION

From the 1960s until the mid-1980s, most of the growth of employment, output and exports in manufacturing industry in Ireland occurred in foreign-owned multinational companies, while the performance of native Irish-owned or indigenous industry was relatively poor. Consequently, foreign-owned firms came to account for a large proportion of manufacturing in Ireland by 1987, with 43 per cent of manufacturing employment, 52 per cent of manufacturing gross output and 74 per cent of exports of manufactured products.

In the period since 1987, the foreign-owned multinational component of industry in Ireland has continued to contribute most to Irish industrial growth, with the result that by 1995 its share of total manufacturing employment increased to 47 per cent, its share of gross output increased to 65 per cent, and its share of exports increased to 82 per cent.¹ Despite this continuing increase in the relative importance of foreign-owned industry, however, a major change since about 1987 has been the fact that there has been a substantial and sustained improvement in the growth performance of Irish indigenous industry.

This article aims to show that, not only has the record of Irish indigenous industry been greatly improved by comparison with its own previous experience, but its growth performance over the past decade has also been stronger than that of industrial countries generally. Thus, since about 1987, the record of Irish indigenous industry has changed from one of relatively weak growth trends by international standards to one of relatively strong growth by international standards. This article brings together and analyses information from a variety of sources to document this improvement in indigenous industry, primarily by examining trends in employment, output and exports, but with reference to some other indicators as well. This involves making some estimations to fill a few important gaps in the existing data.

There has been some recognition in relevant literature of the fact that there has been an improvement in indigenous industry in recent years – at least compared with the very discouraging experience of much of the 1980s. But there does not seem to be a real appreciation of the fact that the scale and durability of this improvement is such that it is without historical precedent in twentieth century Ireland. In particular, there does not seem to be much awareness of the fact that Irish indigenous industry now has quite a long record, over about ten years, of relatively rapid growth by comparison with international standards. The

¹These data are derived from the annual *Census of Industrial Production*.

fact that the growth of indigenous industry has continued to lag well behind that of the foreign-owned sector no doubt contributes to this lack of visibility of what has been occurring in the indigenous sector. In view of the efforts made, since the mid-1980s, to devise policies for developing indigenous industry, it seems worthwhile to present this broad review of trends over the past decade, and to give some brief consideration to the role of various factors, including industrial policy, in bringing about the improvement which occurred.

II EMPLOYMENT

2.1 *Employment Trends Over Time*

Before 1987, the long-term record of employment trends in Irish indigenous industry had generally been poor – whenever conditions of open international competition prevailed. There was the beginning of a process of industrial development, involving substantial numbers employed in manufacturing by the 1830s, but after that industrial activity generally declined in most of Ireland during the rest of the nineteenth century, apart from the north-east.² By the 1920s, there was little manufacturing industry in the independent Irish state and, according to the *Census of Industrial Production* of 1926, only about 5 per cent of the labour force was employed in manufacturing. There was a modest increase in industrial employment by about 5,000 jobs in 1926-31 (Kennedy, 1971, Table 2.2), but data presented by Girvin (1989, Table 3.4) indicate that much of the increase in the 1920s occurred in a limited number of sectors which had been granted tariff protection.

After a policy of stronger and far more wide-ranging protection against imports was introduced in the early 1930s, there was substantial growth in industrial employment until about 1951. But the protected industries which developed in that period were for the most part not internationally competitive and they generally failed to export significantly. Following a period of prolonged recession in the 1950s, the protectionist policy was eventually abandoned.

Once the removal of protection began in earnest in the mid-1960s, competing imports began to take a continuously increasing share of the home market (O'Malley, 1989, Ch. 6). In this context, there was no employment growth in indigenous manufacturing from about the mid-1960s to the beginning of the 1980s and then in the 1980s its employment fell sharply. Essentially what happened was that while Irish firms were losing home market shares they were failing to make compensating gains in export markets. Since they were selling very largely to the domestic market, they could just about maintain their overall employment level while domestic demand was growing sufficiently strongly, thereby compensating for the loss of market share, which it did in the late 1960s and the 1970s. After 1980, competing imports continued to take a rapidly rising share of the domestic market until about 1988 (*Employment Through Enterprise*, 1993, Appendix 3), while there was little or no increase in the export-orientation of indigenous industry until about 1986 (see Section IV below). When domestic

²See O'Malley (1981) for a review of the causes which have been suggested for this nineteenth century decline.

demand weakened considerably during much the same period for a variety of reasons, employment in indigenous manufacturing slumped and a large number of firms ceased production.

As regards the data on these employment trends, before 1973 there were no regular data on employment in Irish-owned industry as such. However, survey data on new foreign-owned grant-aided industry in 1966 and 1973 make it possible to show that all of the growth in manufacturing employment in Ireland in 1966-73 occurred in the new foreign industries, while employment in the rest of manufacturing declined slightly (O'Malley, 1989, Table 6.1). Since the "rest of manufacturing" consisted very largely of Irish-owned or indigenous firms, together with quite a small minority of older foreign-owned firms, this indicates that there was probably no employment growth, and perhaps some decline, in indigenous industry in 1966-73.

Beginning in 1973, an annual survey of industrial employment, distinguishing firms by nationality of ownership, was undertaken by the (former) Industrial Development Authority and this survey has been carried on in recent years by Forfás. This survey shows that there was no employment growth in Irish indigenous industry between 1973 and the beginning of the 1980s (O'Malley, 1989, Table 6.2). Table 1 shows the subsequent trends up to 1997.

Table 1: Permanent Full-time Manufacturing Employment, 1980-97, from IDA/Forfás Employment Survey

Year	Irish-owned	Foreign-owned	Total
1980	143,300	88,400	231,700
1988	110,918	82,381	193,299
1990	112,460	86,520	198,980
1992	112,150	85,694	197,844
1994	111,388	90,376	201,764
1995	114,389	95,227	209,616
1996	118,562	99,123	217,685
1997	120,700	107,173	227,873

Source: Forfás (1997b, Chart 4) for years 1988 to 1996. Data for 1980 and 1997 supplied by Forfás.

Employment in indigenous industry fell in every year between 1980 and 1988 and the decline over the whole of that period amounted to 32,000 or over 22 per cent.³ After 1988 employment in indigenous industry showed signs of a rising trend, slow and very hesitant at first, but amounting to an increase of 9,800 or 8.8 per cent over the period 1988-97. These data refer to permanent full-time employment. Forfás (1997b, Chart 9) also presents data from its employment survey on "temporary, part-time and short term contract employment". Such employment in Irish indigenous firms rose rapidly from 5,661 in 1988 to 10,291 in 1994 and 11,996 in 1997, so that the number more than doubled between 1988 and 1997. This was obviously a much faster rate of increase than in permanent full-time employment, indicating that the permanent full-time data alone understate the overall rate of increase to some extent. In particular, taking

³However, it is worth noting that the decline in employment had almost ceased by 1987, since there was a decline by just 300 jobs between 1987 and 1988.

account of the rise in temporary, part-time and short term contract employment in the years between 1988 and 1994, there was a clearly rising trend in the overall level of indigenous employment in that period, despite the very limited net change for the period seen in Table 1.

The growth in employment in indigenous industry since 1988 may not appear spectacular at first sight. But, given the historical background of Irish industry outlined above, it certainly represents the most successful period for employment growth in indigenous industry under conditions of open international competition – since at least the foundation of the state and probably for a much longer time. But this positive view of the recent employment trend in indigenous industry has been rather overshadowed by the considerably faster growth of employment in foreign-owned manufacturing in Ireland, which increased by as much as 30 per cent in 1988-97.

Since 1983, the annual *Census of Industrial Production* (CIP) has also presented data distinguishing firms by nationality of ownership. However, since some firms were “not classified” by nationality of ownership in 1983 and 1984, only the data since 1985 are really suitable for examining trends over time in Irish indigenous industry.⁴ In addition, the latest available CIP refers to 1995, which is a couple of years older than the latest Forfás employment survey data. Table 2 shows employment trends by nationality of ownership from the CIP for the period 1985-95. The CIP confirms that there was a decline in employment in Irish-owned manufacturing in each year from 1985 to 1988 followed by a rising trend after that.

Table 2: Manufacturing Employment, 1985-95, from Census of Industrial Production

Year	Irish-owned	Foreign-owned	Total
1985	111,010	76,289	187,299
1988	103,215	81,825	185,040
1990*	105,884*	88,293*	194,177*
1991*	110,009*	86,869*	196,878*
1993	111,167	88,836	200,003
1994	109,706	95,715	205,421
1995	116,714	103,864	220,578

Source: *Census of Industrial Production*.

*Note: There is a break in this data series between 1990 and 1991 due to changes in classification, as explained in the text.

It should be noted that there was a break in the CIP data series because of a change in the industry classification system after 1990. Up to 1990, NACE 70 was used, and then NACE REV.1 was used from 1991 onwards. This change affected the classification of sectors within the manufacturing total, but it caused only a negligible change in the data for total manufacturing employment. Thus, total manufacturing employment started off in the new series in 1991 with 2,700 more jobs than at the end of the old series in 1990. At the same time, CIP data for 1991

⁴The firms which were not classified by nationality of ownership employed 6,500 in 1983 and 4,000 in 1984. These figures were equivalent to 5.4 per cent of indigenous employment in 1983 and 3.4 per cent in 1984. While such percentages could be regarded as almost negligible for some purposes, they would be sufficiently large to introduce an appreciable margin of error in calculating the percentage change in indigenous employment between 1983 or 1984 and some later year.

provided by the CSO using, as far as possible, the *same* concepts and classifications as the 1990 CIP, show an increase by an almost identical amount of 2,800 jobs between 1990 and 1991.⁵ Thus, the break in the data series for total manufacturing employment in 1990-91 can be regarded as negligible for our purposes.

However, the break in the CIP series involved some changes in classification by nationality of ownership. In the case of Irish-owned manufacturing employment, the new CIP series starts in 1991 with 4,100 more jobs than at the end of the old series in 1990. This means that the Irish-owned share of total manufacturing employment showed an increase by 1.4 percentage points, from 54.5 to 55.9 per cent. In some contrast, the Forfás employment survey indicates that there was a slight decline by 0.2 percentage points in the Irish-owned share of total manufacturing employment between 1990 and 1991. This indicates that some of the increase in indigenous employment seen between the old and new CIP series in 1990-91 was due to changes in classification rather than a real increase.

To make a link between the old and new series, we can take the 1990 and 1991 CIP figures for total manufacturing employment as being effectively consistent, and we can assume that the Irish-owned share of the total declined by 0.2 percentage points in 1990-91 (as in the Forfás survey). This produces an estimated increase by 1,000 jobs in Irish-owned CIP manufacturing in 1990-91. On this basis, indigenous employment in the CIP series is estimated to have increased by 10.1 per cent over the period 1988-95. This increase was distinctly greater than the rise of 3.1 per cent seen in the Forfás data for permanent full-time indigenous manufacturing employment in 1988-95. This confirms that there was significant growth at this time, and it supports the suggestion that the Forfás permanent full-time data alone would understate the overall rate of increase in this period.

Table 3 shows average annual rates of change in indigenous manufacturing employment by sector in 1985-90, using the CIP (NACE 70) data.⁶ It can be seen in this table that the improvement in employment trends after 1988 occurred across a wide range of sectors. In 1985-88, a minority of sectors – 9 of the 21 distinguished in the table – had employment growth, whereas most sectors – 15 of the 21 – had increasing employment in 1988-90. Or to look at it another way, 17 of the 21 sectors had an improvement in their employment performance in 1988-90, i.e., faster growth than in 1985-88, growth replacing previous decline, or at least a reduced rate of decline. Two of the remaining four sectors which had no

⁵Similarly, total manufacturing employment in the CSO's quarterly series on "Industrial Employment", which retained the NACE 70 classification system, increased by 2,500 jobs between September 1990 and September 1991. This was almost the same as the increase of 2,700 shown between the CIP NACE 70 figure for 1990 and the CIP NACE REV.1 figure for 1991 (CIP employment data refer to September of the year concerned).

⁶Note that some of the sectoral data could be affected by changes in the nationality of ownership of individual firms, as in the prominent case of the takeover of Irish Distillers in the Drink & Tobacco sector. However, at the aggregate level of total manufacturing such transfers of ownership would have little net impact. Information from the Forfás employment survey indicates that there was a net overall transfer from Irish to foreign ownership amounting to about 1,000 jobs between 1987 and 1996, i.e., less than 1 per cent of employment in Irish-owned industry in 1987.

such improvement, electrical engineering and other food, had reduced rates of growth but their growth rates continued to be greater than average.

Table 3: Average Annual Percentage Change in Irish-owned Manufacturing Employment, by Sector, 1985-90

NACE 70 Code	Sector	1985-88	1988-90	Employment 1990
24	Non-Metallic Mineral Products	-7.7	0.4	7,613
257	Pharmaceuticals	4.0	5.6	848
25,26 less 257	Other Chemicals	-3.0	3.4	2,338
22	Metals	0.6	2.9	1,562
31	Metal Articles	-3.0	4.4	9,150
32	Mechanical Engineering	0.2	3.9	3,755
33	Office & Data Processing Machinery	10.2	35.3	527
34	Electrical Engineering	11.3	6.0	5,005
35, 36	Motor Vehicles/Other Means of Transport	0.3	0.7	6,347
37	Instrument Engineering	-2.3	4.1	399
412	Meat Processing	-2.8	6.0	9,236
413	Dairy Products	-0.2	-3.1	7,024
416, 419, 422	Milling/Animal Feeds/Bread, Biscuits	-5.0	-4.8	7,971
420-421	Sugar, Chocolate, etc.	-9.5	-4.3	1,611
411, 414-5, 417-8, 423	Other Food	5.7	3.4	3,808
424-429	Drink & Tobacco	-18.7	-15.8	1,364
43	Textiles	-17.5	2.6	3,430
44-45	Clothing, Footwear & Leather	-1.6	-1.1	9,017
46	Timber & Wooden Furniture	-3.0	2.3	6,965
47	Paper & Printing	2.8	-0.2	12,589
14, 48-49	Miscellaneous Industries	3.1	9.1	5,325
1-4, less 11, 13, 16, 17, 21, 23	TOTAL MANUFACTURING	-2.4	1.3	105,884

Source: *Census of Industrial Production*.

While most sectors had rising employment in 1988-90, it is interesting to note that the growth rates were well above average in the "high-technology" sectors, pharmaceuticals, office and data processing machinery, electrical engineering and instrument engineering.

However, employment in Irish-owned firms in pharmaceuticals, office and data processing machinery and instrument engineering was still small in absolute terms in 1990, being numbered in hundreds rather than thousands.

Table 4 shows average annual rates of change in indigenous manufacturing employment by sector in the subsequent period, 1991-95, using the new series of CIP (NACE REV.1) data. It can be seen in this table that there continued to be employment growth across a wide range of sectors, with growth occurring in 18 of the 25 sectors distinguished in the table. Again, it is worth noting that the highest rates of growth occurred mainly in "high technology" sectors – such as reproduction of recorded media (which is mainly software); medical, precision and optical instruments; office machinery and computers; radio, TV and

telecommunications equipment; and pharmaceuticals. By 1995, most of these were employing between about 1,000 and 2,000 people. There were also relatively high rates of growth in electrical machinery and apparatus and in machinery and equipment, which are conventionally classed as "medium-high technology" industries; by 1995 these two combined were employing over 10,000 people in Irish-owned firms. Irish indigenous industry had for long been under-represented in these types of sectors compared to the industrial structure of the EU. This is no doubt still the case for the most part, but the recent strong growth in such sectors means that, rather than simply building on traditional relative strengths, indigenous industry has been showing signs of developing new areas of competence.

Table 4: Average Annual Percentage Change in Irish-owned Manufacturing Employment, by Sector, 1991-95

NACE REV.1 Code	Sector	Annual Growth	Employment 1995
151	Meat Processing	1.8	12,351
152*	Fish Processing*	5.8	2,738
155*	Dairy Products*	-1.8	7,724
156-157*	Grain Milling, Animal Feeds*	3.4	2,895
153-4, 158	Other Food Products	-0.1	7,422
159, 16	Beverages, Tobacco	6.5	1,232
17	Textiles	-0.5	4,032
18	Wearing Apparel	-4.1	6,201
19*	Leather & Leather Products*	-1.0	1,220
20	Wood & Wood Products	0.5	3,879
21, 221-2	Paper, Publishing, Printing	1.5	13,866
223	Reproduction of Recorded Media	17.3	722
244	Pharmaceuticals	7.3	1,030
24 less 244	Other Chemicals	1.8	2,737
25	Rubber & Plastic Products	5.7	4,669
26	Other Non-metallic Mineral Products	-0.7	8,041
27-28	Metals & Fabricated Metal Products	0.9	9,563
29	Machinery & Equipment n.e.c.	6.4	6,889
30	Office Machinery & Computers	13.0	2,042
31	Electrical Machinery & Apparatus n.e.c.	8.1	3,364
32	Radio, TV & Telecomms Equipment	9.0	1,073
33	Medical, Precision, Optical Instruments	14.4	1,274
34	Motor Vehicles	0.7	2,845
35	Other Transport Equipment	-0.7	4,455
36, 37, 232	Manufacturing n.e.c. incl. Oil Refining	1.2	5,914
15-37	TOTAL MANUFACTURING	1.5	116,714

Source: *Census of Industrial Production*.

*Note: Data for these sectors include foreign-owned firms, but indigenous employment is a very large majority in each case.

2.2 Role of Indigenous Industrial Employment in Total Employment Trends

Although the increase in employment in indigenous industry after 1988 was a big improvement on earlier trends, it made only a small contribution to the increase in total employment in the Irish economy in 1988-96. Thus, total employment in the economy as a whole rose from 1,090,000 in 1988 to 1,285,000 in 1996 – an increase of 195,000. At the same time, employment in Irish indigenous industry increased by 7,600 (according to the Forfás “permanent full-time” data series), which amounted to just 3.9 per cent of the total increase.

However, the *change* in the trend in indigenous industrial employment, switching from rapid decline in 1980-88 to growth in 1988-96, made a rather more important contribution to the turnaround in the trend of total employment. This is illustrated in Table 5. Thus, the table shows that total employment, or the “total at work” declined from 1,156,000 in 1980 to 1,090,000 in 1988, which was a rate of change of -0.7 per cent per annum. If this rate of change had simply continued until 1996, the “hypothetical employment” in 1996 would have been 1,030,000. But in fact total employment increased in 1988-96 to reach an “actual employment” figure of 1,285,000. The gain, by 1996, due to the change from continuing with the 1980-88 rate of decline to achieving the rate of growth which actually occurred, was the difference between the “actual employment” and the “hypothetical employment” in 1996, which amounted to 255,000 jobs – as seen in the last row of Table 5.

Table 5: Impact of Change in Employment Trends Between 1980-88 and 1988-96

	Total at Work	Indigenous Manufacturing	Foreign-Owned Manufacturing
Employment 1980	1,156,000	143,300	88,400
Employment 1988	1,090,000	110,900	82,400
Percentage Change p.a. 1980-88	-0.7	-3.2	-0.9
Hypothetical Employment 1996	1,030,000	85,500	76,700
Actual Employment 1996	1,285,000	118,600	99,100
Actual Minus Hypothetical Employment 1996	255,000	33,100	22,400

Source: Forfás employment survey (permanent full-time series) for data on indigenous and foreign-owned manufacturing. Labour Force Surveys for data on total at work.

The table also shows a similar calculation for indigenous manufacturing. It concludes that the gain, by 1996, due to the change from continuing with the 1980-88 rate of decline to achieving the actual growth recorded in 1988-96, amounted to 33,100 jobs. This was larger than the corresponding figure of 22,400 for foreign-owned manufacturing.⁷ This means that indigenous industry, through the *change* in the trend in its employment, accounted for a greater part of the turnaround in the trend of total employment than was the case with foreign-owned industry. The contribution of indigenous industry to the turnaround in

⁷The sum of the two figures for indigenous and foreign-owned manufacturing, at 55,500, is somewhat less than the figure of 66,200 for all manufacturing that would be obtained using Labour Force Survey data on manufacturing employment. This is because the Forfás employment survey figures for total manufacturing employment are somewhat lower than Labour Force Survey figures.

the total employment trend, amounting to 13 per cent of the total "gain" by 1996, was disproportionately large relative to the share of indigenous industry in total employment.

2.3 International Comparison of Employment Trends

Although the growth in indigenous manufacturing employment after 1988 was not especially rapid compared to some other countries in some earlier time periods, it was in fact an exceptionally strong trend by international standards for the period 1988-96. Table 6 shows some international comparisons of trends in manufacturing employment in two eight-year periods, 1980-88 and 1988-96.

Table 6: Annual Average Percentage Change in Manufacturing Employment, Ireland, EU and OECD, 1980-88 and 1988-96

1980-1988		1988-1996	
OECD	-0.6	Ireland - All	1.5
EU (15 countries)	-1.5	Irish Indigenous	0.8
Ireland - All	-2.2	Japan	0.0
Irish Indigenous	-3.2	USA	-0.6
		Australia	-0.6
		United Kingdom	-1.9
		EU (15 countries)	-1.9
		Canada	-2.0

Source: For Ireland, the Forfás employment survey (permanent full-time series). For the EU, the OECD's *Historical Statistics 1960-1993*, for years up to 1993, and these are updated to 1996 using data from *European Economy - Supplement A*, May 1997. For the OECD in 1980-88, also the OECD's *Historical Statistics 1960-1993*. For the individual OECD countries in 1988-96, the data are derived from the OECD's *Main Economic Indicators*.

It can be seen in the table that in 1980-88 there had been a general decline in manufacturing employment in the EU and in the OECD as a whole. But the decline that occurred in Ireland was steeper than in the EU or OECD, and the decline in Irish indigenous industry was particularly severe, at 3.2 per cent per year. However, in the more recent period, 1988-1996, not only was there a great improvement in the trends in Ireland compared with previous experience, but there was also a big change relative to other countries. In the earlier period, the employment record of Irish indigenous industry looked exceptionally weak compared to the other countries, but in the more recent period after 1988 it looks exceptionally strong compared to the EU and the other major OECD economies. The rate of growth of employment in Irish indigenous industry was still lagging behind that of all manufacturing in Ireland in 1988-96, but this is really the only comparison that makes the recent trend in Irish indigenous industry look relatively poor.

It is worth mentioning, too, that even in the early years within the period 1988-96, when there was only a relatively small increase in Irish indigenous industrial employment (see Tables 1 and 2), this was actually quite a strong trend by international standards. Manufacturing employment in the EU and in the other major OECD countries was generally declining in the period between 1988 and 1993, apart from Japan where there was some increase at that time followed by decline in 1993-96.

III OUTPUT

3.1 Output Trends Over Time

Regular data on the output of Irish-owned manufacturing first became available during the 1980s, when the CIP began to present output data distinguishing firms by nationality of ownership. Up to the present, however, the CIP data on indigenous industrial output are available only in terms of current prices, rather than a constant price series which would show trends in the volume of indigenous industrial production over time.

An approximate indication of trends in the volume of indigenous industrial production, which has been available since the 1980s, is the index of the volume of production of "traditional manufacturing", as opposed to "modern manufacturing", which is published in The Economic and Social Research Institute's *Quarterly Economic Commentary*. These indices are derived by combining together official Central Statistics Office (CSO) volume of production indices for certain sectors. The sectors which are included in the index of "modern" manufacturing are pharmaceuticals, office and data processing machinery, electrical engineering, instrument engineering and "other foods". All other manufacturing sectors are included in the index for "traditional" manufacturing. The output of the "modern" sectors comes very largely from foreign-owned firms while the output of the "traditional" sectors comes predominantly from Irish-owned firms.

It is of interest, therefore, to note that the volume of output of "traditional" manufacturing showed little growth in the years between 1982 and 1987, with an annual average growth rate of just 1.0 per cent in that period. After 1987, it began to grow more rapidly, and it increased by an average of 3.6 per cent per year in 1987-96. However, this is no more than a rough indication of trends in the volume of production of Irish-owned industry. According to the 1990 CIP, 34.0 per cent of the output of the "traditional" sectors came from foreign-owned firms, while 8.4 per cent of the output of the "modern" sectors came from Irish-owned firms. Thus, there is no more than a rather loose correspondence between "traditional" and Irish-owned manufacturing.

To focus more directly on output trends in Irish-owned industry, Table 7 shows the CIP data on gross output of Irish-owned manufacturing in the period 1985-95, valued in current prices. It can be seen that, even in current values, there was little growth between 1985 and 1987, when there was an annual average increase of just 1.2 per cent. After that, however, the growth rate picked up considerably, with an increase of 5.9 per cent between 1987 and 1988, an annual average increase of 7.1 per cent in 1987-90, and an annual average increase of 4.7 per cent in 1991-95. (Note that, owing to the change in classification in the CIP between 1990 and 1991, the data for years up to 1990 are not precisely comparable to the data for years since 1991).

Table 7: Gross Output of Irish-owned Manufacturing, 1985-95, £ million, Valued in Current Prices

1985	1987	1990*	1991*	1993	1995
7,187.0	7,363.7	9,050.3*	9,731.0*	10,378.9	11,686.1

Source: Census of Industrial Production.

**Note:* There is a break in this data series between 1990 and 1991 due to the change in classification.

Of course, these data in current prices do not present an adequate account of the real trends in output. To convert the data to a constant price series, the simplest approach might be to use the index for the volume of all manufacturing production (i.e., including foreign-owned as well as indigenous manufacturing), together with the rate of change in the value of all manufacturing output, to derive a price deflator for all manufacturing. Then this could be applied to the figures for the value of indigenous output to produce an indigenous output series in constant prices. In effect, this would be to assume that the average rate of price change for all manufacturing is the same as the rate which applies for indigenous manufacturing alone. Using this method, manufacturing output prices increased by just 2.1 per cent over the whole period 1987-95, or less than 0.3 per cent per year, which would mean that the increase in the volume of indigenous industrial output was only marginally lower than the increase in the value of output.

It seems clear, however, that this approach is not satisfactory. Looking at volume of production indices together with value of production increases for individual manufacturing sectors, it is evident that most sectors had price increases which were significantly greater than the average figure of 2.1 per cent for all manufacturing over the period 1987-95. At the same time, a minority of sectors had falling prices and these were mostly the sectors which are largely foreign-owned, such as chemicals, office and data processing machinery and electrical engineering. Hence, one would have to conclude that the rate of price change applying to foreign-owned industry was probably lower than the average for all manufacturing, while the rate of price increase applying to Irish-owned industry was probably greater than the average rate for all manufacturing.

Consequently it is necessary to estimate the rate of price change which applies specifically to Irish-owned industry. To do this we use the official volume of production indices for individual manufacturing sectors, together with the official indices of the value of turnover in individual manufacturing sectors, to calculate price trends for the individual sectors. Then we combine these together by attributing to each sector a weight which is determined by net output of Irish-owned firms in the sector as a proportion of total net output of Irish-owned manufacturing in 1987. This weighting of sectors by net output in 1987 is similar to the weighting procedure used by the CSO in constructing the official volume of production index for all manufacturing, except that in this case we use net outputs of Irish-owned rather than all firms. (See the Appendix for a more detailed explanation and discussion of the procedure used to estimate price trends for Irish-owned industry).

In this way we produce estimates of overall price trends for Irish-owned industry which make use of the available data on differing price trends in the different sectors, and combine these in a way which reflects the actual sectoral

composition of Irish-owned industry. Thus, even if some largely foreign-owned sectors have untypical price trends, these are accorded an appropriate very minor weight in the estimated price trends for Irish indigenous industry. Our procedure does, in effect, incorporate an assumption that the rate of price change applying to Irish-owned firms within each individual sector is the same as the rate applying to all firms in the same sector. The available data do not make it possible to avoid incorporating such an assumption. While there seems to be little reason to believe that this assumption would result in a serious systematic bias in the overall price trends estimated for Irish-owned industry, it could nevertheless be a source of some margin of error.⁸

Table 8 shows estimates of the output of Irish-owned industry, in constant 1985 prices, which were calculated by taking account of the price trends derived in the way described above. Note that the 1991 and 1995 figures for the current value of indigenous gross output, in the first column of the table, have been adjusted to take account of the effect of the break in the CIP series arising from the change in classification after 1990. This was done by, first, assuming that the Irish-owned share of total CIP manufacturing employment declined by 0.2 percentage points between 1990 and 1991 (as in the Forfás employment survey), as was discussed above in Section 2.1. Then, the subsequent trends in CIP indigenous employment and gross output per person engaged were applied to produce the adjusted figures for current value of indigenous gross output in 1991 and 1995. The constant price series in the final column of Table 8 estimates that the volume of production in Irish indigenous industry grew by just 0.6 per cent per annum in 1985-87, rising considerably to 4.0 per cent per annum in the period 1987-95.

Table 8: Derivation of Indigenous Manufacturing Output in Constant 1985 Prices

Year	Current Value of Indigenous Gross Output, £ million	Indigenous Manufacturing Price Index (1985 = 100)	Indigenous Gross Output, Constant 1985 Prices, £ million
1985	7,187.0	100	7,187
1987	7,363.7	101.2	7,280
1990	9,050.3	106.1	8,530
1991	9,461.1*	107.2	8,830
1995	11,372.4*	114.1	9,970

Source: *Census of Industrial Production* for current data. Price indices derived as explained in the Appendix. Constant price figures derived by dividing the current data by the price indices.

**Note:* The current value figures for 1991 and 1995 are adjusted to take account of the break in the CIP series arising from the change in classification after 1990, as explained in the text.

By way of a test of the plausibility of the growth rates for the volume of output derived above, it is possible to make a comparison with the growth recorded for the volume of "traditional" manufacturing output in the ESRI's *Quarterly Economic Commentary*, as discussed above. Thus, the figure of 4.0 per

⁸Some margin of error could also arise in other respects, e.g., from the use of value of turnover indices as proxies for trends in the value of production. However, there is good reason to believe that such sources of error would have little overall effect on our estimates of price trends for Irish-owned industry, as discussed in the Appendix.

cent per annum for the growth rate of the volume of production of Irish indigenous industry in 1987-95 is a little higher than the average annual growth rate of 3.7 per cent for volume of output of the "traditional" manufacturing sectors in the same period. Given that employment in Irish-owned industry (in the CIP) was increasing by an estimated 1.0 per cent per annum in this period,⁹ while employment in "traditional" manufacturing was growing by just 0.3 per cent per annum, the higher output growth rate for Irish-owned industry is quite reasonable. In fact, the figures imply a growth rate for volume of output per employee which is a little lower for Irish-owned than for "traditional" industry, so that the rate of output growth suggested for Irish-owned industry can scarcely be particularly excessive.

It was shown in Section II above that employment in Irish indigenous industry was declining until 1988 and only increased after that, whereas this section has shown that the rate of growth of the volume of production of indigenous industry increased markedly after 1987. This might appear somewhat inconsistent at first sight, but this is not really the case. For one thing, employment in indigenous industry actually declined only very slightly, by 300 jobs, between 1987 and 1988. Also, it is commonly observed that in the beginning of a cyclical upswing, output growth increases first. This is normally followed some time later by a strengthening of the employment trend, as employers begin to experience the need for additional staff and then start to recruit more employees once they have some confidence that the increase in output is set to continue.

3.2 International Comparison of Output Trends

The growth in the volume of indigenous manufacturing output after 1987 was a relatively strong trend by international standards for the period, as shown in Table 9.

Table 9: Average Annual Percentage Change in Volume of Manufacturing Production, Ireland, EU and OECD, 1985-87 and 1987-95

1985-1987		1987-1995	
Ireland - All	6.6	Ireland - All	9.9
OECD	2.4	Irish Indigenous	4.0
EU	2.1	OECD	2.0
Irish Indigenous	0.6	EU	1.7

Source: For Ireland, as explained in Section 3.1 and in the Appendix. For the OECD and the EU, the OECD's *Main Economic Indicators*.

Notes: The data for the OECD and the EU include mining; electricity; gas and water; in addition to manufacturing. Data for the EU in 1985-91 refer to 12 countries, while the data for 1992-95 refer to 15 countries; there is an overlap of the two series in the period 1990-92, when the trends in the two were virtually identical, so that there is a negligible loss of consistency in joining up the two series.

It can be seen in the table that in 1985-87 the rate of growth of industrial production in the EU and in the OECD as a whole was a little higher than 2 per

⁹This is after making the adjustment mentioned above to take account of the break in the CIP series between 1990 and 1991; this involves assuming that the Irish-owned share of total CIP manufacturing employment declined by 0.2 percentage points between 1990 and 1991.

cent per annum. The growth rate for all manufacturing in Ireland was significantly higher than this, but the growth rate in Irish indigenous industry was distinctly lower. However, in the more recent period, 1987-1995, not only was there a great improvement in the trend in Irish indigenous industry compared with previous experience, but there was also a big change relative to other countries. In the earlier period, the output growth record of Irish indigenous industry looked weak compared to the other countries, but in the more recent period since 1987 it looks relatively strong compared to the other countries. It must be said that there is some margin of error in the estimated growth of production in indigenous industry (by perhaps a few percentage points over the whole period 1987-95, or about one-third of a percentage point per year), but it can be said with some confidence that its growth rate in 1987-95 was close to twice as high or higher than the industrial growth rate of the OECD or EU.

IV EXPORTS

4.1 Export Trends

Regular data on the exports of Irish-owned manufacturing first became available in 1986, when the CIP began to present export data distinguishing firms by nationality of ownership. However, some earlier survey data on new foreign-owned grant-aided industry make it possible to estimate that exports of industries other than new foreign-owned grant-aided industry amounted to about 26 per cent of their gross output in 1973 and about 27 per cent in 1976 (O'Malley, 1989, Table 6.5). These industries (other than new foreign-owned grant-aided industry) consisted very largely of Irish-owned or indigenous firms, together with quite a small minority of older foreign-owned firms. A later estimate by Foley (1987) indicates that Irish-owned indigenous industry exported about 31 per cent of its output in 1984.

When the CIP data on indigenous exports began, they showed that indigenous manufacturing exported 26.6 per cent of its gross output in 1986, which was about the same as in 1973 and 1976 but apparently somewhat lower than in 1984. At any rate, it seems reasonably clear that there can have been little or no increase in the export-orientation of indigenous industry over the period 1973-86. In contrast to this previous experience, exports as a percentage of output of indigenous manufacturing began to increase immediately after 1986, rising from 26.6 per cent in 1986 to 33.4 per cent by 1990 and 35.9 per cent by 1995.

An increase in export-orientation seems to have occurred across a wide range of sectors. In 1986-90, when most of the increase occurred, the export data were not published by nationality and sector at the same time, but it is possible to identify those sectors which were predominantly Irish-owned and to look at the trends in export-orientation for all firms in those sectors. Table 10 shows these trends for all sectors in which Irish-owned firms accounted for at least 60 per cent of gross output in 1988. It can be seen that 13 of the 14 sectors in the table experienced an increase in exports as a percentage of gross output in 1986-90. The increase for all sectors in the table combined, at 8.2 percentage points, was

fairly similar to the increase by 6.8 percentage points for all Irish-owned manufacturing.

It is necessary to point out that there was an exceptionally large and potentially distorting reported increase in export-orientation in the dairy products sector. Given that dairy products accounted for 24 per cent of all exports of the sectors in Table 10 in 1986, this one sector would have had a significant influence on the extent of the increase in the overall export-orientation of Irish-owned industry in 1986-90. Nevertheless, it seems clear from Table 10 that many sectors in Irish-owned industry experienced some degree of an increase in export-orientation. The sub-totals at the foot of the table, for all the sectors excluding dairy products and for all the sectors excluding dairy products and meat, show that there was a general increase in export-orientation for sectors other than dairy products and meat, but the increase was less than that shown when dairy products and meat are included.

Table 10: Exports as a Percentage of Gross Output in Predominantly Irish-Owned Sectors, 1986-90

Sector	1986	1990	Change 1986-90
Metals	65.8	68.2	+2.4
Metal Articles	39.6	42.4	+2.8
Motor Vehicles (incl. parts)	25.3	32.9	+7.6
Other Means of Transport	28.7	58.6	+29.9
Meat ¹	46.5	47.7	+1.2
Dairy Products ¹	29.1	48.7	+19.6
Grain Milling and Animal Feeding Stuffs	4.2	6.5	+2.3
Bread, Biscuits	5.9	4.1	-1.8
Leather, Footwear	55.3	55.5	+0.2
Clothing	39.8	45.7	+5.9
Timber & Furniture	25.1	26.8	+1.7
Paper & Paper Products	14.6	20.3	+5.7
Printing & Publishing	10.6	12.6	+2.0
"Other" Manufacturing	23.5	29.0	+5.5
TOTAL OF ABOVE	30.7	38.9	+8.2
Total less Dairy Products	31.2	35.5	+4.3
Total less Dairy Products and Meat	23.4	29.3	+5.9

Source: Census of Industrial Production.

Notes: (1) Results for Meat and Dairy Products may be subject to varying interpretation by respondents of the "export" status of sales into EC Intervention and to An Bord Bainne.

"Predominantly Irish-Owned Sectors" are defined here as all sectors in which Irish-owned firms accounted for at least 60 per cent of gross output in 1988.

Since 1991 the CIP export data have been published by nationality and sector at the same time (using the NACE REV.1 sectoral classification). Table 11 shows the trends in export-orientation for indigenous manufacturing by sector in 1991-95. As the table shows, there was only quite a small rise in exports as a percentage of gross output for total Irish-owned manufacturing in this period, from 34.8 to 35.9 per cent. Nevertheless, an increase occurred in two-thirds of the sectors, while fairly significant reductions in just two sectors, chemicals and non-metallic mineral products, restrained the overall rate of increase.

Table 11: Exports as a Percentage of Gross Output in Irish-owned Manufacturing, by Sector, 1991-95

Sector	1991	1995	Change 1991-95
Food, Beverages & Tobacco ¹	38.5	40.6	+2.1
Textiles & Textile Products	42.2	46.3	+4.1
Wood & Wood Products	14.4	15.2	+0.8
Paper, Publishing, Printing	14.4 ²	14.9	+0.5 ³
Chemicals	35.6	29.6	-6.0
Rubber & Plastic Products	26.6	31.8	+5.2
Non-metallic Mineral Products	22.4	16.4	-6.0
Metals, Fabricated Metal Products	35.0	35.0	0.0
Machinery & Equipment n.e.c.	40.3 ⁴	39.6	-0.7 ⁵
Electrical, Electronic, Optical Equipment	51.9	53.4	+1.5
Transport Equipment	36.3 ⁴	42.8	+6.5 ⁵
Manufacturing n.e.c.	32.8	34.5 ⁶	+1.7 ⁷
TOTAL	34.8	35.9	+1.1

Source: Census of Industrial Production.

Notes: (1) Results for parts of the Food sector may be subject to varying interpretation by respondents of the "export" status of sales into EU Intervention and to the Irish Dairy Board.

(2) 1992

(3) 1992-95

(4) 1993

(5) 1993-95

(6) 1994

(7) 1991-94

Another point of interest concerning trends in the exports of indigenous industry is the proportion of such exports going to the UK, which has traditionally been by far the most important destination for indigenous exports. The CIP data show that 55.2 per cent of exports from Irish-owned manufacturing went to the UK in 1986, but this declined to 42.1 per cent in 1995. The percentage going to other EU markets increased by a similar amount. Thus, there were signs here of progress in diversifying into new markets.

It must be pointed out, however, that the decline in the percentage of indigenous exports going to the UK essentially occurred in the period 1986-89 when the percentage dropped from 55.2 to 41.2 – and then showed little further change up to 1995 when the figure was 42.1 per cent. When we examine the data for the predominantly Irish-owned sectors (as listed in Table 10) in the period 1986-89, there was a very large decline in the percentage of exports of the dairy products sector going to the UK, from 48.0 per cent to 23.6 per cent. In view of the large share of dairy products in indigenous manufacturing exports, this would have had a significant influence in bringing about such a large reduction in the percentage of all Irish-owned manufacturing exports going to the UK in 1986-89. Nevertheless, this was by no means the whole story, since 9 of the 14 predominantly Irish-owned sectors reduced the proportion of their exports going to the UK in 1986-89.

In 1991-95, when data are available for exports by nationality of ownership and by sector, the percentage of exports of Irish-owned industry going to the UK scarcely changed at all, from 41.9 to 42.1 per cent. At the same time, half of the sectors of Irish-owned industry (as listed in Table 11) reduced the proportion of their exports going to the UK while the other half increased the proportion.

Overall, therefore, there was no sign of a general reduction in the share of exports going to the UK in 1991-95.

4.2 International Comparison of Export Trends

The growth in the exports of Irish-owned manufacturing after 1986 was relatively rapid by international standards for the period. Table 12 shows some international comparisons of trends in manufacturing exports in 1986-95, valued in current US dollars. Note that the value of Irish-owned manufacturing exports for 1995 was adjusted in deriving this table, in order to take account of the effect of the break in the CIP series arising from the change in classification after 1990. This was done by taking the adjusted figure for current value of indigenous gross output in 1995 as derived for Table 8 above, and then multiplying this by the 1995 CIP figure for exports as a percentage of gross output of Irish-owned manufacturing (i.e., 35.9 per cent).

It can be seen in Table 12 that the growth of exports from Irish-owned manufacturing lagged well behind the growth of exports from all industry in Ireland in 1986-95. But indigenous manufactured exports still grew more rapidly than the manufactured exports of the OECD and the EU. Although indigenous exports did not grow very much faster than those of the OECD and EU, it would actually have been a significant improvement over long previous experience even if they had done no more than to keep pace with the export growth of these other countries. It is also worth noting that an increasing proportion of the domestic sales of indigenous industry represents sales of intermediate products to foreign-owned multinational companies in Ireland, which then export most of their output. Thus, the direct and indirect contribution of indigenous industry to Irish export growth has been greater than direct exports alone would suggest.

Table 12: Annual Average Percentage Change in Value of Manufacturing Exports, 1986-95, in Current US Dollars

Ireland - All Manufacturing	15.3
Irish Indigenous	11.0
OECD	10.5
EU (15 countries)	10.2

Source: For Ireland, Census of Industrial Production. For the OECD and EU, the OECD's *Historical Statistics 1960-1995*.

**Note:* The value of Irish-owned manufacturing exports for 1995 was adjusted in deriving this table, in order to take account of the effect of the break in the CIP series arising from the change in classification after 1990, as explained in the text.

V PROFITABILITY

It has been shown in Sections II to IV that there has been a relatively strong performance by Irish-owned manufacturing since about 1987 in terms of employment, output and exports. It is also relevant to examine the profitability of Irish-owned industry because, if profitability was declining at the same time, this would cast doubt on the longer-term sustainability of the other trends. It is therefore of interest to note that in fact the profitability of indigenous industry was generally increasing.

In the period 1987-89, profits as a percentage of sales in Irish-owned manufacturing firms increased from 3.3 per cent to 4.4 per cent. Profits of Irish firms in the food, drink and tobacco sectors showed little change from 3.9 per cent of sales in 1987 to 4.0 per cent in 1989. But in other manufacturing sectors, the profits of indigenous firms increased quite significantly from 2.9 per cent of sales in 1987 to 4.9 per cent in 1989 (Forfás, 1995b, Table 4).

A more recent, and slightly different, data series shows subsequent further increases. Thus, profits as a percentage of sales in Irish-owned manufacturing rose from 3.9 per cent in 1989 to 5.5 per cent in 1994 and a preliminary figure of 6.2 per cent in 1995. Profits of Irish firms in the food, drink and tobacco sectors had a more modest increase from 3.5 per cent of sales in 1989 to 4.3 per cent in 1994 and 1995. But in other manufacturing sectors, the profits of indigenous firms rose quite substantially from 4.5 per cent of sales in 1989 to 7.1 per cent in 1994 and a preliminary figure of 8.9 per cent in 1995 (Forfás, 1997c, Table 3). If some of these figures on profits as a percentage of sales seem rather low, they are in fact consistent with considerably higher levels of profitability expressed in terms of the return on capital employed. The return on capital employed in Irish-owned manufacturing firms was 10.1 per cent in 1992 and 9.7 per cent in 1993, when profits as a percentage of sales were less than 4.5 per cent (Forfás, 1995b, Table 5).

VI RESEARCH AND DEVELOPMENT

Trends in expenditure on research and development (R&D) are commonly regarded as an indicator of the level of resources being formally directed towards innovation, and innovation in turn is generally seen as an important influence on competitive performance. Levels of R&D expenditure are also often interpreted as one indicator of technological capability. It is relevant, therefore, to note that total expenditure on R&D by business enterprises in Ireland increased substantially from 0.47 per cent of GDP in 1988 to 1.02 per cent by 1995. This increase meant that the Irish figure was converging rapidly on the average EU level, which was declining slightly from 1.28 per cent in 1988 to 1.17 per cent in 1995 (Forfás, 1995a, Table 1 and Forfás, 1997a, Figure 13).

Over 60 per cent of total R&D expenditure by businesses in Ireland is undertaken by foreign-owned firms, while a minority of the expenditure by Irish-owned firms is undertaken by non-manufacturing enterprises. Table 13 shows expenditure on R&D by business enterprises in Irish-owned manufacturing alone. It can be seen that such expenditure by indigenous manufacturing increased substantially between 1988 and 1995, while there was also a large increase in R&D intensity as measured by R&D expenditure as a percentage of gross output. In 1988, R&D spending as a percentage of gross output was lower in Irish-owned than in foreign-owned industry, at 0.47 compared to 0.56 per cent. But by 1995 the indigenous figure was higher, at 1.04 per cent, compared to 0.91 per cent for foreign-owned industry.

Forfás (1997a, pp.31, 32) shows that there was a very high annual average rate of growth of R&D expenditure in Irish-owned industry in 1986-95, at 16 per

cent in real terms. Furthermore, when Irish-owned manufacturing is divided into four categories – high technology, medium-high, medium-low and low technology – the annual average rate of growth of real R&D expenditure in 1986-95 was rapid in every category, at 12 per cent in the high technology group and ranging from 16 to 18 per cent in the others. As Forfás (1997a) remarks, “the growth in R&D activity has not been isolated in one pocket of the industrial base and this can be interpreted as being encouraging in terms of indicating a possible strengthening of technological capability throughout the industrial base”.

Table 13: R&D Expenditure by Business Enterprises in Irish-Owned Manufacturing, 1988-95

	1988	1991	1993	1995
R&D, £ million	37.0	49.1	63.1	121.0
Gross Output, Indigenous Manufacturing, £ million	7,794.8	9,731.0	10,378.9	11,686.1
R&D as per cent of Gross Output	0.47	0.5	0.61	1.04

Source: R&D data derived from Eolas (1990, Table 3.17), for 1988; Eolas (1993, p.18), for 1991; Forfás (1995a, Appendix D, Table J), for 1993; Forfás (1997a, Figure 14), for 1995. Gross Output data from *Census of Industrial Production*.

VII AN IMPROVED COMPETITIVE PERFORMANCE?

It has been shown in Sections II to IV that there has been a relatively strong growth performance by Irish-owned manufacturing since about 1987 – both by comparison with previous experience and by comparison with the rest of the EU and OECD. It might perhaps be suggested that there was little of great significance in this, since it could be seen as an almost automatic consequence of relatively strong growth in the Irish economy – growth which may have occurred for reasons which owed little to indigenous industry. Thus, with the Irish economy growing relatively rapidly, it might be seen as almost inevitable that the highly domestically-oriented indigenous industrial sector would grow quite rapidly too, without necessarily indicating that its competitive performance had improved to any significant degree.

There are real elements of truth in such an interpretation, but for a number of reasons it is essentially inadequate. Thus, it is true that Irish indigenous industry remains quite highly oriented towards the domestic market, which accounted for 64 per cent of its sales in 1995. Other things being equal, therefore, strong growth in domestic demand would have a significant influence on the growth of indigenous industry. It is also true that there was relatively strong growth in the Irish economy since 1987. For some years prior to 1987, there was little or no growth in real GNP, whereas real GNP grew by an average of almost 5 per cent per year in 1987-95. By comparison, real GDP increased by only about 2 per cent per year in 1987-95 in the EU and OECD. The stronger growth trend in the Irish economy since 1987 would therefore help to account for the sharp improvement in the growth of Irish indigenous industry.

However there are a number of aspects of the growth performance of Irish indigenous industry which show that it was more than a simple response to stronger domestic demand conditions, and that there was a real improvement in competitive performance. For example, the exports of indigenous industry as a percentage of its output increased after 1986, so that exports increased faster than domestic sales, despite slower growth in overseas economies than in the Irish economy. In contrast, prior to 1986, exports of indigenous industry were not rising faster than its output, despite faster growth in overseas economies than in the Irish economy. This indicates that a substantial improvement occurred in the ability to compete in export markets. In addition, the exports of indigenous industry grew somewhat faster than those of the EU or OECD in 1986-95, whereas it is highly unlikely that this could have been the case previously, probably for a very long time past. The diversification into new export markets other than the UK also suggests an improvement in competitive capabilities.

Furthermore, the pattern of employment growth by sector in Irish indigenous industry after 1988 did not show particularly high rates of increase in the more "sheltered" or "non-traded" sectors, which would be most likely to benefit automatically from strong domestic demand. When there was strong growth in domestic demand previously, in the 1970s, there was relatively fast growth in indigenous industrial employment in such sheltered sectors, e.g., clay, glass and cement; and paper and printing (O'Malley, 1989, Table 6.7). But since 1988, relatively high rates of indigenous employment growth have occurred in more highly traded and internationally competitive sectors, such as the high technology industries as well as machinery and equipment and electrical machinery and apparatus (see Tables 3 and 4 above). These branches of indigenous manufacturing are now quite highly export-oriented (see Table 11 above). These aspects of the performance of Irish indigenous industry combine to confirm that there was a genuine improvement in its competitive performance, and not just an automatic response to stronger domestic demand conditions.

VIII CAUSES OF THE IMPROVEMENT

If there was a real improvement in competitive performance, this raises the question what caused such an improvement. Part of the explanation is likely to be a simple side-effect of the prolonged stagnation or decline prior to 1987, which resulted in many closures of existing indigenous companies. Presumably the closures occurred mainly among the least competitive firms, which would have the effect of raising the average level of competitive ability in indigenous industry. But there was more to it than this, and quite a number of factors which would have been beneficial influences on the performance of indigenous industry have been mentioned in recent literature on the relatively strong growth performance of the Irish economy as a whole since the late 1980s.

Such beneficial influences include, for example, the successive national pay agreements since 1987. Arguably, these ensured that there were relatively moderate and affordable increases in labour costs, as well as relatively few

important industrial disputes. Thus, average hourly earnings in Irish manufacturing had increased considerably faster than in Ireland's major trading partners between the early 1980s and 1987, but they then increased at about the same rate as the major trading partners from 1987 to 1992 and increased a little more slowly than the other countries from 1992 to 1996.¹⁰ Based on this, the trend in Irish manufacturing wage costs relative to major trading partners ceased to be an adverse influence on Irish competitive performance after 1987 and became a moderately positive influence after 1992. Another beneficial influence on Irish competitive performance was the longer-run effects of improvements in educational qualifications and human capital, including a strengthening of the quality of management. There were also significant improvements in infrastructure, associated in particular with the EU Structural Funds. And there was a relatively stable macroeconomic environment since about 1987, with order being gradually restored to the public finances. Bradley *et al.* (1997) provide a more detailed discussion of a number of such factors which would have been favourable influences on the performance of Irish-owned manufacturing.

In addition, the particularly rapid growth of foreign-owned manufacturing in Ireland would have assisted the growth of indigenous industry in several respects. The foreign-owned sector contributed significantly to the growth of the Irish economy, helping to generate strong overall domestic demand conditions. More specifically, there were rapidly growing expenditures by foreign-owned industry on inputs produced by the Irish indigenous sector. The role of foreign-owned companies as discerning customers requiring high standards from their suppliers, probably also helped to prepare indigenous suppliers to meet standards required in international markets. And the presence of foreign-owned multinational companies would also have helped to develop the quality of labour force skills in certain sectors, including management skills.¹¹

Clearly, therefore, there were a quite number of different factors operating together to generate a favourable outcome for indigenous industry, but the role of industrial policy in this should not be overlooked. Beginning in the mid-1980s, a significant series of relevant changes were made in industrial policy. In particular, since the White Paper on *Industrial Policy* (1984), there was an increased emphasis on the objective of developing Irish indigenous industry. Policy statements after 1984 referred to a need for policy towards indigenous industry to be somewhat more selective, aiming to develop larger and stronger firms by building on those with a reasonable track record, rather than assisting a great many firms indiscriminately. Policy was also intended to move towards concentrating state supports and incentives more on correcting specific areas of disadvantage or weakness which would be common in indigenous firms, such as technological capability, export marketing, and management skills. It was intended to shift expenditures on industrial policy away from supporting capital

¹⁰The index of average hourly earnings in manufacturing, in Ireland relative to major trading partners in a common currency, increased from 100 in 1982 (base 1980 = 100) to 114 in 1987 and 113 in 1992, and then declined to 109 in 1996 (Central Bank of Ireland *Quarterly Bulletins*, Statistical Appendix Table E2).

¹¹O'Gorman, O'Malley and Mooney (1997) expand on a number of these points in discussing influences on the competitive performance of the Irish indigenous software industry.

investment and towards these areas (*Industrial Policy*, 1984, Chapters 1 and 5; Department of Industry and Commerce, 1987, Chapter 2).

In 1992, the Industrial Policy Review Group (1992, p.67) recognised that greater efforts had been undertaken by then to promote indigenous industry, but still considered that there had not been a "full commitment" to this process. The Group called for a more decisive shift in the focus of policy towards developing indigenous industry, and this objective was subsequently re-emphasised. However, even going back to the mid-1980s, there were in fact quite a number of relevant policy changes, introduced over a period of some years.¹²

For example, the Company Development Programme was introduced in 1984 with the aim of building on selected indigenous companies, and the National Linkage Programme commenced in 1985 with the aim of developing selected indigenous sub-suppliers to the foreign-owned multinational companies. After the mid-1980s, efforts were made to award grants more selectively to firms which would have the best prospects for growth in international markets, in order to concentrate resources somewhat more on building larger and stronger firms (O'Malley, Kennedy and O'Donnell, 1992, Chapter 3). Significantly, too, the award of such grants was increasingly made dependent on firms having prepared overall company development plans, and performance-related targets were applied as conditions for payment of grants.

The share of the industrial policy budget going to support capital investment declined from 61.2 per cent in 1985 to 46.8 per cent in 1992, and there was a shift in emphasis towards other measures. From 1985, a range of new initiatives were introduced to strengthen export marketing in indigenous firms, and the share of the industrial policy budget going to support marketing increased. Science and technology policies for industry were also reorganised considerably after the mid-1980s, with new measures being introduced, while the share of the industrial policy budget going to science and technology measures increased. New measures intended to strengthen the quality of management in indigenous firms were also introduced since the mid-1980s. These policy changes were accompanied by reorganisation of the institutional arrangements for implementing policy. In particular, responsibility for promoting indigenous industry was separated from the task of encouraging foreign investment, to ensure that there would be a body of state agency staff giving their full attention to the indigenous sector.¹³

It has been argued elsewhere (O'Malley, 1989) that, to a considerable extent, the poor performance of indigenous industry up to the mid-1980s can be explained by the prevalence in many industries of barriers to entry – arising from the strengths of established competitors – which confront new or small indigenous firms in a late-industrialising country such as Ireland. For example,

¹²The relevant policy changes are summarised very briefly here. Further details can be found in official documents such as *Industrial Policy* (1984), and Department of Industry and Commerce (1987 and 1990). Details on the current package of industrial policies can be found in the *Operational Programme for Industrial Development 1994-1999*.

¹³This was done first in 1988 by means of an internal reorganisation within the IDA, which involved the establishment of separate divisions for the promotion of indigenous and overseas industry. Since 1993, there have been separate agencies for these two functions – Forbairt and IDA Ireland.

the existence of significant economies of scale, and the consequent presence of large established firms in many important sectors in advanced economies, presents a barrier to the development of such industries by new or small indigenous firms in a late-developing country which trades freely with advanced economies. It can also be difficult for new or small indigenous firms in a late-industrialising country to match the already existing technological strength of firms in advanced economies in sectors where technology is of key importance. Similarly, if strong marketing is a key requirement for an industry, the established marketing strength of existing firms presents an important entry barrier for new or small firms.

If the existence of these various types of barriers to entry represents a significant part of the explanation of the difficulties experienced by Irish indigenous industry, then at least some of the developments in Irish industrial policy since the mid-1980s look like appropriate responses. This applies to the idea of focusing assistance somewhat more selectively, so as to develop larger and stronger indigenous firms. It also applies to the approach of focusing assistance more on specific areas of weakness, such as technological capability and export marketing. Since about 1987, the overall performance of Irish indigenous industry seems to be consistent with the suggestion that such policies have helped to produce encouraging results. And, apart from the overall performance of indigenous industry, there are some specific aspects of its performance which are consistent with the suggestion that industrial policies had their own particular beneficial influence.¹⁴

IX CONCLUSION

Since about 1987, there has been a substantial improvement in the growth performance of Irish indigenous industry, as measured by trends in employment, output and exports. This improvement has been such that it is without historical precedent in twentieth century Ireland. Not only has the record of Irish indigenous industry been improved by comparison with its own previous experience, but its growth performance over the past decade has also been stronger than that of industrial countries generally. Thus, since about 1987, the record of Irish indigenous industry has changed from one of relatively weak growth trends by international standards to one of relatively strong growth by international standards. The stronger growth trend in indigenous industry has involved an improvement in *competitive* performance. Quite a number of different factors have combined to bring this about, including industrial policy measures.

¹⁴See O'Malley, Kennedy and O'Donnell (1992, Chapter 3) for an elaboration on this point, with reference to the period up to 1990.

APPENDIX

Derivation of Volume of Production Data for Indigenous Industry

Given that we have data on the value of output of Irish indigenous industry, in current prices, the objective is to derive estimates of the rate of increase of the volume of output of indigenous industry, in constant prices. The way that the CSO derives volume of production indices for total manufacturing is to: (a) take the price indices which are appropriate to each individual sector; (b) apply the price indices to the value of gross output figures for each individual sector so as to convert these into sectoral volume of production indices; and (c) combine together the volume of production indices for individual sectors by attributing to each sector a weight determined by that sector's net output as a proportion of total manufacturing net output in 1987. This produces volume of production indices for total manufacturing. Our objective is to apply, as far as possible, an analogous method to estimating volume of production in Irish-owned industry.

It is not possible to obtain price indices which are specific to Irish-owned firms only in each sector. There are two possible options for obtaining data on price trends, for firms of all nationalities, in the individual sectors using the available data. The first option would be to use the CSO's volume of production indices for individual sectors, together with value of gross output data for individual sectors, to derive sectoral price trends. A practical problem with this, however, is that the volume of production indices are classified by sector according to NACE 70 up to the present, whereas the value of gross output data for individual sectors which are available in the CIP have been classified according to NACE REV.1 since the CIP of 1991. But there is an alternative source of value data in the CSO's value of Industrial Turnover indices, which are classified by sector according to NACE 70 up to the present. Turnover is not quite the same as gross output, since turnover data measure the value of sales in a given period whereas gross output refers to the value of production in a period. But the value of industrial turnover index does track the value of industrial gross output closely. Thus, the value of industrial turnover index for total manufacturing increased by 37.1 per cent in 1985-90, while the value of total manufacturing gross output rose by 38.2 per cent in the same period. Consequently, the value of industrial turnover index is an acceptable proxy for trends in the value of gross output.

The second possible option for obtaining the necessary price indices (for firms of all nationalities) for individual sectors would be to use the Industrial Producer Price Indices which are produced by the CSO as part of the process of generating the Wholesale Price Index. These Industrial Producer Price Indices are classified by sector according to NACE 70 up to the present. A problem with these indices, however, is that when they are applied, as a test, to CIP value of gross output data for individual sectors in 1990, so as to generate sectoral volume of production indices for 1990, the resulting volume indices sometimes differ quite significantly from the actual sectoral volume of production indices published by the CSO for 1990.

In contrast, when we test the first option – i.e., using the CSO's volume of production indices for individual sectors, together with the sectoral value of Industrial Turnover indices, to derive sectoral price trends – this option is found to be more satisfactory. Thus, when these sectoral price trend data are applied to CIP value of gross output data for individual sectors in 1990, they generally come a good deal closer to reproducing the CSO's published sectoral volume of production indices. Therefore, this option was chosen as the best way, using the available data, to obtain price trend data for the individual sectors.

Having derived the sectoral price data, it is not possible – for years after 1990 – to apply these to value of indigenous gross output figures for each individual sector so as to convert them into sectoral volume of indigenous production indices. This is because, after 1990, the sectoral value of gross output data are classified according to NACE REV.1, whereas the sectoral price trend data are classified according to NACE 70. However, it is possible to employ a procedure which is conceptually similar to the CSO method. This procedure is, first, to calculate the inverse of the sectoral price indices; second, to combine these together in a manner which reflects the sectoral composition of indigenous manufacturing; and third, to multiply the resulting overall inverted price index for all indigenous manufacturing by the value of total indigenous manufacturing gross output. This results in estimates of total indigenous manufacturing gross output in constant prices. (Note that for purposes of presentation in Table 8, the overall price index for indigenous manufacturing is shown, rather than the overall inverted price index for indigenous manufacturing; dividing the current output data by the overall price index produces the same results as multiplying the current output data by the overall inverted price index).

As was mentioned above, the CSO's method for combining together sectoral volume of production indices is to attribute to each sector a weight determined by that sector's net output as a proportion of total manufacturing net output in 1987. This produces volume of production indices for total manufacturing. Our objective is to apply, as far as possible, a similar method in estimating total volume of production in Irish-owned industry. Therefore, when combining together the inverted sectoral price indices, we attribute to each sector a weight which is determined by net output of Irish-owned firms in the sector as a proportion of total net output of Irish-owned manufacturing in 1987. In this way we produce an overall inverted price index for Irish-owned industry which makes use of the available data on differing price trends in the different sectors, and combines these in a way which is similar to the CSO method but reflects the actual sectoral composition of Irish-owned industry rather than all industry.

It is possible to test the validity of our overall procedure, at least in so far as it would apply in estimating the volume of production of *all* manufacturing (i.e., indigenous plus foreign-owned). Thus, we can use sectoral volume of production indices and sectoral value of industrial turnover indices to estimate sectoral price indices, and we can calculate the inverse of these. Then we can combine the inverted sectoral price indices together by attributing to each sector a weight determined by that sector's net output as a proportion of total manufacturing net output in 1987. Finally, we can multiply the resulting overall inverted price index

for *all* manufacturing by the value of total manufacturing gross output, and then see how the result compares with the CSO's published volume of production index for total manufacturing.

When this test is done, our procedure estimates that the volume of production index for total manufacturing in 1990 would be 150.1 (to the base 1985 = 100), which is close to the actual CSO index of 149.2. For 1995, our procedure estimates a volume of production index of 236, which is not quite so close to the actual CSO index of 242.1. In this case, the difference between the estimated increase in production, at 136 per cent, and the official increase, at 142.1 per cent, amounts to 4.3 per cent of the official increase. Thus, our procedure comes fairly close to reproducing the CSO results, but it must be recognised that there is a margin of error which results partly from the different method of calculation and partly from the fact that there are small differences between turnover and gross output.

When the procedure is adapted, by using *indigenous* sectoral net output weights, and is then used to estimate the total volume of production in Irish-owned industry, there is a further potential source of some margin of error. This is because the procedure, in effect, incorporates an assumption that the rate of price change applying to Irish-owned firms within each individual sector is the same as the rate applying to all firms in the same sector. The available data make it inevitable that such an assumption must be included. There seems to be little reason to believe that this would result in a serious systematic bias in the overall price trends derived for indigenous industry, but it might be a source of some margin of error.

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