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**INDUSTRIAL DEVELOPMENT IN IRELAND, NORTH AND SOUTH: CASE STUDIES OF THE TEXTILE AND INFORMATION TECHNOLOGY SECTORS**

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# INDUSTRIAL DEVELOPMENT IN IRELAND, NORTH AND SOUTH: CASE STUDIES OF THE TEXTILE AND INFORMATION TECHNOLOGY SECTORS

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## ABSTRACT

**INDUSTRIAL DEVELOPMENT IN IRELAND, NORTH AND SOUTH: CASE STUDIES OF THE TEXTILE AND INFORMATION TECHNOLOGY SECTORS**

This paper follows from another study, which showed that the industrial structures in the Republic and Northern Ireland are very different—the former with a cluster of modern high technology sectors, the latter retaining its nineteenth-century specialization in more traditional sectors. However, the most important dynamic promoting increased intra-EU trade in the single market of the EU is associated with inter-firm trade in similar product areas rather than trade in finished goods. This two-way trade cannot easily take place between North and South, given contrasting production structures. In this paper we explore the history and the nature of this dichotomy, using two case studies as illustrations: the clothing and textile sector, which is mainly a northern area of specialization, and the computer sector, a primary focus of specialization in the South. We suggest that both regions face challenges that could be used to promote North-South links on the island for the first time in modern history.

## BIOGRAPHICAL INFORMATION

**John Bradley** was formerly a Professor at the Economic and Social Research Institute in Dublin, and now works as an economic development consultant. His published research explores the impact of the single European market, structural funds, and economic and monetary union on the less developed peripheral states and regions of the European Union as well as the transition of former COMECON countries to EU membership. He has carried out a wide range of international consultancy assignments for the Irish and other governments, the European Commission and other international organizations.

# INDUSTRIAL DEVELOPMENT IN IRELAND, NORTH AND SOUTH: CASE STUDIES OF THE TEXTILE AND INFORMATION TECHNOLOGY SECTORS

## John Bradley

## 1. INTRODUCTION

One of the characteristics of economic research on the island of Ireland is that it seldom presents comparisons and contrasts of the two regional economies at the level of very detailed sectors. In part, this is caused by the very different sectoral structure of manufacturing and services North and South. In the Republic, attention is focused on the modern, high-technology sectors of computers, software and pharmaceuticals, and with the exception of the food processing sector, the remaining sectors are small and attract far less attention. In Northern Ireland the sectoral portfolio of manufacturing and market services is still more traditional, and is less dominated by foreign ownership.[1]

In Bradley (2006) we gave a strategic overview of the two economies on the island of Ireland. In this paper we present two case studies of sectoral specialization on the island. After presenting a brief overview of the present areas of manufacturing specialization, we then examine a mature or declining sector (textiles and clothing). This sector remains dominant in Northern Ireland but has shrunk to a smaller— mainly specialist—niche in the Republic. In the following section, a modern, high technology, sector—computers and related software—is examined. This sector has grown rapidly during the past decade and a half and has played a crucial role in driving national growth, modernization and development in the Republic, but plays a much more modest role in Northern Ireland.

At first sight, these case study sectors would appear to be at opposite ends of what Raymond Vernon has called the product life-cycle spectrum: textiles and clothing at the mature/declining stage, and computers and software at the introduction/growth stage (see Vernon, 1966 and Bradley, 2006 for further details). But appearances can be deceptive. For example, the Irish computer and software complex is narrowly focused on personal computers, components, peripherals and related software. As shall be discussed later, within this segment of the wider electronics and software industry, personal computers appear to be moving towards maturity. So, the case study can be used to reinterpret the product life-cycle framework more flexibly and apply it to niche products within a segment of manufacturing, where future vulnerability might arise because the technologies were not researched and developed in the Republic, but were merely produced and distributed to intermediate and end users.

[1] We make a distinction between foreign ownership and external ownership. Many firms in Northern Ireland are branch plants of British firms, and are thus externally controlled (NIEC, 1992).

## 2. MANUFACTURING PORTFOLIOS, NORTH AND SOUTH

### 2.1 Introduction

In this section, attention is drawn to an important aspect of the nature of the portfolio imbalance in Northern Ireland manufacturing, namely the continued existence of a range of traditional labour-intensive sectors in an economy that should have divested itself of these sectors long ago.[2] The performance, structural and market trend characteristics of the textiles and clothing sector of Northern Ireland are examined. Present proposals for addressing the problems are reviewed, and a range of possible future competitiveness strategies is explored.

While we attribute to the clothing/textiles sector many negative characteristics, it should be emphasized that even in the case of textiles and clothing the maturity and decline of the sector is neither inevitable nor irreversible. The example of the well-known firm Benetton in northern Italy shows how, in stark contrast to Northern Ireland, a segment of the textiles and clothing sector was developed and transformed into a high productivity, high profit success story through a synthesis of process innovations and strategic marketing (Pinson and Tibrewala, 1996).

### 2.2 Background to sectoral specialization on the island of Ireland

It has been demonstrated that the textiles and clothing sectors were the largest component of manufacturing in Northern Ireland in the year 1924 (Bradley, 2006). In terms of output, they made up 54% in the North, but only 2.4% in the South. Over the intervening years, the sector declined in the North, and grew somewhat in the South. For example, in the years 1951, 1961 and 1967, immediately before and after the switch to outward policies in the Republic and immediately before the outbreak of civil unrest in Northern Ireland, the employment composition of manufacturing was as shown in table 1. By 1967, the textiles and clothing sector in the Republic had grown to just over 25% of total employment in manufacturing (its peak), while in Northern Ireland it had continued an inexorable decline to just under 42%.

Although simple matrix techniques can be used to examine portfolios of different businesses, attempts to translate these to the level of an entire country or regional manufacturing sector have not been very successful (McKiernan, 1992: 115-121). In table 2 an attempt at portfolio analysis for Northern Ireland is presented, while an analogous portfolio for the Republic is presented in table 3. Both refer to the period after the ceasefires but before the Belfast Agreement (1991-96 for Northern Ireland and 1991-1998 for the Republic).

[2] It could be held that a major cost to the Northern Ireland economy of the period of civil unrest since 1968 was the slowing down of the normal forces of sectoral restructuring and renewal that operated much more vigorously in Britain and in Ireland. Continuing claims that Northern Ireland be treated as a special case merely prolongs the necessary changes.

**Table 1. Employment in Irish manufacturing after the second world war**

|  | 1951 numbers | % | 1961 numbers | % | 1967 numbers | % |
|---|---|---|---|---|---|---|
| *Northern Ireland* | | | | | | |
| Textiles | 70,658 | 39.9 | 47,965 | 29.3 | 42,412 | 26.5 |
| Clothing | 27,025 | 15.3 | 23,820 | 14.5 | 21,959 | 13.7 |
| Engineering and metal | 43,461 | 24.5 | 51,508 | 31.4 | 49,260 | 30.8 |
| Food, drink and tobacco | 20,802 | 11.7 | 25,195 | 15.4 | 26,191 | 16.4 |
| Mineral products | 3,143 | 1.8 | 4,173 | 2.5 | 4,243 | 2.7 |
| Timber and furniture | 3,926 | 2.2 | 2,653 | 1.6 | 3,252 | 2.0 |
| Paper, printing etc | 4,500 | 2.5 | 4,954 | 3.0 | 5,404 | 3.4 |
| Miscellaneous trades | 3,631 | 2.0 | 3,612 | 2.2 | 7,081 | 4.4 |
| Total manufacturing | 177,146 | 100.0 | 163,880 | 100.0 | 159,802 | 100.0 |
| *Republic of Ireland* | | | | | | |
| Textiles | 9,535 | 6.8 | 15,394 | 9.8 | 15,504 | 8.7 |
| Clothing | 28,092 | 20.0 | 27,808 | 17.6 | 29,729 | 16.7 |
| Engineering and metal | 18,019 | 12.8 | 26,407 | 16.8 | 33,014 | 18.6 |
| Food, drink and tobacco | 42,038 | 30.0 | 46,317 | 29.4 | 50,668 | 28.5 |
| Mineral products | 5,029 | 3.6 | 6,030 | 3.8 | 7,995 | 4.5 |
| Timber and furniture | 8,766 | 6.2 | 6,963 | 4.4 | 7,726 | 4.4 |
| Paper, printing etc | 12,343 | 8.8 | 14,696 | 9.3 | 15,156 | 8.5 |
| Miscellaneous trades | 16,461 | 11.7 | 14,007 | 8.9 | 17,776 | 10.0 |
| Total manufacturing | 140,283 | 100.0 | 157,622 | 100.0 | 177,568 | 100.0 |

Source: *Report on the census of production for Northern Ireland*; *Census of industrial production* (various years)

Taking Northern Ireland first, the key characteristics of the portfolio of manufacturing sectors from table 2 are as follows:

1. Food processing was the predominant sector in terms of output share (31%), but only second in terms of employment share (19%). In terms of average annual growth over the five-year period 1991-96, it was stagnant in real terms.

2. Textiles and clothing had the second largest output share (13%), but the largest employment share (23%), characterizing it as having very low productivity. Average annual real growth was only about 4%, and possibly lower, since price competition is very strong in the sector (see below).

3. Electrical and optical goods are the third largest sector in terms of output (9.4%), and fourth in terms of employment share (9.2%). This is also a very high growth sector (about 14% per year in real terms). The characteristics of transport equipment are very similar.

4. For all the other sectors, both output and employment shares are small, and range from a high of 7.6 to a low of 1.9%, with real growth rates clustering closely about the average of 4% per year.

**Table 2. Sectoral portfolio in Northern Ireland manufacturing, 1996**

|  | Gross output 1996 £m. | 1996 % | 1991 £m. | growth 1991-96 | Employment, 1996 No. | % |
|---|---|---|---|---|---|---|
| Food, drink & tobacco | 2,726 | 30.9 | 2,390 | 2.7 | 19,370 | 19.0 |
| Textiles, clothing & leather | 1,167 | 13.2 | 849 | 6.6 | 23,800 | 23.4 |
| Electrical & optical equipment | 829 | 9.4 | 384 | 16.6 | 9,330 | 9.2 |
| Transport equipment | 742 | 8.4 | 652 | 2.6 | 10,810 | 10.6 |
| Other machinery & equipment | 671 | 7.6 | 328 | 15.4 | 6,850 | 6.7 |
| Chemicals & man-made fibres | 600 | 6.8 | 450 | 5.9 | 3,620 | 3.6 |
| Rubber & plastics | 502 | 5.7 | 319 | 9.5 | 6,280 | 6.2 |
| Paper & printing | 440 | 5.0 | 297 | 8.2 | 6,400 | 6.3 |
| Other non-metallic mineral products | 364 | 4.1 | 256 | 7.3 | 4,360 | 4.3 |
| Basic metals & fabricated metal products | 330 | 3.7 | 221 | 8.3 | 5,140 | 5.0 |
| Wood & wood products | 286 | 3.2 | 192 | 8.3 | 2,750 | 2.7 |
| Other manufacturing n.e.s. | 167 | 1.9 | 113 | 8.1 | 3,180 | 3.1 |
| Total | 8,824 | 100.0 | 6,338 | 6.8 | 101,890 | 100.0 |

Note: Average annual inflation rate of UK manufacturing output (1991-96) = 2.65%

Source: Northern Ireland Sales and Exports, various issues

Turning to the Republic, the key characteristics of the portfolio of manufacturing sectors (table 3) are very different from Northern Ireland, and are as follows:

1. Electrical and optical equipment is the predominant sector in terms of output share (29%), and in terms of employment share (25%). In terms of average annual growth over the seven year period 1991-98, it experienced very high real growth of 18%.

2. Chemicals (including pharmaceuticals) and man-made fibres had the second largest output share (24%), but a much lower employment share (9%), characterizing it as having low productivity. This was also a very high growth sector (about 21% per year in real terms).

3. Food processing had the third largest sector in terms of output (21.4 per 2.5% per year in real terms).

4. The only other sector with double digit output share was paper and printing (including publishing), with output share of 10.4% and employment share of 9.6%. This is also a very high growth sector (21% per year in real terms). Much of the output of the software sector is classified here, including computer manuals and CD-ROMS.

5. For all the other sectors, both output and employment shares are very small, and range from a high of 2.7 to a low of 1%, with real growth rates somewhat lower than the average of 11% per year.

**Table 3. Sectoral portfolio in Republic of Ireland manufacturing, 1998**

| | Gross output | | | | Employment, 1998 | |
| | 1998 £m. | 1998 % | 1991 £m. | growth 1991-98 | 1998 No. | % |
|---|---|---|---|---|---|---|
| Food, drink & tobacco | 10381 | 21.4 | 7807 | 4.2 | 47113 | 19.5 |
| Textiles, clothing & leather | 777 | 1.6 | 808 | -0.6 | 15564 | 6.4 |
| Electrical & optical equipment | 13831 | 28.6 | 3848 | 20.1 | 60127 | 24.8 |
| Transport equipment | 749 | 1.5 | 406 | 9.1 | 7464 | 3.1 |
| Other machinery & equipment | 1196 | 2.5 | 732 | 7.3 | 14668 | 6.1 |
| Chemicals & man-made fibres | 11728 | 24.2 | 2685 | 23.4 | 21415 | 8.8 |
| Rubber & plastics | 855 | 1.8 | 515 | 7.5 | 10476 | 4.3 |
| Paper & printing | 5018 | 10.4 | 1645 | 17.3 | 23260 | 9.6 |
| Other non-metallic mineral products | 917 | 1.9 | 582 | 6.7 | 9977 | 4.1 |
| Basic metals & fabricated metal products | 1301 | 2.7 | 869 | 5.9 | 14960 | 6.2 |
| Wood & wood products | 469 | 1.0 | 230 | 10.7 | 5016 | 2.1 |
| Other manufacturing n.e.s. | 1207 | 2.5 | 771 | 6.6 | 12164 | 5.0 |
| Total | 48429 | 100.0 | 20127 | 13.4 | 242204 | 100.0 |

Note: Average annual inflation rate of manufacturing output (1991-98) = 1.86%

Source: Census of Industrial Production, 1991 and 1998

In summary, both regions of the island of Ireland display manufacturing portfolios that are heavily concentrated. In the case of Northern Ireland at the time of the negotiation of the Belfast Agreement, the two largest sectors were food processing and textiles and clothing, both of which experienced very slow real growth. There was also significant specialization in a high growth sector, electrical and optical equipment. In the case of the Republic, the predominant specialization was in two very high growth high technology sectors (electrical and optical, and chemicals) and one traditional (but quite capital intensive) slow growth sector, food processing.

**Table 4. Industrial concentration by sector, 2000**

| Sector | Gross output share | | Employment share | |
| | *Republic of Ireland* | *Northern Ireland* | *Republic of Ireland* | *Northern Ireland* |
|---|---|---|---|---|
| Electrical & optical equipment | 33.8 | 19.5 | 27.0 | 11.1 |
| Chemicals & chemical products | 26.3 | 4.4 | 9.1 | 3.6 |
| Food, beverages, tobacco | 17.2 | 29.6 | 18.8 | 19.4 |
| Paper, paper products, publishing, printing | 10.8 | 4.1 | 9.3 | 6.4 |
| Metal & metal products | 2.2 | 4.9 | 6.6 | 7.2 |
| Other manufacturing | 1.9 | 3.1 | 4.5 | 4.0 |
| Machinery & equipment | 1.8 | 5.8 | 5.6 | 6.7 |
| Non-metallic mineral products | 1.6 | 4.2 | 4.4 | 5.7 |
| Rubber & plastic products | 1.4 | 5.2 | 4.2 | 7.0 |
| Transport equipment | 1.2 | 8.4 | 3.8 | 13.0 |
| Textiles, textile products, leather | 0.9 | 7.6 | 4.3 | 13.0 |
| Wood & wood products | 0.9 | 3.3 | 2.4 | 2.9 |

Source: InterTradeIreland, 2004.

This form of sectoral concentration was continued, and table shows the harmonized data published by InterTradeIreland for the year 2000.

## 3. CASE STUDY: THE NORTHERN IRELAND TEXTILES AND CLOTHING SECTORS

### 3.1 Introduction

In designing strategic industrial policy in Northern Ireland, the clothing and textiles sector poses a major challenge. Although in continual decline, its rate of decline has undoubtedly been slowed by the use of large-scale grant aid to prop up ailing firms whose collapse would have destabilized an economy that was already under siege as a result of civil unrest. In other words, it proved very difficult to attract more modern industries to replace any employment loss from the decline of the traditional specialization in clothing and textiles. But, unfortunately, the sector itself failed to modernize in a way that might have preserved it from further erosion of competitive advantage.

As part of a recent review of industrial strategy in Northern Ireland—*Strategy 2010*—a sectoral working group was set up to examine the textiles and clothing sector (CTWG, 1998). The report examined the underlying structure and characteristics of the sector and attempted to formulate policy recommendations that would preserve a role for it within the future of manufacturing.

The sector is defined as being made up of business activities involving yarns, fibres, threads, fabric garments, carpets, household furnishings and industrial textiles (CTWG, 1998: 9-10). It consists of a small number of very large public corporations (the top eight of which are mostly British owned and account for almost half of total employment in the sector), and a large number of small, mostly family-owned and run businesses. The sector employs about 23,000 people (about a quarter of total employment in northern manufacturing), down from a peak of 70,000 in 1945. Employment is split roughly equally between textiles (10,500) and clothing (12,500).

Production rose in Northern Ireland, but fell in the UK as a whole, in the Republic and in the EU as a whole. But although northern productivity increased by about 2.6% each year, profit margins declined from £2,300 per employee in 1993 to £1,600 per employee in 1996 (CTWG, 1998: 21). This represents the lowest level of profitability per employee of any Northern Ireland manufacturing sector, reflecting its high labour intensity.

**Table 5: Performance in the EU Textiles and clothing Industries, 1990-97**

| | Northern Ireland | UK | Republic of Ireland | EU |
|---|---|---|---|---|
| Production (%) | 10 | -13 | -9 | -5.4 |
| Employment (%) | -8 | -20 | -12 | -17 |

Source: CTWG, 1998: 21.

**Table 6: Destination of exports of textiles and clothing from Northern Ireland, 1996**

| Country | Percentage of exports |
|---|---|
| Republic of Ireland | 32 |
| Asia | 10 |
| USA | 10 |
| France | 6 |
| Germany | 5 |
| Miscellaneous | 39 |

Source: CTWG, 1998: 22

The sector is mainly oriented to external sales.[3] In 1996, 92% of output was sold outside Northern Ireland, of which three quarters went to Britain. The main export destinations for the remaining one quarter of external sales are shown in table 6.

### 3.2 Structure of textiles and clothing sub-sectors in Northern Ireland

The textile and clothing sub-sectors are further segmented, as shown in tables 7 (textiles) and 8 (clothing). The carpet sub-sector is concentrated in a small number of firms, and is the largest segment in the sector. The remainder is divided fairly evenly over six remaining segments, with household textiles (table linen, furnishing fabric) making up the smallest segment in terms of turnover (7%) but double that as a share of employment (13%). Very few Northern Ireland companies operate in the area of technical textiles, the main company being Dupont (Lycra and Kevlar).

The largest subsector of clothing is hosiery/lingerie (about a quarter of turnover and of employment), but is made up of a range of other garments. What is interesting about this sub-sector is the nature of its relationship with its main customers. Nearly 58% of the workforce in the clothing sub-sector is employed on long-term supply contracts to Marks & Spencer. A further 21% works on other non-branded supply contracts, with 19% on branded goods. An insignificant proportion (about 2%) is employed on "cut, make and trim" operations. The firms working on the Marks & Spencer supply contracts tend to be large. The rest tend to be small.

**Table 7. Northern Ireland textile sector, by segment, 1996 (percent)**

| Segment | Employment | Turnover |
|---|---|---|
| Carpets | 29 | 39 |
| Threads, braids, twines | 12 | 16 |
| Weaving | 10 | 12 |
| Spinning | 18 | 10 |
| Household textiles | 13 | 7 |
| Dyeing and finishing | 7 | 4 |
| Miscellaneous | 11 | 12 |

Source: CTWG, 1998: 10

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[3] Note that "external sales" from Northern Ireland are defined as sales outside Northern Ireland itself; "exports", on the other hand, are sales outside the UK.

**Table 8. Northern Ireland clothing sector, by type of garment, 1996 (percent)**

| Garment type | Employment | Turnover |
|---|---|---|
| Hosiery / lingerie | 25 | 24 |
| Men's outerwear | 17 | 15 |
| Shirts | 18 | 14 |
| Children's wear | 10 | 11 |
| Jeans / leisurewear | 5 | 13 |
| Ladieswear | 10 | 9 |
| Nightwear | 7 | 8 |
| Protective / workwear | 3 | 2 |
| Other | 5 | 4 |

Source: CTWG, 1998: 11

### 3.3 Market trends in textiles and clothing

The sector has moved through fairly distinctive trends during recent decades (CTWG, 1998: 13-14). The 1970s were characterized by buoyant mass-market demand for high quality goods, and required capital-intensive techniques, long production runs and strong vertical links in the industry. The 1980s were a period of erratic demand where the market became increasingly dominated by competition between the major UK retailers. Consumer tastes tended to become fashion oriented and segmented. Suppliers needed to be able to respond quickly to fickle changes in tastes and the knock-on fluctuation in demand forced changes on production techniques. During the 1990s, quick response capabilities assumed an even greater importance, and the larger Northern Ireland firms formed close strategic alliances with UK retail chains, particularly Marks & Spencer. This led to mergers and rationalizations in the sector.

The sector is likely to face even more daunting challenges. An immediate problem is the decline in the fortunes of Marks & Spencer, whose supply contracts in Northern Ireland support almost 60% of employment. Changing lifestyle characteristics of consumers will generate many opportunities for innovation and branding of high margin products. But the sector does not appear to be well positioned to respond to such demands, since it has functioned mainly as a supply contractor, where design and market research functions have been carried out by retail chains like Marks & Spencer.

Service requirements are also becoming ever more demanding, with continual renewal of styles rather than traditional seasons, requiring a radical shortening of supply response capability. However, if the sector continues to operate supply contracts to major UK retail chains, there is a risk that any competitive advantage possessed by the Northern Ireland clothing sector could be eroded by much lower production costs in Central Europe, North Africa and East Asia, where advances in communications technologies and low transport costs could overcome the Northern Ireland advantage of closeness to the UK market. More seriously, the northern textiles and clothing sector can no longer compete as a low cost producer without

massive capital investment.[4] Furthermore, the phasing out of the Multi-Fibre Agreement—which had served to protect EU producers from low cost competition—has made the EU and UK markets even more competitive. An alternative strategy—to carry out high added-value design and marketing activities locally and outsource production to low-cost countries, might be feasible, but is likely to place severe strains on the level of technical and marketing expertise.

### 3.4 Future competitiveness strategies

The textile and clothing industry has many of the characteristics of a mature or declining sector. In the absence of exceptional characteristics (such as displayed by a firm such as Benetton in northern Italy), the product life-cycle framework of Vernon (see above) would suggest that the sector has very limited options in its present form. Far from displaying any exceptional capabilities, the competitiveness of the Northern Ireland textiles and clothing sector has been deteriorating for many decades. There are only a few large firms that can benefit from scale economies in pursuing low cost competitive strategies. Local design capabilities were never very strong at any time, but in recent decades have been neglected as the large firms engaged in supply contracts with UK retail chains. Wage costs have been driven up to UK levels, and a relatively low rate of productivity growth has resulted in high unit labour costs. The availability of high rates of subsidy has served to prop up an otherwise ailing sector and reduce the urgency for rationalization, change and renewal.[5] Finally, the declining nature of the sector precludes any major role for inward foreign direct investment, which is more likely to seek out lower cost labour in the less developed periphery of the east or south of the EU, or in Asia.

In light of the large size of the textiles and clothing sector in Northern Ireland, it is surprising that the major review of industrial strategy—*Strategy 2010*—came up with such unfocused proposals (Strategy 2010, 1999: 92-94). For example, positive aspects of the sector were identified as including strong family firms with professional management, although this has not generated much new thinking or innovation over the past decades. The close partnership with UK retailers was also identified as a strength, an assertion that is open to question (see above). The "flexible, young workforce" is also counted as a strength, although the sector is well known for its low skills and lack of innovation. Negative aspects of the sector are well known, and include low cost competition from Eastern Europe, Asia and North Africa, low levels of research and development, over-dependence on a small number of UK multiples, and a "poor image". It is suggested that growth in the sector is only likely to be achieved: "by building an international reputation for excellence and specific added-value products or services" (Strategy 2010, 1999: 94). But how is this to be achieved?

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[4] Hourly wage costs in textiles (measured in US dollars) for Northern Ireland are in the region of $13, slightly higher than in the Republic ($11) but considerably lower than Germany ($21). However, the figure for Turkey is $2.5, the Czech Republic $2, Morocco $1.9 and Bangladesh $0.4. Hourly wage costs in clothing tend to be lower than in textiles in Northern Ireland ($9) but are also relatively lower in a wide range of less developed countries, such as Romania, $1 (CTWG, 1998: 71-72).

[5] The average rate of regional preferential assistance to all industry in 1996 was 5% of manufacturing GDP in Northern Ireland, but only 1.8% in Wales, 1.1% in Scotland and 0.1% in England.

**Table 9. Strategies for declining businesses**

| | Has competitive strengths for remaining demand pockets | Lacks competitive strengths for remaining demand pockets |
|---|---|---|
| Favourable industry structure for decline | *Leadership or niche* | *Harvest or divest quickly* |
| Unfavourable industry structure for decline | *Niche or harvest* | *Divest quickly* |

Source: Harrigan and Porter (1998): 114

There are appropriate end-game strategies for such declining sectors (Harrigan and Porter, 1998). The conventional strategy for a declining sector suggested by portfolio matrices has been to "harvest"—to cease any significant investment activity, maximize cash flow, and eventually divest. This was the strategy followed in the Republic, and has led to the decline in importance of textiles and clothing to an insignificant niche (see table 3 above). However, Harrigan and Porter suggest a less one-dimensional approach to strategy for declining businesses, illustrated in figure1.

1. A market share *leadership* strategy is one where a company attempts to reap above-average profitability by becoming one of the few companies remaining in the industry. Leadership permits more control over the process of decline, but does not reverse it. The tactics of achieving a position of leadership include ensuring that other companies retire more rapidly from the industry; perhaps by reducing their exit barriers or by raising the stakes and forcing competitors to reinvest.

2. The objective of a *niche* strategy is to identify a segment of the declining industry that is likely to maintain stable demand or decay more slowly, but which permits high returns to be made.

3. In a *harvest* strategy, management tries to get the highest cash flow it can from the business, while undergoing a controlled disinvestments.

4. Finally, a *quick divestment* strategy is one where the company is sold in the early stages of decline. Divesting quickly will force a company to confront its own exit barriers, such as its customer relationships and corporate interdependencies.

In table 9 a distinction is made between a favourable and unfavourable industry structure for decline. A favourable structure is characterized by low demand uncertainty, low exit barriers, and fragmented rivalry. An unfavourable structure is characterized by high demand uncertainty, high exit barriers, and conditions leading to volatile end-game rivalry.

Although table 9 is designed from an industry perspective, it offers useful insights even in the case of a whole sector in a region like Northern Ireland. The Northern Ireland textiles and clothing sector would appear to have competitive strengths in

certain demand pockets and the structure of the industry appears favourable, suggesting a *niche* or *leadership* strategy. The strategy recommendations made by CTWG (1998: 27-42) appear to suggest moving in that direction. Examples include a continuation of the policy of acting as high quality, low cost suppliers to UK and US retail chains; the development of customized products and services; the development of a range of branded products, perhaps in association with the fashion niche in the Republic; and specialization in a range of technical textile products. A crucial role for government policy is identified, in terms of support for innovation, design, marketing and training.

### 3.5 Summary

Attention has been drawn to the nature of the portfolio imbalance in Northern Ireland manufacturing. While there is some justification of the continued large size of the food processing sector—since the agriculture sector is the largest, in relative terms, of all 11 UK standard regions—the enduring dominance of the textiles and Clothing sector is more difficult to explain. Economic logic points clearly to the need to get out of this sector, since the comparative advantage of a high wage region like Northern Ireland is weak at best, and non-existent at worst. The performance, structural and market trend characteristics of the textiles and clothing sector have also been examined, further reinforcing its declining nature. Proposals for addressing the problems as contained in *Strategy 2010* policy review appear to be pious aspirations rather than rational, implementable strategy. The range of possible future competitiveness strategies are not appealing, and include at best *leadership* or *niche*, and at worst, *quick divestment*. The future of Northern Ireland manufacturing almost certainly lies elsewhere, and not in textiles and clothing. In the next section we turn to the issues that arise in building and sustaining a fast-growing, high technology sector, a challenge that still faces policy makers in Northern Ireland.

## 4. CASE STUDY: THE IRISH ELECTRONICS AND SOFTWARE SECTORS

### 4.1 Introduction

As was apparent in table 3 above, there is much more going on in the manufacturing sector in the Republic than computers and software. But the computer-related sector and the pharmaceutical sector are at the heart of the recent rapid growth and development of the economy, and provides a useful way to examine the ability of Irish development agencies to design and implement strategies to attract inward foreign direct investment in the high technology sector generally. This is the main reason for selecting the electronics and software sector as a case study.

In this section, the way in which a complex of computer industries was attracted to the Republic is examined. In particular, the approach of the Industrial Development Authority (IDA) is described and shown to be consistent with the industrial policy

frameworks associated with Vernon, Porter and Best.[6] However, the success of IDA strategy needs to be evaluated in the context of the possibility that the computer-software complex in the Republic is focused on a relatively narrow range of products within the wider electrical and optical sector.[7] It is suggested that this narrow range of products may be about to mature, and that a new approach is needed in order to make the transition to other related manufacturing activities. The section concludes with an examination of how this is being done in the context of changes in modern production processes.

### 4.2 How the US computer industry was brought to Ireland

The success of the Celtic Tiger has brought forth many explanations of how it came about. A recent account has been co-written by Padraic White, a former managing director of the IDA, which handled all aspects of industrial promotion prior to 1994 (MacSharry and White, 2000).[8] There is always an element of *post hoc* rationalization about such accounts, written many years after the key decisions were taken. However, White bases his account of the evolution of the modern Irish manufacturing sector in part on an earlier paper, written before the first major computer company ever decided to locate in the Republic (McLoughlin, 1972). The story of the IDA is a classic example of a state development agency that mediated between the narrow firm-based concerns of potential investors and the wider social concerns of national policy makers.

The challenge facing the IDA was how to attract just the right type and scale of foreign investment to fit the Republic's needs. There was a strong planning and research section (headed by Ray McLoughlin), which generated new ideas and concepts that were fully tested against the actual experience of the IDA representatives who were in the field trying to convince firms to consider locating in the Republic.[9]

As McLoughlin tells it, the "closed loop" system of industrial planning designed by the IDA in the late 1960s had the following components (see also figure 1).

1. Definition of the national economic and social objectives as defined by government policy;

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[6] See Vernon, 1966; Porter, 1990; Best, 2001 and further consideration of the role of strategic business frameworks in Bradley, 2006.

[7] The sectoral terminology is that of the NACE system (general industrial classification of economic activities in the European Community).

[8] Organizational changes in the wake of the 1992 review of Irish industrial policy split off the task of attracting inward foreign direct investment from the very different task of promoting development in locally-owned manufacturing. The former is now handled by a more focused IDA, and the latter by a new agency, Enterprise Ireland.

[9] On a personal note, in the year 1986 the author—in the process of compiling a lecture for development ministers from LDC countries explaining the Irish experience of foreign direct investment—had occasion to call the IDA Research Section in order to check out the extent to which IDA policy analysts had made use of Vernon's product life-cycle framework in selecting attractive sectors. To his surprise, he was told that nobody had ever heard of Raymond Vernon or of the product life-cycle!

2, Definition of the criteria for selecting target industries, whether in terms of the Republic's location or its capacity to attract inward investment;

3. Identification and targeting of specific foreign companies and detailed assessment of their investment requirements;

4. Assessment of the Republic's ability to meet the development needs of those companies;

5. Monitoring of progress in successfully attracting investment projects.

In more familiar language, White described the policy goal as "to target with rifle-shot precision individual companies that met specific criteria, then go directly to them and make the case for locating in Ireland" (MacSharry and White, 2000: 231-32). Using even more colloquial marketing language, White referred to ""these armies of cold callers, and the commando-style task forces fanning out across the world, laid the ground for Ireland's dramatic success in getting new industries later in the 1970s" (MacSharry and White, 2000: 231*).*

Since the IDA was a relatively small organization, the workload to implement all elements of the promotional strategy was phenomenal:

> In the first full year (1971) of the new direct marketing approach, IDA executives made presentations to 105 different target companies. Next year, they increased this to 775 in 13 countries. And, by 1973, a staggering 2,600 presentations top individual companies were made across the world (MacSharry and White, 2000: 232).
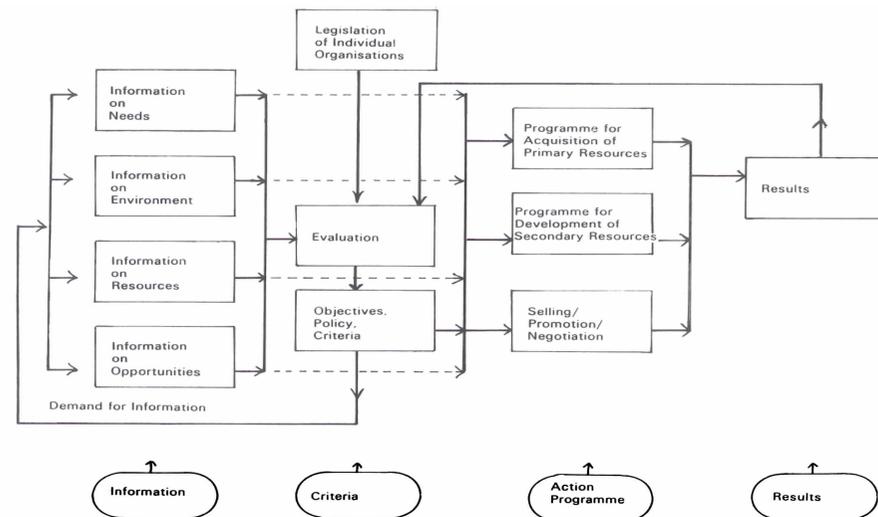
Even at a very early stage, the IDA had a sophisticated system of scanning the world business horizon, and identified the electronic and pharmaceutical sectors as having desirable characteristics that particularly suited the Republic's situation. The man-made-fibre sector had also been targeted, and had been a big success in Northern Ireland. But after an initial period, it was hit by the OPEC oil price shocks of 1973-74, and few firms survived. Clothing and textiles was also targeted, and firms like Wrangler, Bluebell, Farah Jeans and Burlington Industries located in Ireland and created welcome jobs (MacSharry and White, 2000: 274). But with tough price competition from low-wage Asian and southern European economies, and disruptive changes in fashion, most of them either closed or cut back severely.

The first critical success in attracting a world-class computer firm was Digital Equipment Corporation (DEC), a pioneer in mini-computers. Its presence heavily influenced many other major multinational computer hardware and software companies to locate in the Republic in the following years. Today, electronics represents the largest single foreign-owned manufacturing sector. It contributes 30% of total exports and employs about 44,000 people directly (18% of total employment in manufacturing).[10] In addition, a large software sector has grown up around the hardware industry, and it employs a further 15,000 people directly and produces 40% of all PC package software sold in Europe. Both the hardware and software sectors have further significant impacts on a wide range of other—often traditional—sectors.[11]

It was generally realized by the IDA that their unique selling point, giving the Republic a crucial advantage in winning inward investment in the high technology, high profit sectors, was the low rate of tax on corporate profits (zero on export-related profits initially, but changed to a flat rate of 10% after the Republic joined the then EEC in 1973). This incentive had some striking virtues. Unlike an incentive system that provided high capital grants and required continuing subventions, the benefits of the tax-based incentive was that it only kicked in when firms were up and running, and actually making profits. It also proved to be a crucial benefit to high profit firms, who are invariably located at the earlier stages of the product life-cycle and are at the cutting edge of product and process innovation. It was also an incentive that was kept stable over many decades, and the IDA and the Irish government ensured that it could be fully credible over the usual business investment planning cycles of 10 to 15 years or more. Finally, the tax-based incentive had the great virtue of being very simple, easy to understand and transparent.

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[10] Detailed data for the electronics sub-sector of NACE 30-33 (electrical and optical equipment) is taken from annual census of industrial production.

[11] For example, the packaging and printing industry—largely locally owned—supplies sophisticated products and services to the hardware and software sectors. Only some of the activities of the software sector fall within the classification of "manufacturing", and are included in the census of industrial production. Further data have been taken from the IDA web site: www.ida.ie

But the tax incentive, even combined with fairly generous capital grants, would not have been sufficient to stimulate growth from a zero base in new technology sectors. Prior to 1970 there had been no indigenous electronics sector in the Republic and only a handful of mainly US companies (General Electric, Ecco and Core Memories). It was quickly realized by Ray McLoughlin, head of the IDA planning and research section, that the limited supply of electrical engineers and technicians in the Republic would be a major deterrent to selecting the country as a location for industries in this potentially fast growing niche. By the mid-1970s, Irish universities were producing about 100 electrical engineers and 200 technicians, but a massive increase in supply was called for if the sector was to expand.

The IDA alerted the Irish government to the potential crisis, which could easily choke off growth. Very quickly, the university sector was expanded and given massive increased resources. By as early as 1979, new and expanded courses in electrical engineering were under way, post-graduate conversion courses were provided to encourage science and other graduates to enter the new field, and a system of sub-degree level regional technology institutes was planned and implemented over the next decade. When the poor quality of the telephone network was also identified as another bottleneck that would impede data-transmission, a crash programme was put in place, a new state telecommunications agency was set up, and a fully digital nation-wide system was installed and commissioned by the mid-1980s. This programme was also used as a further incentive to attract inward investment in the telecommunications area,

Just as DEC was the lynch-pin of the first phase of inward investment in the computer area, the success in attracting Apple to establish its European manufacturing base in the Republic as early as 1980 was the linchpin of a strategy that targeted the new wave of PC-based hardware and software. The IDA approach has been described as follows:

> The IDA electronics division used a see-through model of a computer to identify every component in it. Then, systematically, it canvassed the makers of each individual component, such as keyboards, hard disks, cables, computer mice and sub-assemblies. The decade (1980) closed with Ireland successfully inducing two companies the IDA had pursued for over a decade to locate here—Intel's microprocessor plant and Motorola's communications-products plant (MacSharry and White, 2000: 288-89).

The high-point of the IDA strategy came during the 1990s, when the Republic became the front-runner for most of the sophisticated foreign investment in electronics, computers and software. A virtuous circle had been created, with electronic and computer equipment at its core, a spill-over into PC-related software development and customization, and a further spill-over into telecommunications-based marketing, customer and technical-support services. This both assisted existing producers located in the Republic and contributed to the creation of a sophisticated international financial services sector.

### 4.3 The future of the computer and software sector in Ireland

A hint of how the IDA has been dealing with the incipient maturity problem of the computer sector was contained in the review of industrial promotion strategy (Enterprise 2010) prepared by Forfás, the co-ordinating agency of the IDA and Enterprise Ireland:

> The emerging new business model is leading to a new pattern of international investment, with corporations selecting the best location for each particular activity, rather than necessarily putting integrated projects in a single location (Forfás, 2000: 2).

This type of decentralised approach within firms is well known, and was the basis for the success of Dell in creating a high profit computer firm in an area that looked as if it was reaching maturity in the late 1980s. The issues are illustrated in figure 2. The nature of operations carried out within the firm range from "do everything" to "do nothing". The nature of inter-firm contacts ranges from a transactional basis (with many suppliers) to a closed basis (with only a few carefully selected suppliers).

The case of Dell illustrated the overriding importance of final assembly, distribution and marketing. In terms of inter-firm contact, a small number of long-term suppliers were used. Ireland was an obvious location for such a company, particularly in the 1990s, since many of the suppliers (including Intel, the supplier of the vital microprocessors) were already located in the Republic, and geographical peripherality was a serious problem because of good transport and communications infrastructure and (in stark contrast to textiles and clothing), the high "added-value" density of the final product.
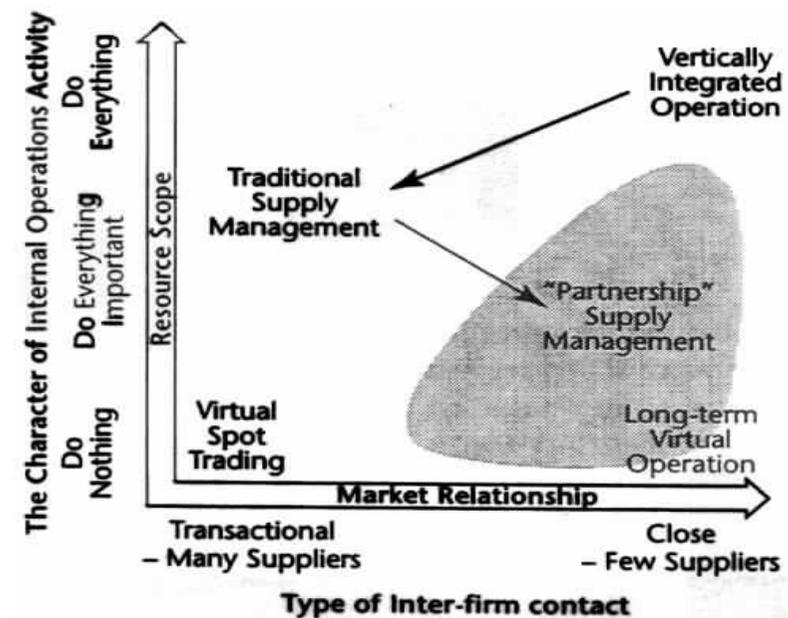


**Figure 2. Types of supply relationship**

Until recently, sourcing inputs from other countries would have incurred unacceptably high transaction costs (both in terms of inter-firm communications and border controls for intermediate products). However, the dramatic fall in transport and communications costs, as well as the completion of the single European market by 1992, worked strongly in the Republic's favour. But *Enterprise 2010* appears to envisage a wider application of global outsourcing, with the Republic at the high added-value core of activities. Porter's framework suggests that this approach would leave the Republic vulnerable to changes in technology, and Best's framework suggests that such an approach will require a high standard of excellence in all aspects of the economy. Either way, the suggested new approach of marketing the Republic as a "network" location in a type of post-industrial age will be a major challenge.

### 4.4 Summary

There were many different aspects to the success of the IDA in attracting inward investment in high technology areas. It had a certain independence from government and a separate role in planning strategy at the national as well as the firm level. This meant that it was well equipped to deal both with research into the actual needs of individual industries as well as requirements at the national level in terms of basic physical infrastructure, education and training, telecommunications, and transport needs. There was also a realization that national industrial promotion was a continuously evolving challenge:

> The nature of industry keeps changing—there is a continuous process of decline in some sectors (for example, textiles and mechanical engineering) and growth in others (software and e-commerce). So we can assume that a fair share of the industries we have today will decline and decay in coming years. Thus, we need to be continually searching for the emerging star sectors that are competitive in an Ireland of rising costs compared with others in an enlarged European Union (MacSharry and White, 2000: 313).

Another crucial characteristic of the IDA approach was its pro-activity, described provocatively as follows:

> It is IDA policy to gear itself to discharge the total process to the limit of its legislative permit, and while it will not encroach on areas which are clearly the responsibility of other state organizations, it will err on the side of doing rather than not doing where the returns on effort appear to be high (McLoughlin, 1972: 30).

But in a curious way, the IDA had a simpler and more direct strategic mission in the Ireland of the dismal 1960s and early 1970s:

> The need to create jobs is even greater now than before. If the jobs aren't there, the advance factories are useless because we can't fill them, the regional plans are useless because there are no jobs to disperse and the selection exercise is useless because there is nothing to select from (McLoughlin, 1972: 36).

As the IDA faces into the new millennium, and as the existing base of PC-based computers and software matures in an increasingly volatile world on electronic and

communications revolution, a whole new set of complex challenges is about to present itself. But the experience of the past 30 years illustrates that the IDA played a vital role in mediating between the formulation of national industrial policy (interpreted in the very widest sense as including taxation, infrastructure and education) and the requirements of selected sectors and firms within these sectors. The tension that appears to characterize the worlds of academic research in economics and business found no parallel in the IDA's world of promoting Ireland as a desirable location for high technology foreign direct investment.

### 5. CONCLUSION

Industry in Northern Ireland has yet to develop dynamic, self-sustaining characteristics, especially in terms of clusters of related and supporting industries. It remains heavily subsidized by public funding and is concentrated in the low technology sectors of traditional industries such as textiles and clothing. The situation in the Republic of Ireland is somewhat healthier, but because industrial development has been so heavily driven by foreign direct investment, which tends not to lay down the full range of developmental roots in the domestic economy, the key interconnections between related firms and industries have yet to take place fully.

Porter has suggested that four interacting characteristics are essential for competitive success: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry (Porter, 1990). First, with regard to *factor conditions*, there is clearly much that could be done to improve the level and quality of education, training, infrastructure and technology on an island basis, in much the same way as the Republic of Ireland has managed to do over the past decade by itself. As Porter emphasizes, improved factor conditions do not come about automatically, but as the result of government and companies bringing them about and subsequently sustaining them. What the case study of clothing and textiles in Northern Ireland suggested is that there are serious problems with education and training in these sectors, and in other traditional lines of northern specialization. In the Republic the problems are less severe, since the educational and training system has been oriented towards serving the factor needs of a range of modern high-technology industries.

Second, *demand conditions* are a clear example of how island-based activity and policy could bring significant economic improvement. What is required is the creation of sophisticated and demanding local buyers who put pressure on companies to meet high standards in terms of product quality, features and services. There is clearly substantial scope for development on this front, even in the Republic where industrial success is still tightly focused around the activities of multi-national companies. There seems to be some evidence that foreign plants are increasingly sourcing their inputs locally and that indigenous industry is responding to the challenges that they demand. However, there is certainly potential for further development. The turnaround in performance, documented by O'Malley (1998), and the increased cross-border trading activity of northern small and medium-sized businesses suggest that circumstances are already changing for the better.

The third determinant of the competitiveness diamond is the need for *related and supporting industries*. In effect, this is the complement of demand conditions and involves the development of a critical mass of competitive suppliers of specialized components, machinery and services. The relevance of the island economy is that Porter emphasizes the importance of geographic proximity and close working relationships for the promotion of the key issue of innovation, involving information flows, technical interchange and the opportunities that exist for sharing. It is in this respect that he presents the case for the importance of *clusters* of related industrial activity, with strong forwards and backwards linkages, both within and between industries.

In a long historical context it is clear that the Belfast region had such a cluster of related and supporting industries between the latter part of the nineteenth century and the first third of the twentieth (Ó Gráda, 1994). However, the very success and dominance of sectors such as clothing and textiles probably made it difficult to break with the past and condemned the sector to a slow decline. In the Republic, on the other hand, the high-technology cluster of computers and pharmaceuticals only came towards the end of the twentieth century. International experience has been that regions which have been dynamic in terms of traditional industries often tend to experience serious problems in transforming and restructuring. The inflexibilities are probably more understandable in terms of Olson's collusive coalitions than in terms of any narrow economic calculus (Olson, 1982).

Fourth is the importance of *firm strategy, structure and rivalry*. Again, the two economies, North and South, would still seem to lack much of what Porter argues for in this regard. For example, he states that companies rarely succeed abroad unless there is intense competitive rivalry at home. In Northern Ireland, competition is limited and cushioned by high levels of public subsidization. In the Republic, on the other hand, foreign industry does not compete locally and indigenous industry, at least until recently, operated in partially sheltered markets due to the element of non-traded goods being produced for home consumption. Intra-island trade on the island has increased in recent years, but there again remains substantial scope for further growth of high technology two-way trade.

A focus on the North-South axis is perfectly consistent with the fact that the major external markets and sources of inward investment for both regions presently lie, and will continue to lie, outside the island. It is also consistent with the fact that even in the hypothetical situation of a single economy on the island, it would still be one of the most open economies in the world. But openness in terms of trade, in a situation where either island production is dominated by foreign multinational branch plants (as in the Republic), or where the region is dominated by declining sectors (as in Northern Ireland) is not a position of strength.

What is revealing in EU regional comparisons that focus at detailed sectoral performance is that inter-regional cooperation does not necessarily require extensive harmonization of economic policies. Rather, cooperative economic activity thrives where policy differences and national preferences are fully understood and are made more transparent against the background of removal of non-tariff barriers to

trade through the implementation of the single European market. Such findings suggest that mutually-beneficial North-South as well as East-West cooperation could be built along similar lines if contentious political issues could be resolved. Indeed, the Belfast Agreement, with its three "strands", points exactly to this conclusion.

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