

TWO REGIONAL ECONOMIES IN IRELAND

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1. INTRODUCTION

The two regional economies of Ireland are located in a world of increasing economic interdependence. Market completion within the European Community is at an advanced stage, January 1st, 1993 being the symbolic start to open borders. The newly democratised economies of Central and Eastern Europe, after a painful process of restructuring, are likely to become more integrated into the wider world market economy. In North America, the NAFTA will build links between the economies of Canada, the USA and Mexico. Japan, together with the other market economies of the Pacific basin and China are co-operating increasingly in the economic sphere. In the wider world, the progressive extension of the provisions of the GATT are guiding the global economy towards free trade. None of this is happening without debate, argument, mistrust and even rancour. Nevertheless, it is happening and many people believe that these developments will eventually result in improved growth and living standards with few permanent losses to citizens of the developed and less developed world alike.

Yet even as world economic interdependence grows, tales of political, religious and cultural fragmentation fill our newspapers and television screens. In the case of the breakup of Yugoslavia, the world watches in horror as a modern European country tears itself apart,

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destroying lives and property. Modest economic success and sophistication are clearly no guarantors of political stability. Even in more normal circumstances than face Yugoslavia, economic plans cannot be entirely divorced from their explicit or implicit political context, as the increasingly troubled debate over the Maastricht treaty has so graphically illustrated. Hence, in speaking about the economies of Northern Ireland and the Republic of Ireland, one needs to keep constantly in mind that the economist's world of rational calculation, optimisation and integration can so easily be swept away by irrational, though no less powerful, forces.

Even research economists, working within their own world of abstraction and simplification, cannot remain entirely divorced from non-economic considerations. An illustration based on personal experience will make this point clear. We have been working in the area of economic analysis in the ESRI for over 10 years, for most of that period within a group of all the other EC members involved in the construction and use of an EC-wide economic model called HERMES (CEC, 1993). As a tiny member state within this very heterogeneous group of larger countries it would seldom have occurred to us to question any of the fundamental assumptions and choices that guided these other nations. Diversity was accepted as a given fact of life, and experiences were compared and contrasted within the HERMES group in the dispassionate spirit of scientific inquiry that is the hall-mark of this society. We functioned truly in the role envisaged by Keynes for economists: "specialists - like dentistry", referred to recently by Dr George Quigley in his Sir Charles Carter Lecture (NIEC, 1992).

In 1992 The Economic and Social Research Institute (ESRI) and the Northern Ireland Economic Research Centre (NIERC) were awarded a research grant by the International Fund for Ireland to carry out a programme of joint research on the economies of Northern Ireland and the Republic of Ireland. It has come as an unsettling surprise to us, as we started work on this project, to see our detached stance become progressively more difficult to maintain. The cause is easy to identify, but difficult to describe in a fashion that avoids misunderstanding or simplistic misinterpretation. Furthermore, it arises from positive, not negative, considerations. Basically, we in the Republic of Ireland feel a passionate interest in Northern Ireland that transcends our more dispassionate involvement with the rest of Europe. Europeans are more likely to become rather one dimensional "competitors" with whom we play the game of international trade and who feature in our economic models as world factor prices, internationally mobile investment, interest rates and exchange rates. With Northern Ireland, on the other hand, we share geographical, historical and cultural links that make it difficult to deal with the two regional economies of the island of Ireland in a narrow context or at arms length. The inhabitants of Northern Ireland are very real multidimensional people with whom we share this island and whose institutional

arrangements and policy decisions are difficult to treat as abstract variables in an economic model.

However, in reading the extensive economic literatures of the two regional economies one is constantly being reminded of the very different mind-sets of the North and the South. For example, in a recent NIEC report examining the broad policy options for Northern Ireland - a document of remarkable frankness and insight - the following sentence occurs:

By virtue of its physical separation from the rest of the UK and position in relation to Europe, Northern Ireland cannot be said to have any strategic advantage in location. (NIEC, 1991, p. 4).

Of course the literature of the Republic of Ireland is littered with similar references to its peripheral situation. Yet one cannot avoid the thought that whereas the South sees its peripherality in the context of the island of Ireland, and hence encompasses - in an entirely benign way - the similar plight of Northern Ireland, the Northern peripherality talked of above is of a more exclusive kind and places little value on the potentials of the larger Southern market.¹

In our joint research on the International Fund project with our NIERC collaborators we could chose to ignore these wider issues and continue to deal with our work in more abstract terms, invoking the usual fiction that one can study the two regional economies at a purely technical economic level. To do so would still permit much progress to be made in promoting a better understanding of how the two economies function that would be to the benefit of both regions. Yet while still functioning mainly as technicians, there is much to be gained by positioning economic discussion in a somewhat wider context in order to search out different ways of improving the performance of the economy of the island of Ireland. Perhaps out of the palpable tension between these two approaches - the one narrow and technical, the other broad and encompassing - one can reach out for insights and ideas that will enhance our prospects.

Our paper is organised as follows. In Section 2 we provide a descriptive overview of Ireland's two regional economies, drawing on and referencing the extensive previous work in this area, not all of which has been centred on the concept of an island economy. However, description of this kind, valuable and all as it is, can be usefully complemented by a more formal analytical approach. Further insights can be gained by moving to a framework of analysis based on formal economic models of behaviour. In Section 3 we review how the two regional economies have been encapsulated in economic models, starting with the pioneering paper of Spencer and Harrison (1977) extending to the more recent separate modelling work by the ESRI and NIERC, and concluding with the

experimental North-South modelling work being carried out by the ESRI and the NIERC within the International Fund for Ireland joint research project on the two regional economies. In Section 4 we discuss briefly how some of the island's economic problems might be alleviated, focusing on mechanisms that may facilitate faster growth in the medium to long term. We conclude in Section 5 with a discussion of further research in progress on the future prospects for the two regional economies of Ireland.

2. THE TWO REGIONAL ECONOMIES: A DESCRIPTIVE OVERVIEW

The political division of the island of Ireland in 1922 resulted in the creation of two regional economies: Northern Ireland as part of the United Kingdom and the Irish Free State as an independent nation within the British Commonwealth.² Although Northern Ireland remained part of the United Kingdom, the parliament at Stormont had considerably more discretion on economic policy than any other region of the UK. The Irish Free State, on the other hand, had potentially limitless freedom of action but choose to exercise it only in a rather restricted way (Fanning, 1978).

The industrial inheritance of Northern Ireland was vastly greater than that of the largely agricultural South, and the subsequent development of the two regions during the period 1922-60 has been extensively documented elsewhere (Kennedy, Giblin and McHugh, 1988). Although still of great interest to historians and political scientists, the structure of the two regional economies before 1960 is of less immediate interest to economists, but continues to provide the institutional background context within which we view the present day economic structures of the two regions. We must examine more recent performance to seek the driving forces that shape the present and will shape the future destiny of the two regions.

To an outsider, it would seem the most natural and interesting thing in the world to compare the economies of Northern Ireland and the Republic of Ireland. Adjusting for the difference in industrial inheritance in 1922, such a comparison can fruitfully address the fascinating question of the extent to which culture, personal characteristics and political institutions condition economic performance. Nevertheless, examination of the literature shows there are few descriptions of both regions that start off from an assumption that their structure and the forces that drive them have more similarities than differences.³ What one does find are, at the one extreme, descriptions of both regions in isolation from each other and, at the other extreme, attempts to portray how the two regions might perform under radically changed political arrangements.

The ESRI and NIERC medium-term studies of the two regions are examples of research that have tended to ignore the island economy of Ireland.⁴ In part this simply reflects the very limited economic interactions between the two regions and the restricted way in which the prospects for future beneficial interactions are considered. At the other extreme, Dowling examined the economics of a unified Ireland in Gibson (1974) and a recent updated recalculation along the same lines has been provided by the Cadogan Group (The Cadogan Group, 1992). The New Ireland Forum studied the macroeconomic consequences of three possible alternative arrangements: a unitary state, a federal or confederal state, and joint authority. (Stationery Office, 1985). However, this type of ex ante political economy cost-benefit analysis at best rests on very shaky theoretical and practical assumptions and at worst can be quite misleading.

Of more immediate practical use are attempts to describe the two regions in the context of their existing, unchanged political and institutional arrangements. Even without invoking major institutional changes, this is a difficult enough task by itself, and one that has not been carried out in an entirely satisfactory way in the literature. The goal of such description should be the identification of actual or potential bottle-necks to better economic performance in the two regions. If such an examination leads one to conclude that particular economic failures can be credibly attributed to inappropriate and restrictive political and institutional arrangements, and if such an attribution were acceptable to people in the North and the South, then a rational economic basis for political dialogue between the two regions might be established.

Our purpose is not merely to describe the structure of the Northern and Southern regional economies, since this has been done many times before.⁵ Rather, we are interested in the simple dynamics of operation of the two economies, where the key forces at work are clearly identified. We start with the production or supply side of the economy, disaggregated into four sectors as follows:

- (i) An aggregate internationally traded sector, consisting of all manufacturing industry.
- (ii) A non-traded market sector, consisting of market services, building and construction and utilities.
- (iii) Agriculture, forestry and fishing.
- (iv) A non-market service sector.

This division into four sectors is the very least needed to obtain a clear picture of the structure and dynamics of regional economies like Northern Ireland and the Republic of Ireland. We also examine wage and price determination and the crucial issue of cost competitiveness, aspects that are at the core of any explanation of the performance of the internationally traded sector's performance. We try to keep the description at a broad level, aiming at the big picture within which the wealth of detail available in other publications can logically be placed.

We then examine the labour markets in the two regions, focusing on population growth, labour force participation, migration and unemployment. We briefly examine regional GDP on an expenditure basis, an area of some difficulty in Northern Ireland in light of the paucity of certain data. Of particular interest is the regional balance of trade, since the different attitudes to this measure go to the heart of the difference between a sovereign nation and a region of a sovereign nation. Finally, we examine the structure of the public sector expenditure and taxation, and the explicit and implicit regional PSBRs.

2.1 Regional Production

The manufacturing sector of a regional economy is the one directly exposed to competition in the external or international marketplace.⁶ Since the regional home market is so small, the domestic traded sector simply cannot efficiently supply all its different needs.⁷ Rather, it must specialise in a narrow range of products, sell in highly competitive export markets, and import the goods not produced at home. The traded sector has been referred to as the 'engine' of growth, since a weak traded sector unable to compete successfully in export markets will cause balance of trade crises of the kind that characterised the Republic of Ireland during the 1950s and caused the stop-go policies of UK governments during the 1950s and 1960s (Thirlwall, 1980). The role of the balance of trade in a region of the UK like Northern Ireland is more complex and subtle, though no less important. We return to it later.

In Figures 2.1-2.3 we present a series of graphs showing different aspects of the tradeable sector (defined as total manufacturing) for Northern Ireland and the Republic of Ireland. The evolution of output is shown in Figure 2.1(a) and numbers employed in Figure 2.1(b). Of all the graphs we show in this paper, these are probably the two most striking. The decline of the Northern manufacturing sector in absolute terms and relative to the South is the key economic event of the last two decades for which we need explanations. In Figure 2.2(a) we show the evolution of labour productivity, and in Figure 2.2(b) the profit share of added value. In both cases the South has out-performed the North.⁸ Finally, in Figure 2.3(a) we show fixed investment in both regions, with the evolution of average annual earnings shown in Figure 2.3(b). The strong performance of Southern investment

is quite striking, and the level of wages are seen to be rather similar in both regions, with the South moving slightly ahead in the latter part of the 1980s.⁹

There are two very obvious questions that arise about this difference in behaviour. First, was the North-South difference in manufacturing performance due solely to the civil unrest in the North, starting in the late 1960s and continuing to the present day?¹⁰ Second, was it due to a greater policy flexibility enjoyed by the South and its ability to deviate from UK policy norms? In the former case, there is a certain amount of Northern research on quantification of the effects of civil unrest, to which we return later. In the latter case, comparison of Northern employment performance with aggregate UK performance shows that Northern Ireland was merely tracking the UK manufacturing decline and appears to have been unable to arrest it with the limited range of policy instruments available to it (NIEC, 1991, p. 21).

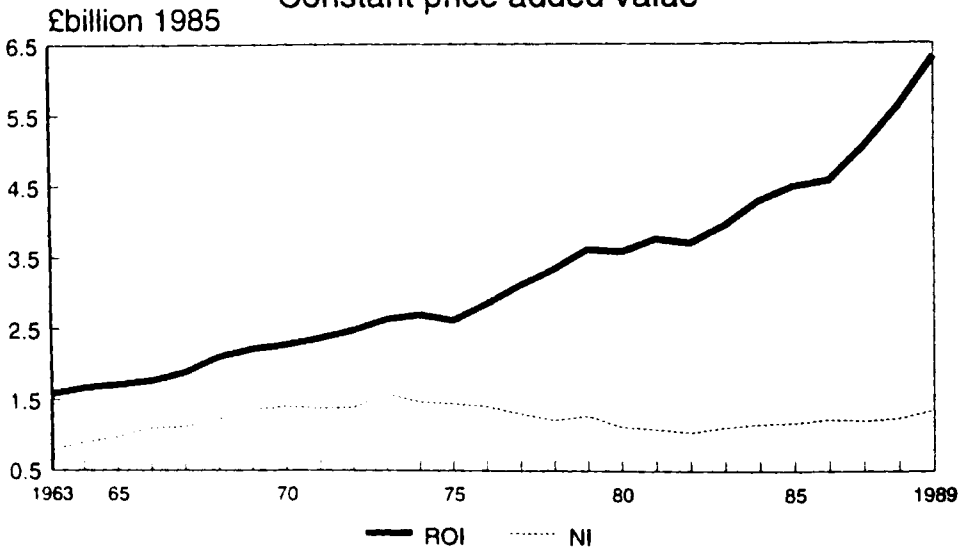
The performance of the Southern manufacturing sector looks flattering in comparison with the North, but contained a disturbing difference between the inability of the indigenous sector to grow and compete internationally, and a more rapid growth of the foreign-owned sector which was, however, not employment intensive (NESC, 1992). Teague (1987b) has made the interesting observation that the relative stagnation of the economies of Northern Ireland and the Republic of Ireland during the 1950s led policy-makers in both regions simultaneously to make a fundamental re-evaluation of industrial policy and actively seek foreign direct investment. Both regions designed attractive investment grants and factory building schemes. In the South, a zero rate of tax on profits arising from exports was put in place. In the North, a regional employment premium (REP) scheme of wage subsidies was included. Foreign investment grew rapidly over the period 1958 to 1975, mainly in the mechanical engineering and textiles sectors. However, while the South continued to benefit from a continuing inflow of foreign investment, interrupted only temporarily by the OPEC-I and II world recessions, many of the earlier projects in Northern Ireland were lost (particularly in the artificial fibre sector) and the ability of the North to attract new replacement multinational investment was considerably weaker than that in the South.

A detailed study of the role of FDI in Northern Ireland has recently been carried out by the Northern Ireland Economic Council (NIEC, 1992). This is of great interest because it includes explicit comparisons with the Republic of Ireland and with Scotland, another peripheral region of the United Kingdom. The contrasting experiences of industrial development in the two parts of Ireland is quite dramatic. Figures 2.4 and 2.5 show the differing origins and sectoral coverage of FDI in the North and South. It is seen that while inward investment from Britain dominates the Northern picture (Figure 2.4(a)), the United States dominates the Southern investment pattern (Figure 2.4(b)). Also, in the North textiles dominates the sectoral composition (Figure 2.5(a)), while in the South it is metals and engineering that dominate (Figure 2.5(b)).

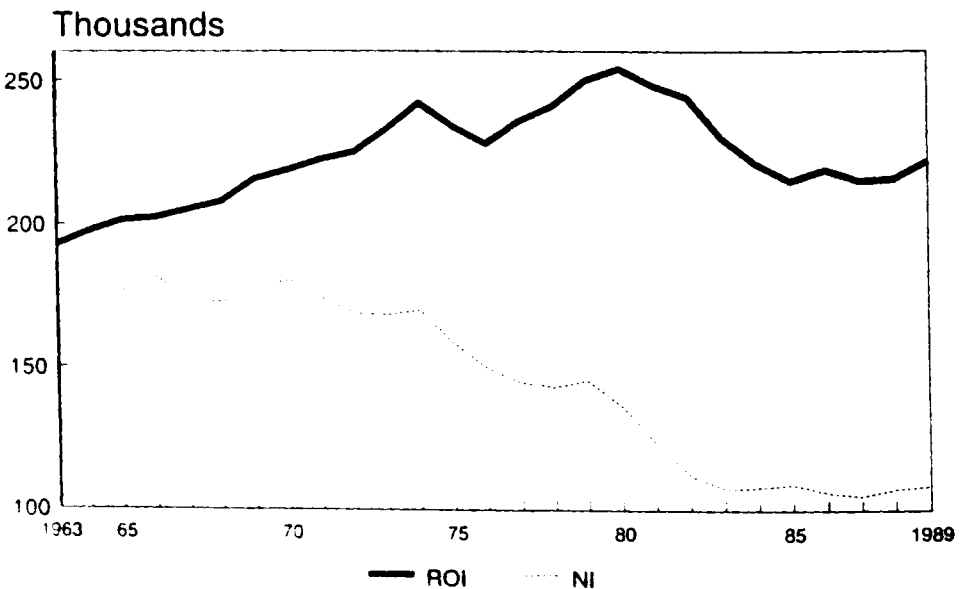
Figure 2.1

The Manufacturing Sector in Northern Ireland and the Republic of Ireland: Output and Employment

(a) Manufacturing Output
Constant price added value

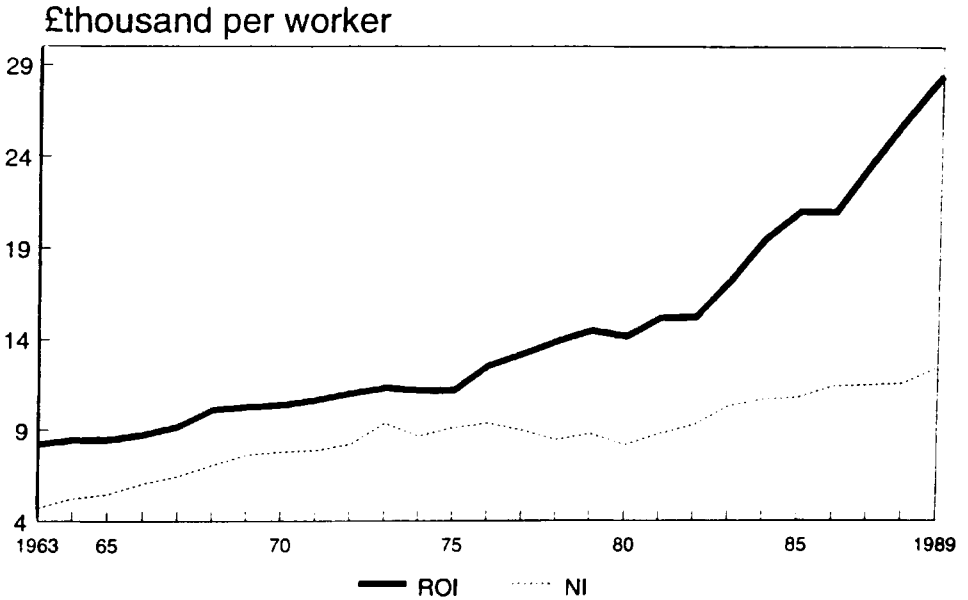


(b) Manufacturing Employment

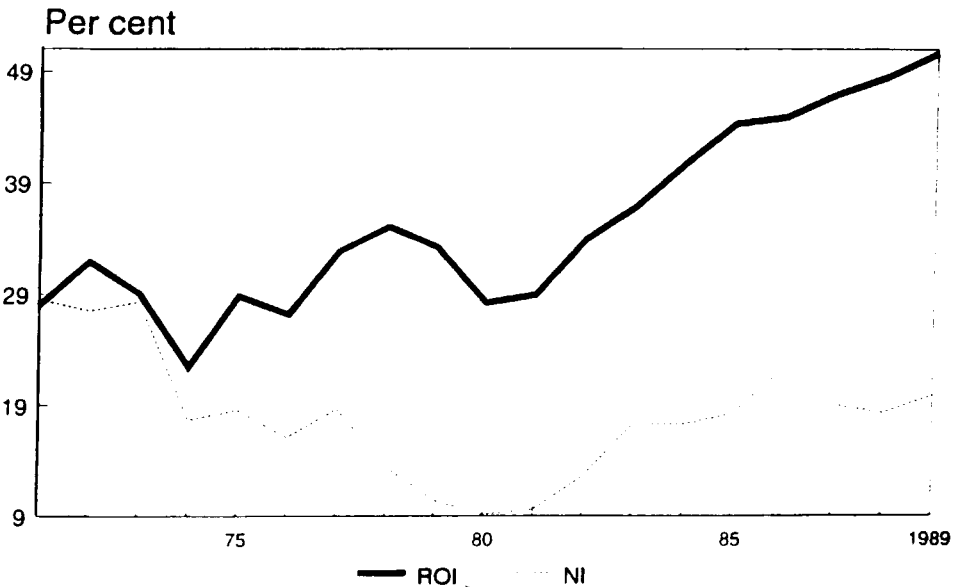


Source: ESRI-NIERC computer data base of economic statistics

Figure 2.2
The Manufacturing Sector in
Northern Ireland and the Republic of Ireland:
Productivity and Profit Share
(a) Manufacturing Labour Productivity



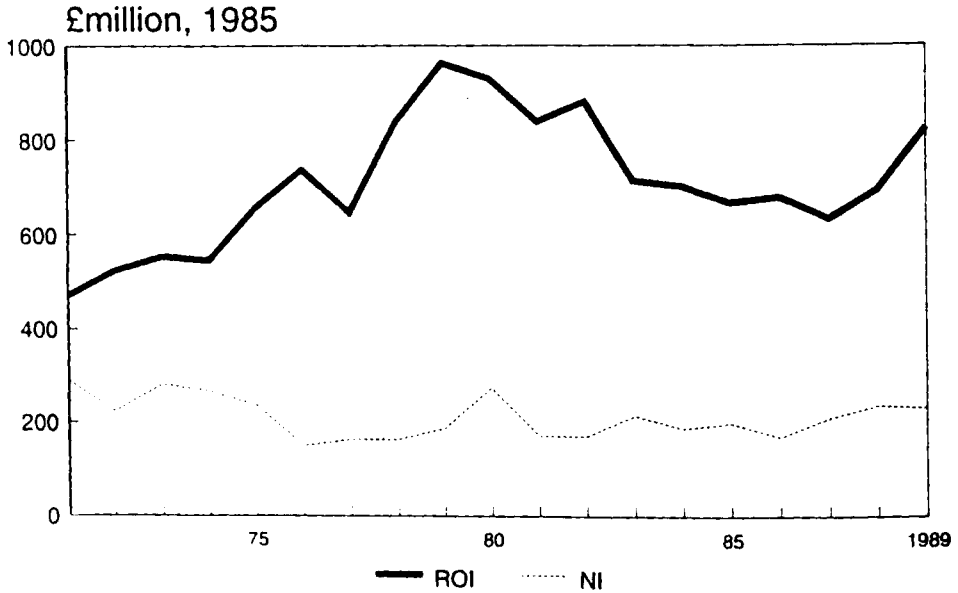
(b) Share of profits in added value



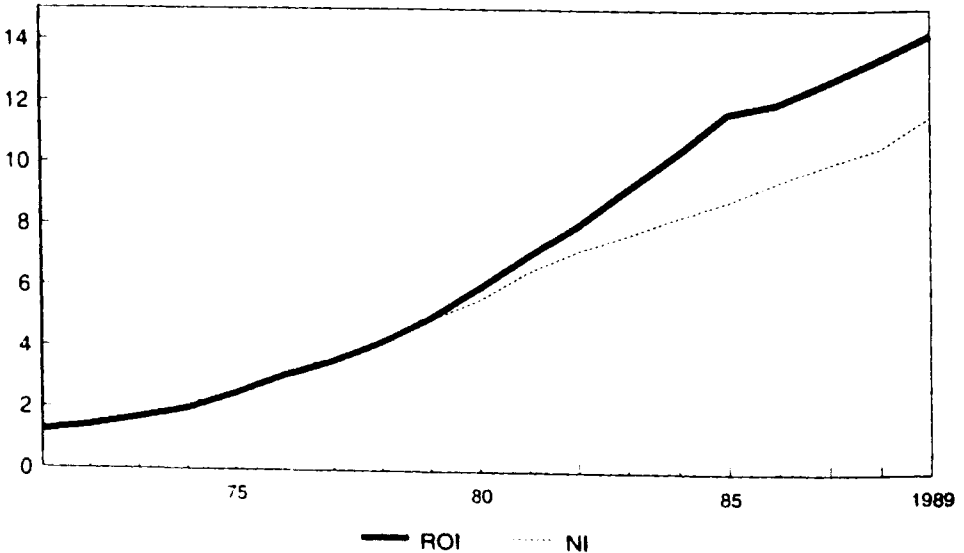
Source: ESRI-NIERC computer data base of economic statistics

Figure 2.3
The Manufacturing Sector in
Northern Ireland and the Republic of Ireland:
Fixed Investment and Average Annual Earnings

(a) Fixed investment in manufacturing



(b) Average annual earnings: manufacturing
 £thousands



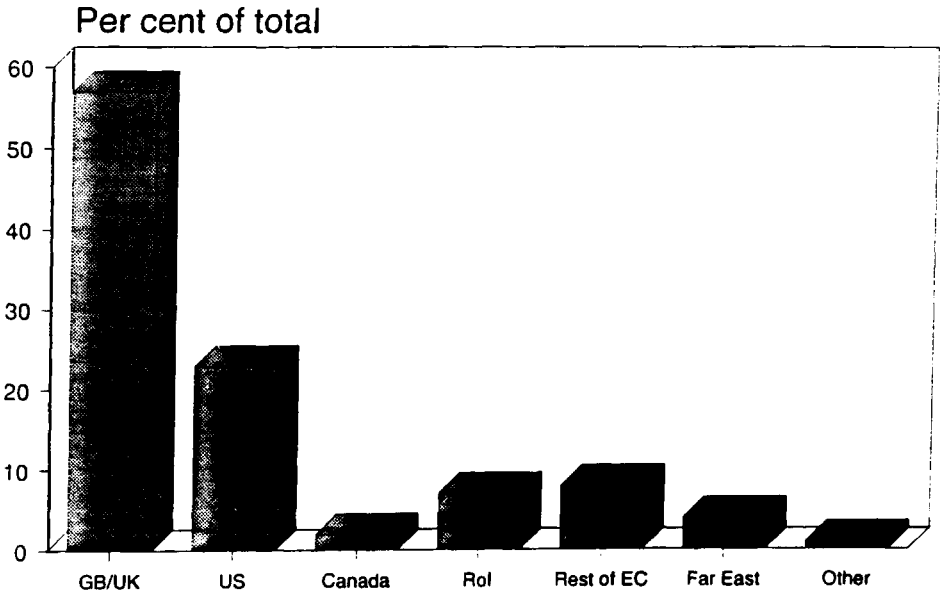
Source: ESRI-NIERC computer data base of economic statistics

Figure 2.4

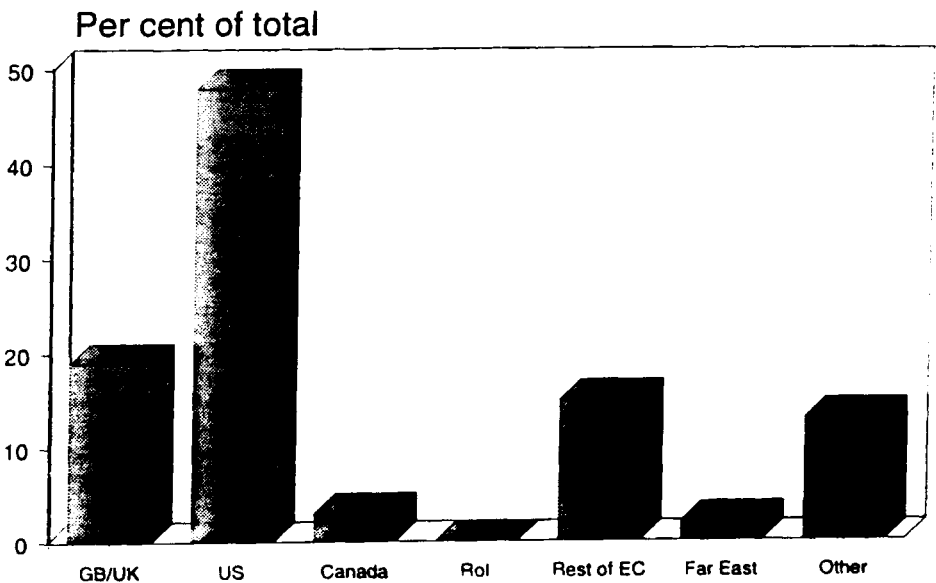
Northern Ireland and the Republic of Ireland:

Origins of Foreign direct investment

**(a) Northern Ireland employment
Externally owned manufacturing**



**(b) Republic of Ireland employment
Externally owned manufacturing**



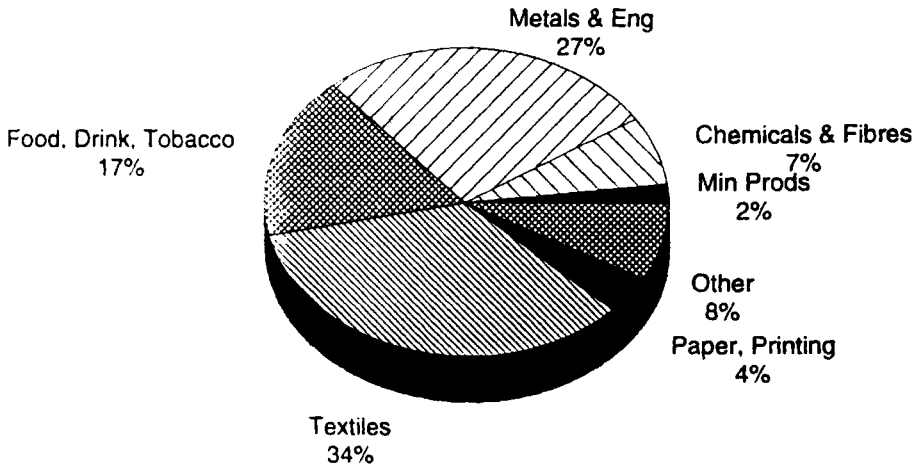
Source: NIEC (1992)

Figure 2.5

Northern Ireland and the Republic of Ireland: Sectoral Coverage of Foreign direct investment

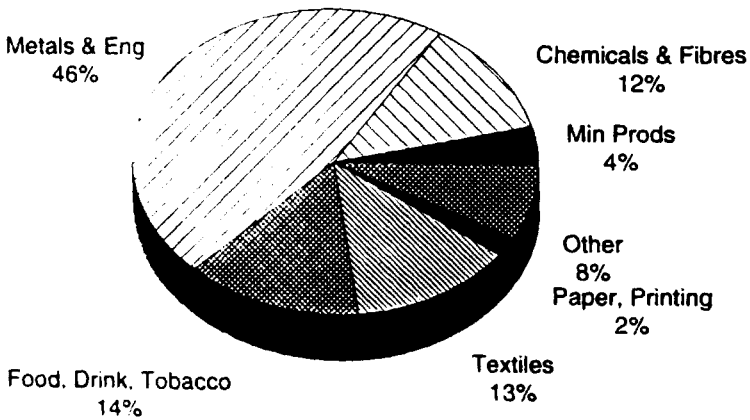
(a)

Northern Ireland sectoral shares Externally owned manufacturing



(b)

Republic of Ireland sectoral shares Externally owned manufacturing



Source: NIEC, 1992

In the North total employment in manufacturing declined by 36 per cent between 1973 and 1990 with an even bigger reduction in employment of 53 per cent experienced in externally owned plants. In the South, total industrial employment contracted by only 11 per cent over the period 1973 to 1990, with most of this collapse in employment occurring in indigenous Irish companies. Externally owned companies in the South actually increased employment by 27 per cent, even allowing for the decline in employment in British owned companies.

The civil unrest would seem to be a plausible explanation for the differing behaviour of FDI in the two regions of Ireland. However, total employment in non-UK owned manufacturing plants in Scotland declined from 112,800 in 1975 to 69,804 in 1986, and had only increased to 85,800 by 1990. The composition of non-UK employment in Northern Ireland is quite different from that in Scotland, which is more like the Republic of Ireland and is dominated by US owned plants, in particular in the electrical and instrument engineering industry (as we have recently had cause to notice when Digital Computers relocated production from Galway to "Silicon Glen" in Scotland). As in the case of the Republic of Ireland, Scottish FDI tends to be associated with more modern manufacturing activity than is the case in Northern Ireland, but has not been quite as successful as in the Republic of Ireland (NIEC, 1992, p. 40). Hence, there may be a set of factors that are common to peripheral areas of the UK that either do not apply in the case of the Republic of Ireland or are offset by the greater policy flexibility "enjoyed" by the South.

Turning to the non-traded market sector, the main components of this sector are market services (transport, communications, distribution, finance, insurance and other personal and business services), building and construction and utilities (electricity, gas and water). The relationship of this sector with the traded manufacturing sector has been changing over the years as many activities previously carried out in the manufacturing sector are being transferred to the service sector. In Figure 2.6 we show the evolution of output and employment in the market services sector, North and South. In both cases the sector has grown, in stark contrast to the manufacturing sector for Northern Ireland shown above in Figure 2.1. However, the service sector growth in the South may have had more to do with servicing the ever increasing complexity of the manufacturing sector than in the North, where it may be more associated with the phenomenal growth of the public sector (see below).

Employment in the two regional agricultural sectors is shown in Figure 2.7, both in absolute terms (graph (a)) and as a percentage of total employment (graph (b)). Although the shake-out of labour from Northern agriculture started earlier than in the South, mirroring the even earlier decline of British agricultural employment during and after the industrial revolution, both regions display a similar pattern of employment decline, in absolute terms and as a share of total employment. Given the decline of Northern manufacturing referred

to above, the Northern employment share in agriculture has tended to stabilise in more recent years.

Our definition of the non-market service sector is quite wide, in that it embraces public administration, defence, health and education. Basically, all employees in this sector have their salaries and wages paid out of the public purse, i.e., from tax revenue or from borrowing. In Figure 2.8 we show the evolution of employment in the non-market sector in Northern Ireland and the Republic of Ireland (graph (a)). It is apparent that while employment grew rapidly both in the North and the South, the size in the North was quite phenomenal. To illustrate this further, we show in graph (b) non-market sector employment as a percentage of market sector employment (i.e., manufacturing, market services and agriculture). In a sense this is the "burden" carried by the region's private sector in supporting the public sector. Once again, the Northern evolution is dramatically out of line with the Southern pattern.

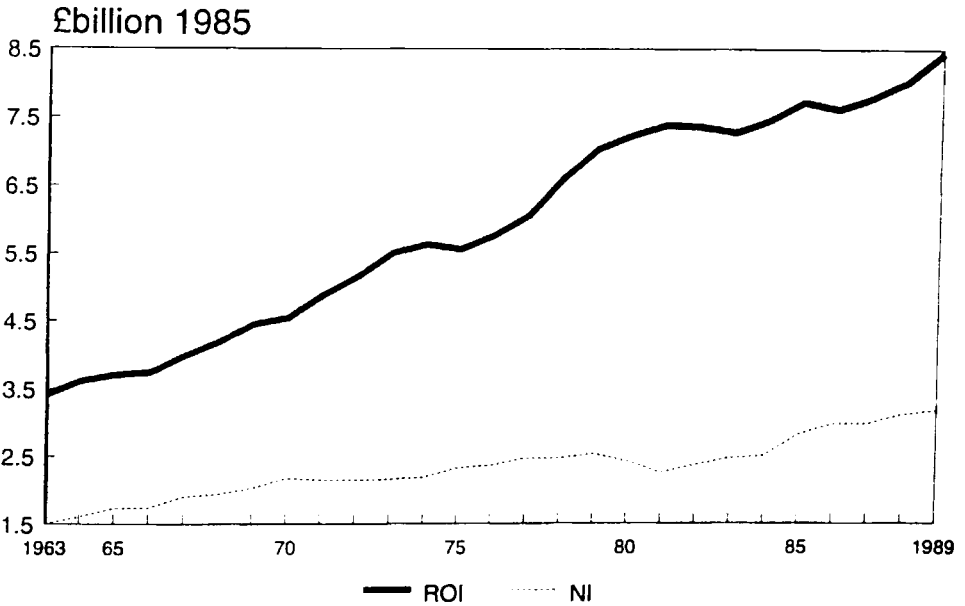
The relationship between the exposed manufacturing sector (price taking and driven by external demand) and the non-market sector is a particularly interesting one. In the South, the need to finance public sector expansion by immediate or deferred taxation drives a "wedge" between the wage paid by the producer in manufacturing and the take home consumption wage spent by the worker. Hence, public sector expansion can crowd out employment in the exposed manufacturing sector through loss of competitiveness as unions drive up nominal wages to restore their real standard of living. This tended to happen in the South during the 1980s and was a cause of serious loss of manufacturing jobs (Barry and Bradley, 1991).

However, we shall see that in the North there is no immediate link between the size of the public sector and the need to finance it from Northern Ireland tax resources. Nevertheless, the increase in the size of the public sector can still crowd out the exposed manufacturing sector through the effect of decreased labour market tension (i.e., lower unemployment) in driving up wage rates.¹¹ Causation is difficult to establish here: the growth in public sector employment may have been induced by the failure of Northern manufacturing. On the other hand, the massive autonomous growth of the public sector may have exacerbated the already bad competitiveness problem of Northern manufacturing by driving up wages and absorbing too much of the talented workforce. We now turn to these regional labour market issues.

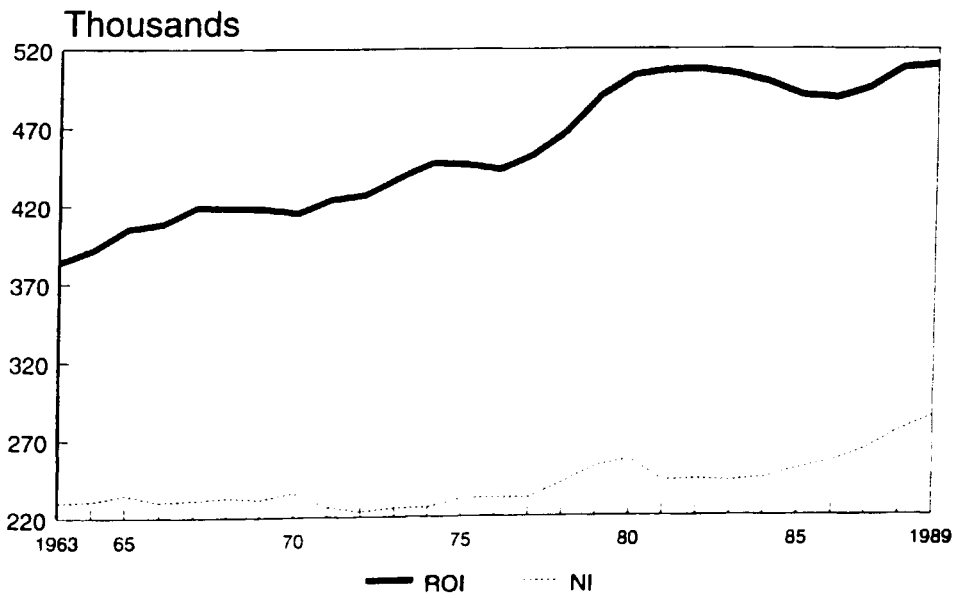
Figure 2.6

Northern Ireland and the Republic of Ireland: Output and Employment in the Market Services Sector

(a) Non-traded market sector output



(b) Non-traded market sector employment

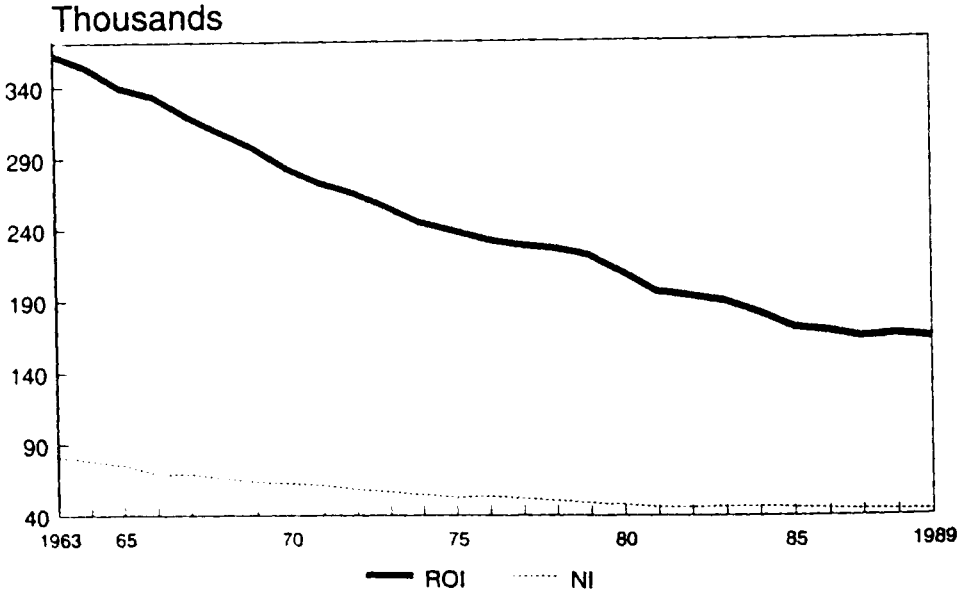


Source: ESRI-NIERC computer data base of economic statistics

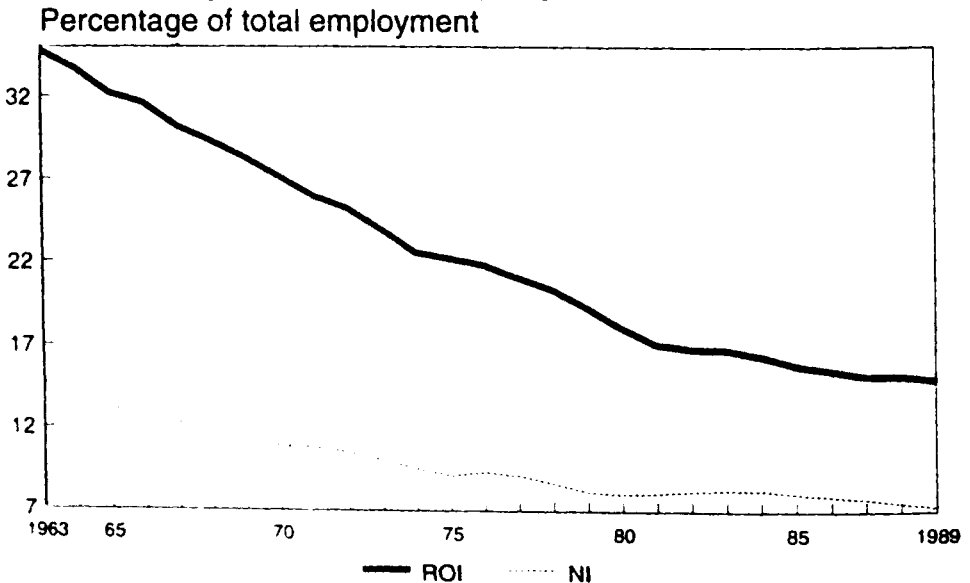
Figure 2.7

**Northern Ireland and the Republic of Ireland:
Employment in agriculture**

(a) Employment in Agriculture



(b) Agricultural employment share

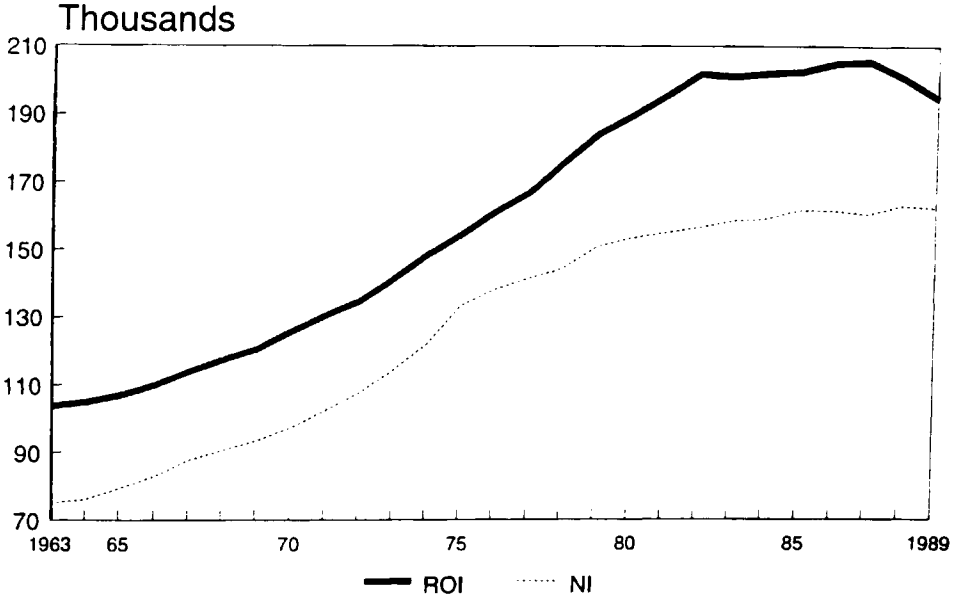


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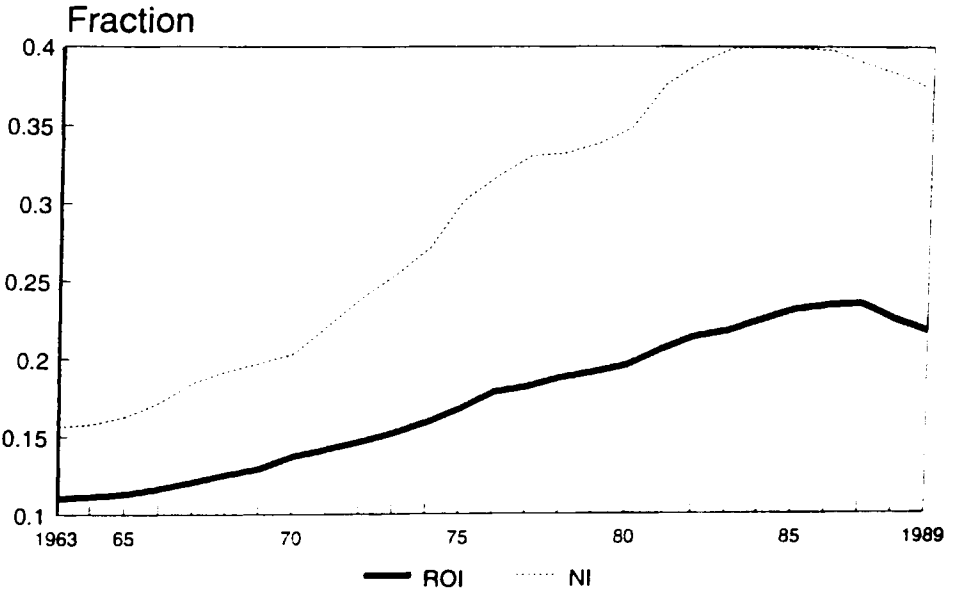
Figure 2.8

Northern Ireland and the Republic of Ireland: Employment in the non-market sector

(a) Employment in non-market services



(b) Non-market/market employment ratio

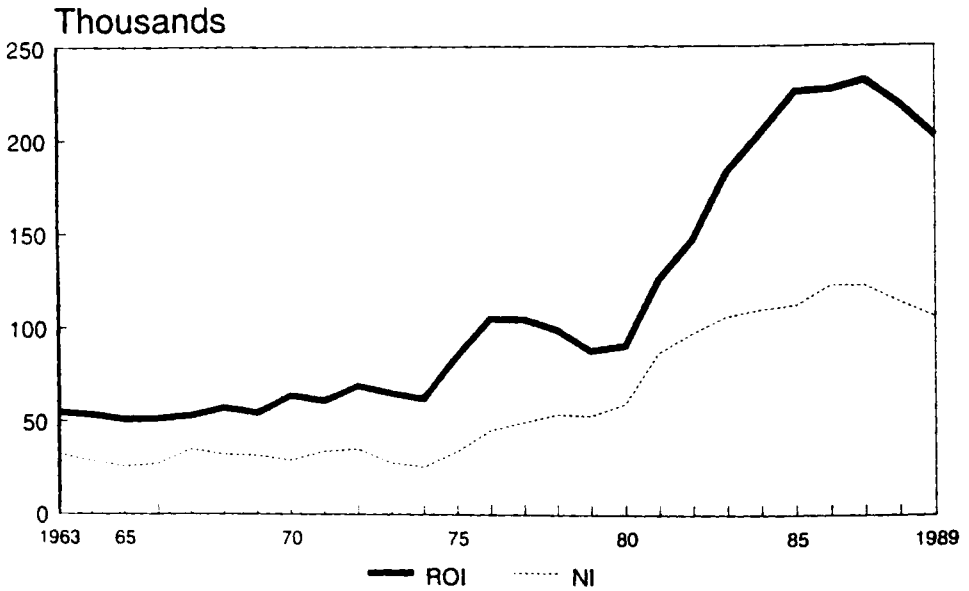


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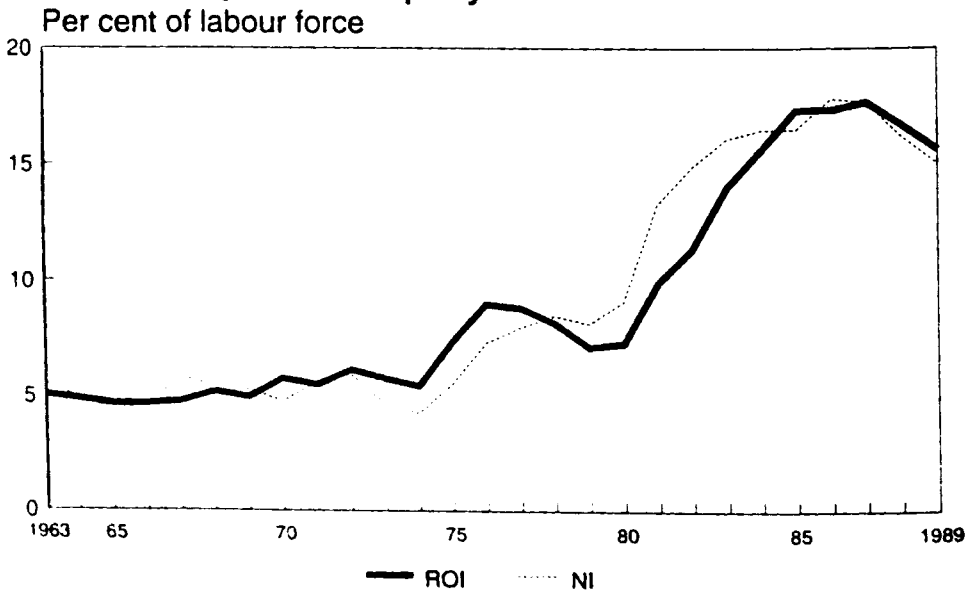
Figure 2.9

Northern Ireland and the Republic of Ireland: Unemployment

(a) Unemployment numbers



(b) Unemployment rate

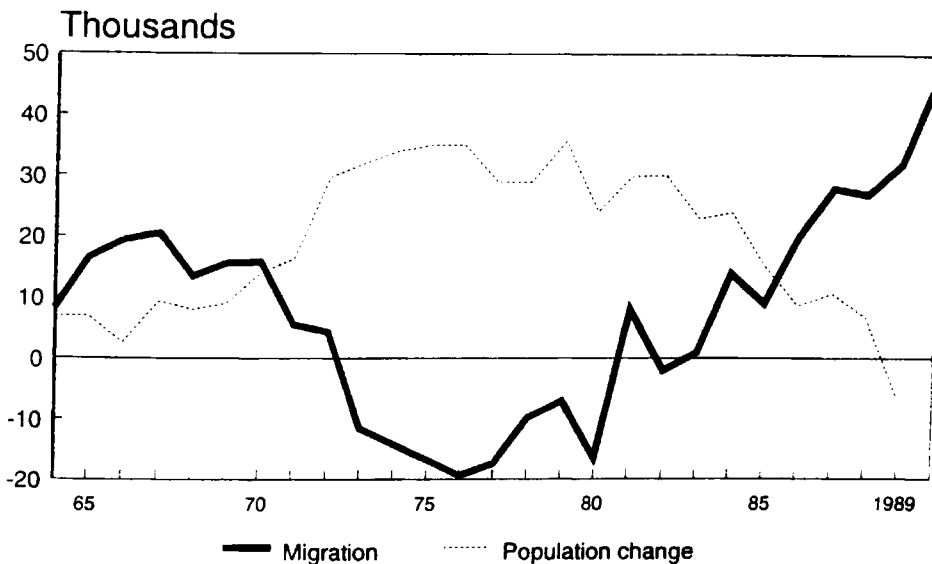


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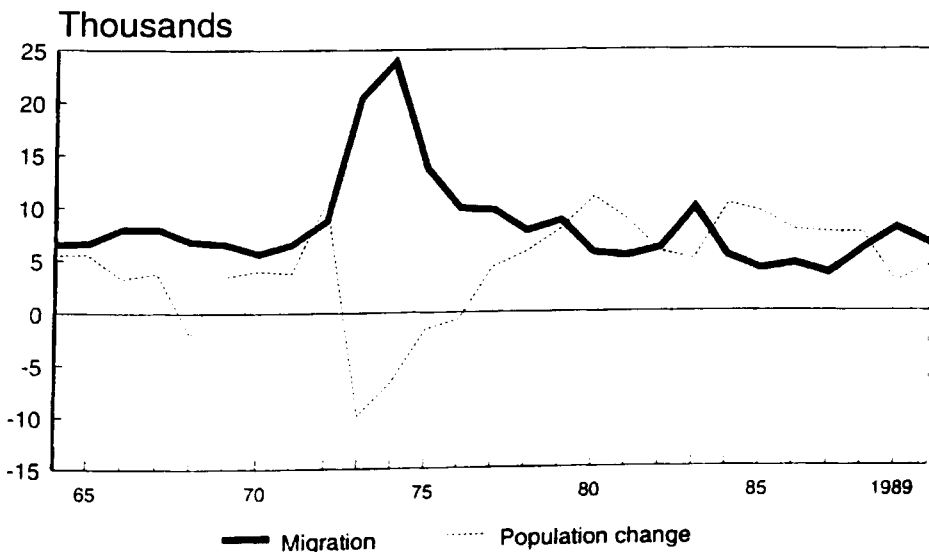
Figure 2.10

Northern Ireland and the Republic of Ireland: Population Growth and Migration Flows

(a) Population change and migration Republic of Ireland



(b) Population change and migration Northern Ireland



Source: ESRI-NIERC computer data base of economic statistics

2.2 The Regional Labour Markets

A shared feature of the two regional labour markets in Ireland is the high rate of unemployment in both regions. In Figure 2.9 we show numbers unemployed (graph (a)), and unemployment rates, using the labour-force survey definition (graph (b)). In Figure 2.10(a) and (b) we show the annual change in the working age population superimposed on net migration to and from each region.

The common pattern of behaviour of unemployment is striking. Both regions suffered much higher rises in unemployment rates than occurred in Britain. Indeed, the Northern situation might well have been much more serious if it were not for the increased role of the public sector, described above. However, the patterns of labour migration and population growth are very dissimilar. In the case of the Republic of Ireland, migration was net outward during the 1960s, became strongly net inward during the 1970s, and reverted to net outward during the 1980s. In the last few years net outward migration has essentially ceased, due to the deterioration of the British labour market. In the case of Northern Ireland, migration was more modest and steady, other than during the years 1971-72, a period of very serious civil unrest.

The existence of migration flows, either actual or potential, has important consequences for the operation of the labour market and the determination of regional wage rates in Ireland. Ireland has large pools of potential emigrants at home and potential return migrants overseas. These migration flows are sensitive to Irish/British unemployment and wage differentials, although empirically unemployment differentials appear more important. Expansion of employment in either region is likely, in the long run, to reduce emigration much more than it will reduce unemployment: the polar case of this argument is presented in Honohan (1984) and (1992). In the earlier paper, using data from 1962-83, it was argued that the unemployment rate in the Republic of Ireland tended to remain at about 5 percentage points above the UK level and that any shift in Irish and British unemployment rates away from the long-run equilibrium would induce migration flows that restore the equilibrium differential.

In the 1980s, this historical relationship between aggregate Irish and British unemployment rates broke down, but Honohan (1992) has argued that British unemployment rates continue to exercise a dominant role on Irish male unemployment rates, in the long run. However, the equilibrium differential appears to be increasing over time. One possible interpretation for this may lie in the fact that unemployment benefit, assistance and other social welfare rates in the Republic of Ireland, even if still at a lower level than British rates, have risen faster than those in Britain, a factor of critical importance in relation to the Irish

unemployment problem. While the unemployment differential does not appear to be beyond the influence of policy-makers, this does indicate the futility of demand-led employment stimuli as a measure for reducing Irish unemployment.

The situation in Northern Ireland is quite analogous to that in the Republic of Ireland. For example, Roper and O'Shea (1991), based on simulations of the NIMOD model, analysed the effects of the higher than UK average Northern Regional Employment Premium (REP). They suggest that the initial benefits of the REP in boosting employment and reducing unemployment during the early years of its operation were offset later by reduced emigration. In fact they conclude that the legacy of the labour subsidies of the 1970s was a *positive* contribution to unemployment in the mid-1980s, after the REP was abolished in 1979.

2.3 Regional Expenditure and the Trade Balance

In large relatively closed economies the expenditure breakdown of GNP into private consumption, public consumption, investment, stock changes, imports and exports is of central concern to the operation of the economy. For example, in the UK the role played by private consumption and private house purchase in overheating the economy in the late 1980s is being followed by a preoccupation with a consumer led recovery in the 1990s. There has been a tendency to interpret the Northern Ireland version of the UK recession as a mini version of the wider national recession (Gudgin and O'Shea, 1992), an interpretation that we think is inappropriate to the economic circumstances of the North. Commentators on the Southern economy place much more emphasis of the role of external forces and the performance of the exposed trading sector (Bradley, Fitz Gerald and McCoy, 1991).

The situation in a small open regional economy is very different from the large economy case. A region is so dependent on its export markets that the operation of the supply-side of the economy is of primary concern, rather than the demand side. Here the difference between Northern Ireland as a region of the UK and the Republic of Ireland as a sovereign state becomes crucial. It is obvious that the Southern balance of trade and the current and capital accounts of the balance of payments place constraints on the operation of policy. So, for example, when the excessively high public expenditure of the late 1970s and early 1980s led to deterioration of the public sector borrowing requirement (with a consequential rapid accumulation of public debt), and of the current account of the balance of payments, severe constraints were placed on public policy (Figure 2.11). These problems took almost a decade to bring under control and continue to constrain the role of public policy. This story is well known and need not be laboured (Bradley, *et al*, 1985; Fitz Gerald, 1986).

The parallel problems of Northern Ireland are, paradoxically, at once simpler and more complex. They are simpler, because responsibility for the UK PSBR and balance of payments rests with the London government and not with Northern Ireland. They are more complex since the feedback from an adverse regional balance of trade is likely to be bound up in the way in which a federal nation like the UK handles regional policy and inter-regional transfers.¹²

Until the mid 1970s the UK Regional Accounts (i.e., the regional version of the aggregate National Accounts) contained data on imports into and exports from Northern Ireland. The resulting net trade balance for the period 1959 to 1974 is shown in Figure 2.12, where it is seen that the Northern Ireland trade balance was almost in equilibrium in the early 1970s, just prior to the OPEC-I recession and before the civil unrest became serious. Subsequently there was a sharp deterioration that has persisted to the present day.

Although no official trade data are available after 1974 - a quite extraordinary situation given the previous record of regional data collection - unofficial estimates have been made. For example, Rowthorn (1987) provides output-expenditure estimates for selected years in the period 1970-84 from which it is possible to calculate a balance of trade. These estimates are reproduced in Table 2.1, where it is seen that the regional trade deficit as a percentage of regional GDP is considerably higher than the official trade statistics imply. No information is given by Rowthorn on the data methodology used, so the estimates should probably be treated with caution.

Gudgin and O'Shea (1992) have pointed out that Northern Ireland exposure to Britain as a destination for its external sales is rather similar to the Republic of Ireland's export exposure to Britain. This is illustrated in Table 2.2, where the dominant picture, for both the North and the South, is clear: dependence on the British market has diminished, and the role the rest of the EC increased correspondingly. The data for 1990 for Northern Ireland reproduced in Table 2.2 from Gudgin and O'Shea (1992) appear to have been based on preliminary results of a survey recently published in Scott and O'Reilly (1992) who have provided the detailed results of a survey-based estimate of the size and composition of Northern Ireland external sales and exports for the year 1990. Based on the full survey data, Figure 2.13(a) shows the destination of all sales of manufactured goods in Northern Ireland in the year 1990, and Figure 2.13(b) shows comparable data for the Republic of Ireland.

In 1990, 66 per cent of total sales of manufactured goods produced in the North was sold within the United Kingdom and 72 per cent within the British Isles. Furthermore, the narrowness of the Northern export base is illustrated by the fact that a small number of major exporters were responsible for a large proportion of all exports: the three largest

Table 2.1: Output and Expenditure in Northern Ireland 1970-84

At Factor Cost	£ Million at Current Prices			
	1970	1973	1979	1984
Domestic output				
Transportable goods	360.00	487.00	992.00	1391.00
Other non-government	413.00	612.00	1647.00	2513.00
General government	137.00	225.00	890.00	1639.00
Gross Domestic Product	910.00	1324.00	3529.00	5543.00
Consumers' expenditure	616.00	932.00	2578.00	3818.00
Government consumption	153.00	256.00	1041.00	1977.00
Investment	299.00	346.00	1121.00	1296.00
Total Domestic Expenditure	1068.00	1534.00	4740.00	7091.00
Balance of Trade	-158.00	-210.00	-1211.00	-1548.00
Balance of Trade as % of GDP	-17.36	-15.86	-34.32	-27.93
Official Subvention	89.00	315.00	1059.00	1533.00

Source: Rowthorn (1987) p. 124.

Table 2.2: Northern Ireland and the Republic of Ireland: Destination of Exports/Sales

To:	Percentage sales from Northern Ireland		Percentage exports from Republic of Ireland	
	1973	1990	1973	1990
Republic of Ireland	1.1	5.7	-	Note 1
Northern Ireland	26.1	25.0	9.5	5.7
Britain	61.4	37.1	45.2	28.3
Rest of EC-12	2.8	16.0	22.7	41.4
Other	8.6	16.2	22.6	24.6

Source: Gudgin and O'Shea (1992) and CSO Trade Statistics of Ireland.

Note 1: The 1989 Census of Industrial Production shows that 75.6 per cent of gross output of all Republic of Ireland manufacturing industries was exported.

Table 2.3: Trade between Northern Ireland and the Republic of Ireland

	North to South	South to North	Total	Balance of Trade
R. of I CSO estimates*				
All goods and materials	465.1	759.3	1224	-294.2
Manufactured Goods	407.6	612.5	1020	-204.9
NIERC estimates				
Manufactured goods	391	-	-	-

Source: Scott and O'Reilly, 1992

- * The CSO estimates were adjusted to sterling by NIERC using an exchange rate of £0.93 sterling to £IR 1.

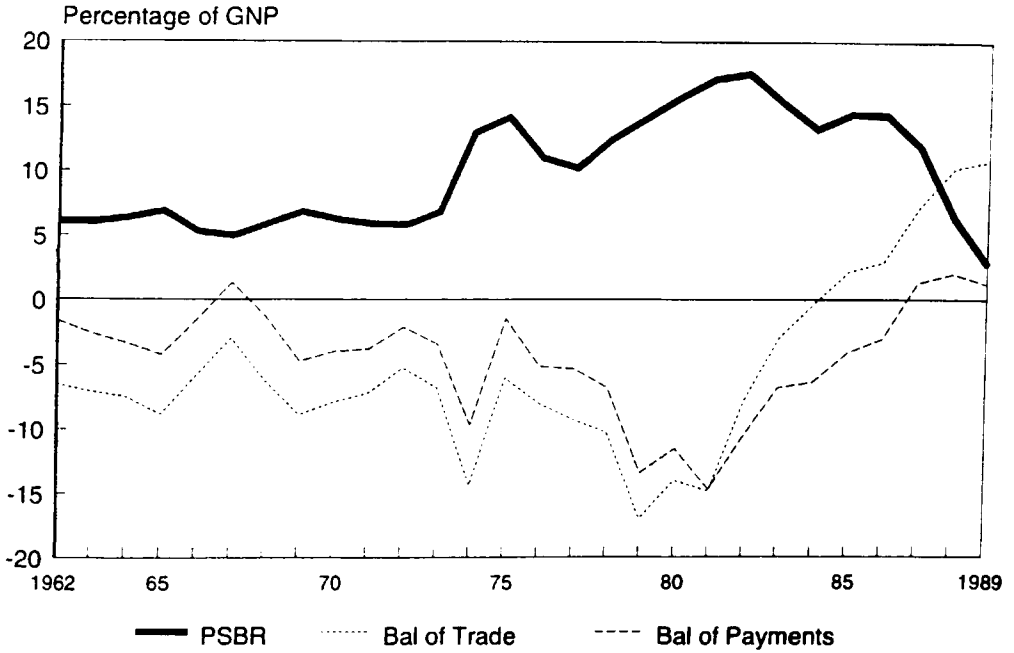
exporting firms accounted for 40 per cent of all exports and the ten largest for 54 per cent. Putting the new Scott and O'Reilly data alongside the Republic of Ireland's CSO trade data for Northern Ireland, illustrates both the accuracy of the NIERC survey-based estimates and the large trade deficit run by the North with the South. This is shown in Table 2.3, where two aspects of the data are of interest. First, in 1990 Northern Ireland ran a visible trade deficit with the Republic of Ireland of almost £300 million (about 3 per cent of Northern GDP). Second, the overall volume of trade between the two regions appears quite limited, accounting for only 6.4 per cent of Northern sales.

Based on these data, Scott and O'Reilly (1992) draw some interesting, if pessimistic, conclusions on the prospects for faster Northern and Southern growth based on greater trade penetration than were suggested in the May, 1990 CII Newsletter. Since the CII estimates have entered into the accepted conventional wisdom, and are often repeated in the media, it is important to record the NIERC reservations and caveats.

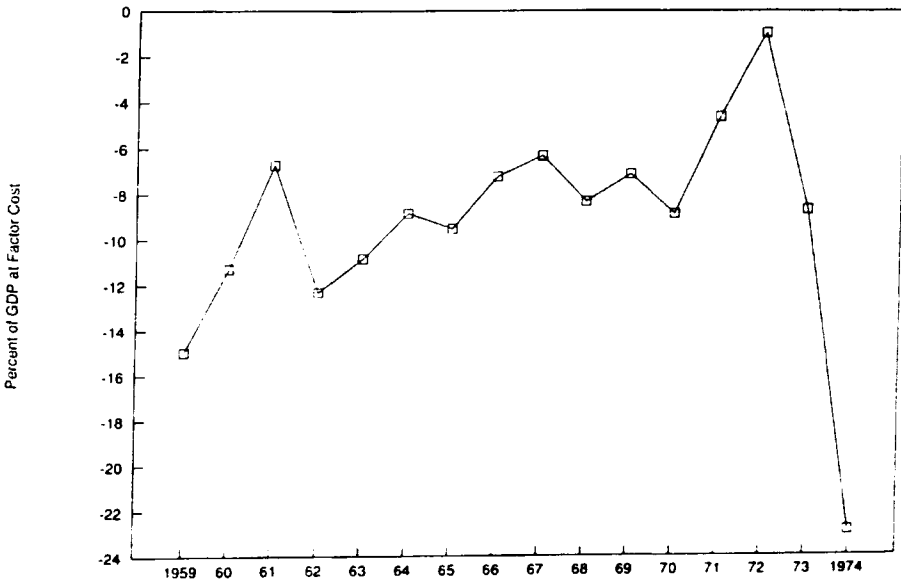
The CII estimated that combined sales by manufacturers North and South to the island of Ireland market was just under £6 billion. They estimated that there was a potential to increase this to £9 billion, and create 75,000 new jobs. The potential for sales increases and associated employment growth were based on three crucial assumptions:

- (i) Northern manufacturers could sell as much in the South, in per capita terms, as they presently sell in their domestic market. A similar assumption is made about Southern sales in the North.

**Figure 2.11 Republic of Ireland:
Public sector borrowing requirement and balance of payments:**



**Figure 2.12 Northern Ireland:
Net Trade Balance as Percentage of GDP**
Northern Ireland Net Trade Balance



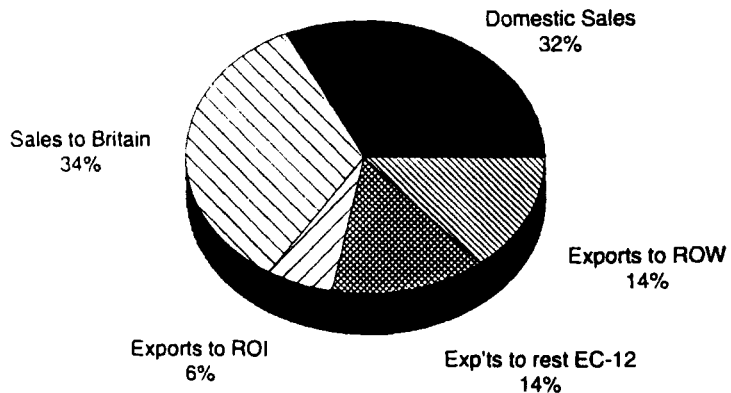
Source: HMSO UK Regional Accounts (various issues 1960-1975)

Figure 2.13

Northern Ireland and the Republic of Ireland: Destination of sales of manufactured goods: 1990

(a)

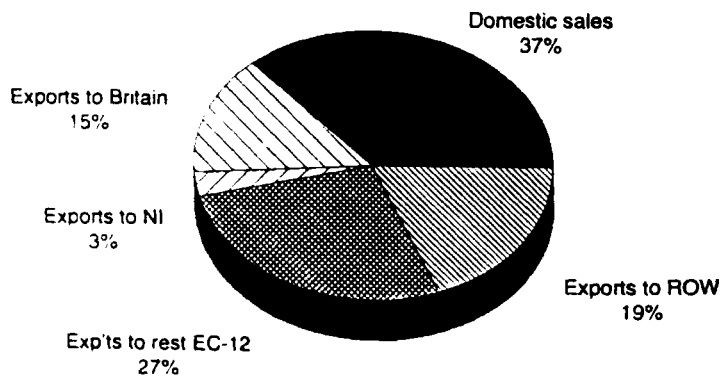
Northern Ireland manufactured goods
Destination of sales: 1990



Source: Scott and O'Reilly (1992)

(b)

Republic of Ireland manufactured goods
Distribution of gross output (1989)



Source: Census of Industrial Production

Source: Scott and O'Reilly, 1992 (a) and Census of Industrial Production (b)

- (ii) All these increased sales displace imports from outside the island, rather than from other Irish producers.
- (iii) Every extra job created in manufacturing induces a extra 1.3 jobs in the rest of the economy, i.e., the employment multiplier is 2.3.

Scott and O'Reilly (1992) point out that the existing level of sales between the two regions of Ireland appears to be largely in line with the level of sales between other small European countries and their nearest neighbours. Indeed, sales by the North are £110 per head of Southern population, compared with £37 per head in Britain. A three-fold increase is very optimistic, particularly if sales displace the goods of the other region (e.g., food products). According to Scott and O'Reilly, a more realistic target might be to double cross-border trade from £1 billion to £2 billion, and with 50 per cent displacement, to generate a net increase in output of £0.5 billion. This would generate about 5,700 manufacturing jobs, and with a more realistic multiplier of 1.3, would increase total employment by 7,500.¹³

In conclusion, there appears to be evidence that Northern Ireland is running a large trade deficit with the rest of the UK and the rest of the world. The Republic of Ireland, on the other hand, runs a sizeable trade and balance of payments surplus with the external world, although recent revisions have indicated that the balance of payments surplus has existed for only the last few years. We turn now to the North of Ireland's public finances, which are the main source of finance of the trade deficit.

2.4 Regional Public Expenditure, Taxation and the PSBR

Canning, Moore and Rhodes (1987) have suggested that, in a very narrow sense, the Northern Ireland civil unrest may have stimulated the regional economy, since the unrest coincided with, and may have induced, a much larger expansion of the public sector. By 1983 employment in health, education and public administration accounted for over 38 per cent of total employment, compared with only 25 per cent in 1971 and 16 per cent in 1951. By 1983 only 54 per cent of this government expenditure could be financed by tax revenue from Northern Ireland and any subsequent reduction in the financing burden would need faster growth in the regional economy.

After the introduction of direct rule in 1972, the link between tax revenues and public expenditures in NI was broken and public spending has been related to need, defined by British standards, with no local revenue raising constraint. If a regional balanced budget had continued to be required, as it was in previous decades, Canning, Moore and Rhodes (1987) suggest that some 50,000 less public sector jobs would have been sustainable, with less induced market sector employment as a consequence.

In a very blunt assessment, Rowthorn (1987) asserts that Northern Ireland is a financial burden on the British government and no longer has the capacity to stand alone as a viable independent entity. The wealth creating sector of the economy has stagnated (as we showed above) and the public sector is financed through massive subsidy from Britain. Estimates of this burden vary. James Bradley (1990), has derived estimates for the current deficit and the overall public sector borrowing requirement, shown in Table 2.4.¹⁴ These estimates are based on an approximate attribution of indirect taxes to Northern Ireland, and assume that receipts are confined to revenue and other receipts generated from Northern Ireland's own economic activity.¹⁵ As Bradley (1990) has pointed out, the size of the British grant-in-aid depends upon Northern Ireland's ability to generate tax revenue and other receipts, which in turn depends upon the buoyancy of the Northern Ireland regional economy.

Table 2.4: Northern Ireland: Current Deficit and Borrowing Requirement

Year	Current Deficit		Borrowing Requirement
	£ million	% of GDP	% of GDP
1975/76	57.2	2.8	19.6
1976/77	139.1	5.8	22.0
1977/78	126.7	4.6	19.5
1978/79	241.0	7.9	21.7
1979/80	259.6	7.4	22.2
1980/81	402.0	10.0	22.1
1981/82	374.7	8.5	20.3
1982/83	376.2	7.7	19.2
1983/84	502.6	9.5	19.2
1984/85	536.5	9.5	18.8
1985/86	577.5	9.4	18.2
1986/87	628.1	9.2	17.4
1987/88	517.8	7.0	14.9
1988/89	576.1	na	na

Source: Bradley (1990): p. 449.

What these estimates show is that had Northern Ireland been forced to rely on its own tax revenue and receipts generated from its own economic activity, assuming the level of activity and all other factors remained unchanged, the result would have been a series of

large current deficits and substantial borrowing as shown in Table 2.4. According to James Bradley, these figures understate the problem since they ignore interest payments on the hypothetical accumulated regional debt.

Whereas the link between tax revenue and public expenditure in Northern Ireland has been broken, policy-makers and tax payers in the Republic of Ireland enjoy no such luxury. For as long as British taxpayers accept the current system of residual financing of the Northern deficit, which could conceivably persist for a time after any future change in constitutional arrangements, the deficit is only a post-recursive residual item. On the other hand, deficit-financing in the Republic of Ireland represents a very real constraint on public policy initiatives.

Prior to 1980, public expenditure in the South grew rapidly, driven mainly by an increase in public sector employment. The ratio of public to private sector employment has however been consistently lower than in the North (Figure 2.8b). Even as tax rates were raised, the public sector borrowing requirement (PSBR) moved deeper into deficit and rose to almost 16 per cent of GNP in 1981 (Figure 2.11). As a consequence, the debt/GNP ratio rose and an increasing portion of this national debt was denominated in foreign currencies. This meant that interest payments on much of the debt became a direct outflow from the domestic economy and the devaluations of the Irish pound within the EMS during the first half of the 1980s further increased the debt burden.

During the early 1980s direct and indirect tax rates were raised sharply, but failed to stabilise the national debt, and by 1986 the debt/GNP ratio stood at 135 per cent. A sharp adjustment was at this stage inevitable: the Republic of Ireland had run right up against the budget constraint that Northern Ireland has never yet had to face. The adjustment, when it came in 1987, was however extraordinarily and unexpectedly sharp. Public expenditure fell, even in nominal terms, between 1987 and 1988. We know of no other instance of such a phenomenon in modern Western Europe: in only one year since the Conservatives came to power in 1979 in the UK were they able to avoid a real increase in public expenditure. Due to a combination of buoyant world demand and falling interest rates, this enabled the debt/GNP ratio to be cut significantly. The disciplines of the EMS and the explicit commitments in the Maastricht treaty now prevent Irish governments from moving away, even temporarily, from fiscal rectitude.

While it was perceived in the mid 1980s that some dramatic fiscal adjustment would have to take place, the actions taken by the Fianna Fáil Government elected in 1987 on a populist platform took agents by surprise. Nevertheless, far from depressing private consumption, as would have been predicted by Keynesian analysis, private consumption grew very strongly in the years after the adjustment. Giavazzi and Pagano, 1991, claimed

that there was actually causation underlying this correlation and argue that the public expenditure cuts reduce the need for future high taxes. This will be foreseen by rational, optimizing agents who will increase their private consumption when faced with an unexpected fiscal contraction. They interpret the Republic of Ireland's experience during the years 1987-90 as a case of "expansionary fiscal contraction". However, this view is controversial. Bradley, Whelan and Wright (1993) incorporated forward looking, or rational, expectations into the HERMIN macro-model and found that the strong performance of Ireland's private consumption could not be accounted for by expectational effects. They suggest that it could very easily be explained by the strong growth in the world economy, particularly in Britain, which occurred at the same time.

2.5 Conclusions

The high rate of labour force growth in both of the Irish regional economies (considerably higher than the UK average) and the migration mechanism complicate the job of aiming at full employment since the required rate of growth in labour demand must be at least equal to the growth in the labour force plus any labour force growth due to induced inward migration. Could the wage level change so as to induce full employment? We will see below that this is unlikely, given the modest sensitivity of Northern and Southern wage rates to regional unemployment (Borooah and Lee, 1991; Barry and Bradley, 1991).

What were the reasons for the reversal of growth and sharp decline of the Northern manufacturing performance in the 1970s, a performance that is in stark contrast with the relative success of the South? Three causes are apparent: the civil unrest, which became serious at just the time the decline of manufacturing started; the weakening of regional and industrial policy in the UK, particularly after the advent of the Conservative government in 1979; and the slower growth of the world economy that followed the OPEC-I recession.

Counterfactual analysis is notoriously difficult, even with complex econometric models. Heuristic examination, based on simple techniques like those of Moore and Rhodes (1973) have been used in Northern Ireland. The approach has four stages:

- (i) Assume each NI industry grows at the aggregate UK industry rate, and define this as the *expected* level of employment (E) as distinct from the actual level (A), and calculate the difference $D=A-E$.
- (ii) Divide the period into a (prior) "policy off" period and an active "policy on" period. Extrapolate the "policy off" evolution of D into the "policy on" period, and define this as D^* .

- (iii) The effects of the operation of regional policies is derived by subtracting the actual NI-UK difference D and the hypothetical extrapolated NI-UK difference D^* .

Using this approach, Harris (1991, pp. 70-73) shows that between 1960 and 1971 an extra 33,000 jobs were created in the North, but by 1983 the net increase had fallen to zero. However, Harris is critical of this approach for two reasons:

- (a) The methodology assumes a zero sum game, where extra jobs in the North are at the expense of jobs elsewhere in the UK.
- (b) The methodology produces a catch-all, and is unable to distinguish component policy effects or other non-policy influences.

In particular, the approach has been modified to take account of the civil unrest in the North as follows. For the period prior to the civil unrest (1961-69), the difference D_{NI} for Northern Ireland is regressed on the difference D_{DA} for the other development assistance areas of Britain, obtaining the statistical relationship:

$$D_{NI} = 51128 + 0.46 D_{DA}$$

This relationship was used to predict a 'troubles-off' (sic) series for the period 1970-83 for Northern Ireland (D') on the assumption that changes in the relative effectiveness of policy in NI and the other British Development Areas would have been exactly the same in the 1970s in the absence of the civil unrest. Hence, all NI under performance is attributed to the civil unrest.

The results of this analysis show that NI regional policy created some 22,000 net jobs between 1960 and 1983, and hence that the civil unrest was responsible for the loss of some 22,000 jobs (Harris, 1991, pp. 164-165). Similar estimates have been derived using this methodology by the Northern Ireland Economic Research Centre (NIERC, 1990) and Rowthorn (1987).

3. LESSONS AND INSIGHTS FROM FORMAL ECONOMIC MODELS

Description is useful but stops well short of providing a full understanding of how the two regional economies function in isolation and in comparison with each other. Further insights can be gained by attempting to see how formal economic hypotheses and models can explain the regional economic data. However, here we are on rather thin ice. There is no single, uncontroversial, correct model of regional economic behaviour that is simply waiting to be confronted with data in order to estimate the size of key parameters. Rather we have

only the murkiest ideas about the mechanisms that are important to regional economic growth and statistical estimation techniques, no matter how sophisticated, are unable to resolve disputes.

Turning now to more formal tools of analysis, there are three interlinked strands to formal economic modelling. First, there is a considerable amount of applied econometric research on individual topics and sectors in both regions. Such work normally follows economic thinking rather than leads it, but often serves a useful purpose of clarifying specific issues (e.g., price transmission into a region, or the operation and flexibility of the regional labour market). Second, there are only two operational economic models systems available presently in Ireland: the NIMOD model developed and operated by the Northern Ireland Economic Research Centre, and HERMES, developed and operated by The Economic and Social Research Institute. Finally, we describe briefly some recent experimental work where two models, NIMIN for the North and HERMIN for the South, were constructed with the explicit purpose of comparing and contrasting the two regional economies.¹⁶ Taken together, these three approaches help in building a more complete picture of the two regional Irish economies.

3.1 Themes in Applied Economic Research in Ireland

Since the policy-makers in the Republic of Ireland have a wider range of instruments to play with, it is not surprising the Southern econometric work reflects this diversity. During the 1970s a major theme of research was the issue of price transmission into the economy, and a series of pioneering papers by Geary established firmly the external determination of most inflationary pressures (Geary, 1976). After the link with sterling was broken, the price determination problems became more complex. Work by Callan and Fitz Gerald (1989) re-established the external price-taking findings for the exposed traded sector, although, with the turbulence of the EMS the area is still one of controversy (Leddin and Walsh, 1990). This literature finds no parallel in Northern Ireland. Indeed, price data for Northern Ireland is almost impossible to come by, and the fiction is maintained that the Northern Ireland Retail Price Index is identical to that of the UK. The Northern price taking assumptions go far beyond the traded sector and apply to the non-traded sector as well as to a considerable area of wage determination (Roper and Schofield, 1990).

During the 1980s there was considerable econometric work on the supply side of the Southern economy, most of which was carried out in the ESRI in the context of the ESRI HERMES model. Bradley and Fitz Gerald (1988) established that the notion of foreign direct investment (FDI) and internationally mobile investment was at the centre of the behaviour of the Southern manufacturing sector and the ability to attract this investment depends on Southern costs of production (in particular wage costs) and the profitability of

firms in the South relative to other international locations.¹⁷ Even for indigenous firms, the ability to survive depended on a similar competitiveness calculus. Not surprisingly, this theme finds echoes in the North of Ireland in the NIERC work on the NIMOD model, which we will return to later (Roper and Schofield, 1990).

Given the serious unemployment problems in both regions, one would expect to find in Ireland as rich a macroeconomic and microeconomic empirical literature on the labour market as, say, that of Britain, summarised and integrated in the recent seminal book by Layard, Nickell and Jackman (1991). While there are some interesting studies of unemployment, they raise more questions than they answer. We briefly examine two, one from the South and one from the North.

Newell and Symons (1990) and Barry and Bradley (1991) used econometric techniques to try to answer the question: why did the Republic of Ireland's rate of unemployment rise by 10 percentage points between 1979 and 1987? The potential culprits were the world economy, domestic policy actions and demographic trends. Barry and Bradley attributed the blame equally between the world recession of 1979-81 and the high tax rates needed to stabilise the burgeoning national debt after the fiscal expansions of the 1977-82 period. Of interest in this work on wage determination was the hysteresis effect of rising unemployment on wage bargaining: while the unemployment rate is rising, it exerts downward pressure on wage inflation, but when unemployment stabilises, even at a high level, the long-term unemployed cease to participate effectively in the labour market. Hence, upward pressure on wage inflation can co-exist with high levels of unemployment. Also, increases in labour productivity were found to be passed on completely to labour in the form of higher wages, a result found in most other EC countries (Dreze and Bean, 1990). In summary, this research has serious implications for the prospects of ever reducing the rate of Southern unemployment to even the already high average EC levels.

If one were to pick one econometric study of the labour market in Northern Ireland, the work of Borooah and Lee (1991) stands out in terms of its rigour and clarity. This study concerns the issue of the disparity of economic performance between the regions of the United Kingdom and uses an econometric model to examine some causes of such disparities by comparing Northern Ireland with the UK as a whole. It proceeds from the hypothesis that regional disparities arise as the consequence of regional differences in competitiveness, i.e., unit costs of production are significantly lower in some regions than in others, even adjusting for industrial structure, and these generate differences in employment.

It uses a two-stage procedure:

- (i) Labour demand functions are estimated for NI and the UK, conditional upon a given capital stock and level of output.
- (ii) Wage equations are estimated for NI and the UK, conditional upon the above labour demand equations.

In a conditional demand for labour, the output level is given, and the wage-setting and investment decisions are taken prior to the employment decision, so labour costs and the capital stock are predetermined. Hence,

$$\text{employment} = f(\text{wage rate, unit cost of materials, hours worked per week, capital stock, gross output, time})$$

In very simplified form we can write this symbolically as

$$e_t = f(z_t, d_t)$$

where z_t represents real wage rates and d_t represents all factors that can shift the demand for labour (e.g., hours worked, capital stock, output and time). In estimation, the real product wage was found to exert a stronger effect on demand for labour in Northern Ireland, with a long-run elasticity equal to -0.94, than in the UK, which showed a lower long-run elasticity equal to -0.42.¹⁸ Also, the rate of technical progress was much lower in NI than in the UK and the contribution of capital stock in explaining employment is negligible compared to the UK.

The negotiated real producer wage is determined by the real fall back wage, the wedge between output and consumer prices and on the vector of shift variables in the labour demand equation. The fall back wage will be influenced by such factors as the lagged regional wage, the expected aggregate UK wage, and the regional unemployment level. In estimation, the most important determinants of wage setting in NI were not those affecting the labour demand constraint, but are rather "external" to the individual firms in the region. Aggregate UK wage settlements dominate regional unemployment as the primary influence on the wage level. In the long run an increase in the rate of unemployment of 1 per cent in NI would result in a fall in real wages of 0.7 per cent. Also, in the long run, there is effectively a one-to-one correspondence between expected UK real wage inflation and NI real wage inflation. NI demand factors have no role in wage determination, a finding with important implications for policy designed to influence NI competitiveness.

In summary, Borooah and Lee (1991) found that lower total factor productivity (TFP) growth in NI compared with the UK coincided with a rapid convergence of NI wage rates with those in the UK. This had serious negative consequences for NI employment and drove up unemployment. The level of capital in NI has little influence on employment and NI demand for labour is considerably more sensitive to the real wage level than is the case in the UK. Factors affecting the demand for labour have little effect in wage determination. Rather, NI wages are determined by aggregate UK wages, moderated only to a slight degree by local NI labour market conditions.

3.2 Two Economic Models: NIMOD and HERMES

An early attempt to model the two regional economies of Ireland is Spencer and Harrison 1977. They developed a simple income-expenditure Keynesian model framework with which to compare the two economies. This model was a pioneering effort in its time, and remains of interest to the extent that it highlights how much things have changed in the intervening 15 years. For example, the Keynesian assumptions and the short-run orientation of the models would make them unsuitable for medium and long-term studies. Interestingly, the Southern model was linked to the Northern one via a Southern export demand function that must take both British and Northern income and relative prices into account.

Both the ESRI and the NIERC carry out detailed quantitative work on their respective economies. In particular, both organisations have long-standing programmes of macroeconomic modelling research. These models have been constructed for the contribution they can make to policy development and also to improve local economic analysis. They seek to capture the key features of the economy and can be used both for policy analysis and forecasting.

The ESRI model of the Irish economy has been operational since 1985, and was developed as part of the EC funded HERMES programme of Directorate-General XII (CEC, 1993). HERMES-Ireland was part of an EC-wide system of models, and was developed and tested within an international network of researchers. The main use of the model has been in the production of medium-term forecasts (published in the Institute's Medium-Term Review), the analysis of policy changes (such as the EC Community Support Framework: Bradley, Fitz Gerald and Kearney, 1992) and the study of major economic and social issues (such as the causes of unemployment: Barry and Bradley, 1991).

The NIERC model of the Northern Ireland Economy (NIMOD) has been operational since 1989 and has been used for medium-term forecasting and policy analysis (Roper and Schofield, 1990; Roper *et al.*, 1989). Roper and O'Shea (1991) is a study of the (largely

ineffectual) impact of wage subsidies in Northern Ireland during the period 1967-79. NIMOD is currently used in association with the Oxford Economic Forecasting model of the UK economy to prepare detailed forecasts for 11 regions of the UK (NIERC, 1992).

Both HERMES and NIMOD are state-of-the-art, in that they incorporate and synthesize a wide range of up-to-date quantified knowledge about the Northern and Southern economies. The experience over the years of both the ESRI and NIERC in interacting with policy-makers, the business community and trades unions, suggests that such models, when properly used and explained clearly, represent very efficient, powerful and persuasive resources. The benefits of economy-wide macro-economic research extend to the microeconomic and sectoral areas as well. During a recent research programme investigating the impact of the EC structural Funds (the Community Support Framework, or CSF), the ESRI carried out a series of microeconomic and sectoral studies in areas such as the evaluation of targeted education and employment schemes, transport costs, agri-business linkages, industrial economies of scale, etc. In addition to their direct contribution, the main results from these studies were incorporated into the overall economic model and influenced the broad economy-wide policy conclusions of the main study (Bradley, Fitz Gerald and Kearney, 1992).

NIERC has also conducted sector-specific studies as part of their programme of model development, including an analysis of the house-building industry in Northern Ireland and projections of the industrial demand for electricity. Moreover, the availability for the first time of a large-scale consistent database for Northern Ireland has itself contributed to an understanding of the economy (Roper *et al*, 1989).

Both the ESRI and NIERC models have strong external linkages, reflecting the openness of the two economies. The ESRI model is oriented towards the EC and the rest-of-the-world economies, while the NIERC system is focused exclusively on the UK economy. There is currently no structural link between the two models, reflecting their development in isolation from each other. This in turn simply mirrors the relatively weak trade links that exist between the two regional Irish economies.

Both NIMOD and HERMES have some shared core stylised features. For example, both are in the neo-Keynesian tradition in that disequilibria (like unemployment) can arise and persist and wages and prices do not move rapidly to clear markets. They both use backward-looking or autoregressive expectations mechanisms and assume that agents are myopic and have only imperfect information. They are aggressively open in orientation in both product *and* labour markets. Finally, they are similar in outline structure, consisting of the following categories:

- (i) Exposed manufacturing sectors: price taking, and driven by external demand.
- (ii) Sheltered service sectors: price making (cost mark-up), and driven by internal demand.
- (iii) Agriculture sectors that are dominated by the EC CAP.
- (iv) Broadly similar public sector categories.

However, there are key differences, the main ones being as follows:

- (i) The Northern and Southern "worlds" are very different, the British economy driving NIMOD and a wider measure of world activity driving HERMES.
- (ii) Trade balances and the balance of payments are implicit in NIMOD but explicit in HERMES.
- (iii) Investment behaviour is passive in NIMOD and not modelled explicitly, while HERMES models investment jointly with other factor demands like labour, energy and other materials.
- (iv) The financing of the public sector borrowing requirement is implicit in NIMOD but explicit in HERMES. Exogenous block grants finance public spending in the Northern model while the Southern model has explicit borrowing and taxation mechanisms.
- (v) Wage determination is almost totally dominated by British wages in NIMOD, but is the outcome of a domestic bargaining process in HERMES.

3.3 NIMIN and HERMIN: A Unified Modelling Framework

It is difficult to compare the properties of the models NIMOD and HERMES since they have very specific features that influence their properties, as discussed above. In addition, they are very large and cumbersome to use and update. Hence, there was a need for more compact, theoretically controlled models for joint North-South research. One advantage of having an aggregated model is that it is more transparent and easier to use in policy analysis. In addition, a side benefit of aggregation is that the underlying investment decisions do not have to be treated as discrete. In the highly disaggregated NIMOD, investment is very difficult to model because of the "lumpiness" induced by dominant individual firms inside the sectors. Even with highly aggregated data there is considerable

“lumpiness” in Northern Ireland data, especially investment data. The relationship between the sectoral structure of NIMOD and the new NIMIN is shown in Table 3.1.¹⁹

Similar arguments can be advanced to justify the construction of HERMIN. It is intended to be a more transparent version of HERMES, easier to use in policy analysis, and more flexible in joint North-South analysis. Indeed, the larger HERMES and the smaller HERMIN have a symbiotic relationship and are intended to be complements rather than substitutes.

The new models allow us to explore fundamental theoretical choices in the following sense. In the case of the Republic of Ireland, and particularly in the case of Northern Ireland, neither the standard regional paradigm (used in NIMOD) nor the small open economy paradigm (used in HERMES) appears entirely suitable. It is useful to be able to explore these important issues in the context of smaller models. Two major options are available to regional modellers.

(i) *Economic base theory:*

This includes input-output models and export base models. The approach assumes that regional economic activity depends on exogenous final demand, mainly export demand, for commodities produced by the region. If exogenous final demand increases, not only does production increase directly to meet the demand, but also indirectly to supply inputs to the exporting industries and to domestic (consumer) demand. These are short-term models and are useful for the analysis of small shifts in exogenous final demand. Excess capacity is assumed to exist and the capital stock is taken as fixed. These assumptions cease to be realistic or appropriate for longer term analysis. Although changes in exogenous demand have short-term economic impacts on regional economies, they are not a direct motivation for long-term structural changes in a region.

(ii) *Location theory:*

The various theories of spatial economics - land-use, optimal plant location, market area analysis, population migration - are all special cases of the Arrow-Debreu general equilibrium system. If the intended use of the model is for the analysis of long-term issues, an approach based on location theory may be more appropriate than economic base theory. As extra channels of causation open up, the models become more complex and simultaneous, and the avenues through which policy can work become more numerous.

As regards choice of modelling paradigm, in the case of the Republic of Ireland the arguments in favour of the location theory approach are inescapable. However, in the case of Northern Ireland the issues are not quite so clear-cut. For example, in the Northern economy:

Table 3.1 (a): Northern Ireland: Relationship between NIMOD and NIMIN Sectors

NIMOD Sectors	NIMIN Sectors
Manufacturing	Traded Sector (T)
Electrical Engineering	
Mechanical Engineering	
Other Engineering	
	Non-Traded Market Sector (N)
Public Utilities	
Distribution	
Business Services	
Other Services	
Mining and Quarrying	
Construction	
Transport and Communication	
Agriculture	Agriculture (A)
Public Administration	Public Sector (G)
Education and Health	

Table 3.1 (b): Republic of Ireland: Relationship between HERMES and HERMIN Sectors

HERMES Sectors	HERMIN Sectors
Manufacturing Industry	-- Tradable Sector (T)
High Technology	
Food Processing	
Traditional Indigenous	
Building and Construction	-- Non-tradable Sector (N)
Public Utilities	
Marketed Services	
Distribution (wholesale and retail)	
Transport and Communication	
Other Marketed Services	
Agriculture Sector	-- Agriculture Sector (A)
Non-Market Services	-- Non-Market Services (G)
Public Administration	
Health and Education	

- (a) Key sectors of manufacturing are driven by UK and world demand (export base).
- (b) Foreign direct investment, although smaller than for the South, is nevertheless an important consideration (location theory).
- (c) Inter-regional population movements can be large (location theory).
- (d) Policy autonomy is much less than in any sovereign nation (export base).
- (e) Northern Ireland has greater policy autonomy than any other part of the UK (location theory).
- (f) Demand conditions in Northern Ireland can be quite different from those affecting the rest of the UK. For instance, the higher level of public spending and employment in comparison to Britain tends partially to shelter Northern Ireland from the UK business cycle (mixed approach).

The eventual goal is to link the two regional models to a world model (such as the London-based National Institute of Economic and Social Research (NIESR) global economic model, NIGEM) and to each other. This will be greatly facilitated by having compatible parallel models for the two Irish regional economies: HERMIN and NIMIN. Linking the new models to each other in the context of the world economy will permit important issues to be explored:

- (i) Can import leakages out of the island be lowered and the benefits of more intensive trade be realised along the lines of the CII claims?
- (ii) Can greater domestic "island" market promote growth, moving beyond trading at arms length and building more supply-side linkages between the two regions? (Porter, 1990)
- (iii) How can faster growth be financed, either through internal sources (Co-operation North, 1991) or through external sources (e.g., the EC Community Support Framework).
- (iv) How would the formulation of industrial policy work if it were formulated and executed on an all island basis?

- (v) Specifically, what are the possible synergies from focusing economic development on the important Belfast-Dublin economic corridor, as proposed by Quigley (1992a,b)?
- (vi) Externalities from infrastructure and training policies (Bradley, Whelan and Wright, 1993).

In addition, we need to be able to explore the consequences of regional trade and public finance imbalances. For the Republic of Ireland, the need for such analysis goes without saying. For Northern Ireland, the justification is less obvious, but none-the-less important. The North's relative policy autonomy within the United Kingdom needs to be analysed in the context of an imputed regional budget constraint. There are shadow costs within the UK of increasing the North's "block grant" which must be set off against any benefits. Even if these are not made explicit, they must surely be implicitly used in the Northern administration's negotiations with London.

Furthermore, if public policy in Northern Ireland is directed at increasing export oriented growth, then the net trade balance must be of interest since it represents the only true measure of the regional competitiveness outcome. The new models will need to look at a wider concept of regional competitiveness than is presently contained in Northern NIMOD model, constrained as it is by missing regional data.

4. THE QUEST FOR FASTER REGIONAL GROWTH

The geography of economic growth in all nations is uneven (Richardson and Townroe, 1986). Dissatisfaction with uneven development may be sufficient grounds politically to identify a regional "problem" and to introduce regional development policies directed at changing the spatial distribution of population and economic activity. Analysis offers reasons why development is likely to be uneven, pointing to three main factors: increasing returns to scale; constraints on the free operation of factor markets; and the role of government.

Alternative viewpoints may be taken as to why initial spatially uneven patterns of development persist and may become more marked. There are two dominant schools of thought in this area:

(i) *Cumulative causation and core-periphery models*

In Myrdal's and Kaldor's analysis a region begins to develop with a "growth trigger" such as a natural resource discovery, development of a new export food crop, or a range of new manufacturing products. Rising real wages and high returns to capital reflect increasing returns to scale and the development of spatial external economies of agglomeration, manifested in rising labour and capital productivity as a function of the growth rate of regional output. Regional economic growth is, in effect, a process of cumulative causation, where success breeds success and failure exacerbates failure (Kaldor, 1970; Dixon and Thirlwall, 1975).

(ii) *Neo-classical models*

This is a narrower vision of the dominant forces in an economy. It takes regions as aggregated production units among which an equilibrium of income and employment emerges from the smooth working of factor markets. A more developed neo-classical view, however, allows for increasing returns and new technology, the influence of public-sector supporting investment, and a more dynamic perspective.

Approaches to the design of regional policies tend to have different emphasis from one theory to another. Crudely, the neo-classical view leans to incentives to steer productive factors, especially in the formal manufacturing sector. This could be held to be a reasonable characterisation of present UK policy, although modified in disadvantaged regions like Northern Ireland. Cumulative causation theory, on the other hand, leads to policies for growth centres and improvement in infrastructure, transport and communications, and education. Aspects of this approach have characterised industrial and regional policy both North and South, but there has been a reluctance to create regional inequalities and permit the process of city-based cumulative causation to operate (Jacobs, 1986). Indeed, the geographical dispersal of Southern manufacturing industry and the proliferation of start ups in diverse industrial sectors, both of which were encouraged by state policy, have directed Southern industrial structures away from the desirable features of cumulative causation.

Moves towards economic, monetary and political union within the EC have focused attention on the wide disparities in average income levels that exist throughout the Community and, in particular, between the core, on the one hand, and peripheral member states such as Greece, Ireland and Portugal, on the other. It is feared that these disparities may be further exacerbated by the process of unification and may constitute a threat to its success. In contrast to the objective of convergence, i.e., the eventual convergence of inflation rates, interest rates, borrowing, public debt and balance of payments within the

EC, the objective of promoting convergence of real income and wealth levels has come to be termed cohesion. Kennedy (1992) gives an review of the issues involved in real and nominal convergence, together with a consideration of the broad policy options. An important instrument which the EC has designed to help achieve this objective is the Community Support Framework (CSF).

Since it seems unlikely that cohesion is something that could be achieved without a large positive differential in the rate of economic growth of the poorer regions of the EC over the other core areas, at the centre of all discussions of the cohesion issue lies the theory of economic growth and its application to underdeveloped regional economies like Northern Ireland and the Republic of Ireland. One needs to explore the theory of economic growth, with particular reference to how it relates in general terms to the question of international real economic convergence and the design of the CSF. Bradley, Whelan and Wright (1993) give a survey of the standard, or orthodox, neo-classical theory of economic growth as developed up to the 1960s, which has had considerable influence on empirical macroeconomic modelling and policy to the present day. They also considered a range of neo-classical growth models which have emerged from modern or endogenous growth theories, which take up many issues upon which the orthodox theory was silent, such as the origins of technical progress, the reasons for human capital accumulation, etc. This material provides a theoretical background against which much of the discussion on the design and impact of regional growth and the CSF should ideally take place but, alas, does not.

In brief, what does the older orthodox growth theory tell us about the likely return to capital and investment in the poorer EC countries like Ireland? Diminishing marginal returns to capital will imply that, technical progress apart, those countries which have a high capital-labour ratio, and thus a higher level of per capita income, will have a low return to capital. This implies that, with capital mobility, capital will flow from rich to poor countries as long as poorer countries continue to have a lower capital-labour ratio, and that this capital accumulation process will lead to international convergence of income levels. However, this rather mechanistic application of the neo-classical growth model abstracts from two important aspects. First, uncertainty will mean that investors of mobile international capital will be seeking to equate expected *ex ante*, rather than actual *ex post*, rates of return and second, market mechanisms may not work in exactly the way that neo-classical theory requires.

On the basis of these considerations, orthodox neoclassical growth theory suggests three elements that together determine a country's rate of economic growth in a world of mobile capital:

- (i) *The capital-labour ratio:* The lower the capital-labour ratio, the higher is the productivity of capital and, thus, the potential return to capital investment.
- (ii) *The degree of uncertainty:* A degree of uncertainty is perceived to be attached to the expected return to investment. If international investors are risk averse then a higher level of uncertainty will lead to a lower level of investment.
- (iii) *Institutional factors:* Institutional factors influence the extent to which a country's factor markets approximate the neo-classical ideal of *laissez faire* and perfect competition. Thus, regulations on economic behaviour may prevent profitable opportunities being exploited, taxes on profits and labour may distort factor prices and the existence of inefficient non-traded inputs may also reduce the return to capital.

The view that a poor country will be able to catch up spontaneously with richer countries, once it has an appropriate combination of freely functioning market mechanisms and political stability which reduces uncertainty, broadly represents the official thinking within international organisations involved in promoting economic growth and development, such as the World Bank, the IMF and the OECD (World Bank, 1991). Indeed, it is also a view expressed by those who are sceptical about the desirability or wisdom of CSF-type programmes within the EC.

What does this imply for convergence and cohesion within the EC? A recent paper by Larre and Torres (1991) analysing the economies of Greece, Portugal and Spain, has suggested that the orthodox approach works quite well in explaining the recent economic growth performance of these less developed peripheral members of the EC. It is suggested that the combination of the liberalising effects of EC membership and a series of structural market reforms allowed Spain and Portugal to converge some way upwards towards average European income levels, while the poor economic performance of Greece can be assigned to its failure to introduce structural reforms and macroeconomic stability.

An emphasis on the encouragement of market mechanisms, competition and the reduction of uncertainty can also be seen as central to the policy prescriptions and analysis of Irish neo-classical economists. Neo-classical explanations of modern Irish economic growth have attributed the failure of Ireland's protectionist era from the 1930s to the late 1950s to the lack of market incentives in a heavily protected economy. The relative success of the subsequent move towards an export and FDI oriented strategy is held to be due to the opening up of market mechanisms and the high return to international capital offered by the country's low capital-output ratio. The poor performance of the Irish economy during the early and mid 1980s is interpreted as the result of uncertainty generated by the

precarious state of the public finances and market distortions created by high levels of taxation. In the case of Northern Ireland, the uncertainty caused by the civil unrest adds to the already great difficulties.

This type of analysis also suggests that EMU will promote economic cohesion in the periphery. Reforms such as a single EC currency, financial deregulation and the removal of non-tariff barriers to trade will increase the expected return to investment in peripheral EC economies by reducing financial risk and improving access to the large European markets, thus facilitating capital flows to take advantage of the high returns available in the periphery.

It is noteworthy that this analysis places little emphasis on the need for EC structural fund expenditures to promote economic convergence. What does this approach point to as the main drawbacks on the Republic of Ireland attaining a cohesion objective? A number of possibilities suggest themselves:

- (i) *Public finances:* The Republic of Ireland's national debt/GNP ratio is still about 100 per cent and is a source of uncertainty to international investors in Ireland. The ratio is declining and the government's strong commitment to moving towards the stringent Maastricht conditions for entry into EMU will certainly help reduce fears of any financial instability. Another important fiscal uncertainty concerns corporation tax rates and whether tax reforms will lead to the eventual raising of Ireland's low 10 per cent corporate tax rate, which is only guaranteed up to the year 2010.
- (ii) *Labour market institutions:* The Republic of Ireland has low corporate taxes but, despite the high level of unemployment, relatively high taxes on labour, which are likely to distort labour costs away from the comparatively low level which the low capital-labour ratio would suggest. Furthermore, the extent of Irish integration into the British labour market leads to pressure for similar headline pay awards to those being obtained in Britain, even if these pay awards are not warranted by productivity gains. Finally, it can also be said that high public, or non-market, sector pay awards often induce higher wage inflation in the market sector. Policies which eased the tax burden on labour and encouraged wage restraint and flexibility within the increasingly corporatist wage bargaining system would induce investment by reducing uncertainty as to future labour costs.
- (iii) *Lack of competition in the non-tradable sector:* A wide range of inputs that manufacturing firms use when they locate in Ireland are effectively non-traded and often sold at prices which are out of line with other international competitors.

Policies to induce greater efficiency and competition in these sectors of the economy are also likely to promote inward investment.

The situation for Northern Ireland has similarities to the Southern case. Any uncertainty there may be with the Northern public finances may have more to do with the *willingness* of Britain to continue to finance the large Northern borrowing requirement rather than her *ability* to do so. The labour market issues are almost the same as those in the South, both on the demand and supply side. The non-traded market sector may have difficulty in performing to internationally acceptable cost standards, in a situation where the competitive position of the manufacturing sector itself is also problematic.

Thus, orthodox neo-classical growth theory suggests that the CSF programme in Ireland should be aimed at aiding the reduction of the debt/GNP ratio, introducing labour market reform and encouraging greater competition in the non-tradable sector. Since many of the decisions in these areas are in the hands of Irish policy-makers; it has been suggested that the EC CSF expenditures should simply be linked to Irish policy-makers' decisions on promoting market reforms and reduction of macroeconomic imbalances, thus strengthening incentives for the undertaking of potentially difficult reforms.

The orthodox neo-classical approach to growth theory has suggested a powerful and influential set of policy proposals and provided a framework for thinking about economic convergence and cohesion. However, it has one rather serious problem: it does not appear to fit the facts! While neo-classical analysis suggests that countries with low levels of per capita income should be able to enjoy high growth rates, the fact remains that in cross section analyses growth rates do not appear to be significantly correlated either positively or negatively with per capita income levels (Barro, 1991). Furthermore, as Lucas (1990), has stressed, factor flows fail completely to behave in the manner described by the theory: not only are the vast majority of capital flows between rich countries but there is also great pressure for migration of both skilled and unskilled workers towards high income countries.

These observations could be reconciled with the orthodox neo-classical approach by attributing them to the fairly obvious imperfections in market mechanisms and the type of political risk and instability that are often endemic in poorer countries. However, this leads to a tautological explanation of economic development: poor countries and regions will catch up if they have market reforms and political stability, and if they are not catching up then it must be due to the absence of market mechanisms and political stability. In any case, as Lucas (1990) points out, if the theory was even partially correct, the likely size of the differences in returns to capital would be enormous. Such differences in prospective returns would not only generate large capital flows for private investment in poor countries but also investment in maintaining market mechanisms and political stability. The fact that

such investment is not forthcoming is an indication that something is wrong with the traditional neo-classical prescriptions for economic growth. These considerations effectively reduce neoclassical growth theory to attributing a substantial element of the observed patterns in economic growth and development to differences in the rate of exogenous technical progress. However, since the orthodox theory makes little attempt to explain technical progress, this is not very satisfactory.

More recent research in growth theory places much more emphasis on increasing returns to scale, market imperfections and co-ordination failures, and the beneficial externalities associated with increased human capital and improved physical infrastructure.²⁰ Contrary to the last great era of growth research in the 1960s, the present new growth theory of the 1980s and 1990s is based on empirical analysis to a considerably greater extent, albeit still at a fairly abstract and stylised level.

Recent developments in growth theory have begun to provide more adequate explanations of the underlying processes of growth, producing theories based on endogenous mechanisms rather than the traditional exogenous *deus ex machina* technical progress assumptions of the older theories. The principal ways in which they achieve this are by extending the specification of the supply side of the economy beyond that of the traditional approach. In particular, these theories have recognised the importance of increasing returns and externalities associated with human capital, public capital and the generation of new technologies.

Using the new HERMIN and NIMIN models, it is possible to explore these mechanisms through analysis of stylised shocks to public investment in infrastructure and to state financed training schemes. It is found that in both cases the beneficial effects of the policy shocks are transitory where an element of domestic co-financing is required. The choking off of these beneficial effects arises mainly because of a loss of competitiveness in the traded sector brought about by the need to raise taxes, and the consequential impact of the bigger tax wedge on wage bargaining, unit labour costs, and international competitiveness.

Bradley, Whelan and Wright (1993) look at three types of beneficial externalities that are likely to enhance the effects of well designed investment and training policy initiatives.²¹ The first arises through the increased total factor productivity likely to be associated with improved infrastructure and a higher level of human capital associated with training and education. Of course, a side effect of increased factor productivity is that, in the context of fixed output, labour is shed. This is particularly serious in economies like Ireland, where the recorded rate of unemployment is between 15 and 20 per cent of the labour force.

The second type of externality is likely to be associated with the role of improved infrastructure and training in attracting productive activities to Ireland through foreign direct investment, and enhancing the ability of indigenous industries to compete in the international market place. This is referred to as an "industrial composition" externality, since it is well known that the type of products manufactured in developing countries changes during the process of development, and become more complex and technologically advanced.

The simulations carried out using the HERMIN model of the Republic of Ireland indicate that the factor productivity externality is a two edged process: industry and services become more productive and competitive, but labour demand is weakened.²² The role of the industrial composition externality is more unambiguously beneficial: the higher it is, the faster the period of transitional growth to a higher income plateau.

The third type of externality is both the most controversial and, potentially, the most beneficial to a country that badly needs to improve the operation of its labour market. We examined the effects of assuming that better training schemes might improve the process of wage bargaining by increasing the force with which unemployment dampens wage inflation. There are many interpretations of this effect, the most obvious being the blurring of the distinction between insiders and outsiders in the labour market. Our simulations show that even quite modest improvements in the efficiency of the labour market could yield very strong growth effects, particularly when operating in combination with the first two types of externalities.

5. WHAT FUTURE FOR THE TWO REGIONAL ECONOMIES?

Given the similarities between the economic difficulties besetting Ireland's two regional economies, North-South research co-operation is likely to prove very beneficial. The recently started ESRI-NIERC programme of research, sponsored by the International Fund for Ireland and the Irish business community, is designed to promote research collaboration with a view to designing and implementing inter-linked analysis systems for the two regional economies of Ireland. This has involved the creation of consistently defined databases, the restructuring of the ESRI and NIERC models, and a joint programme of applied research using the models as a guiding framework. The ultimate objective is to strengthen the ability of policy-makers to design policies which will address more effectively the urgent economic problems of the two regions.

The joint research programme has four main aims:

- (i) To promote mutual understanding of the economies of Ireland, North and South, their relationships to the outside world and to each other.
- (ii) To identify common economic problems for analysis.
- (iii) To identify policy successes and opportunities in each region, and to assess their wider applicability.
- (iv) To create an analytical framework capable of assessing the common impact of changes in EC policy and European economic conditions on the periphery of the Community.

The first aim, promotion of mutual understanding, is focused on the particular task of deepening our knowledge of how the two regional economies function. Issues presently being worked on include:

- (a) The construction of accessible and parallel macroeconomic and industrial data sets, based on the original ESRI and NIERC databases.
- (b) The development of an integrated economic policy modelling system for the island as a whole, in the context of Ireland's vulnerability to conditions external to the island economy.
- (c) A more comprehensive interchange of research findings between the ESRI and NIERC as a means of influencing the wider community of policy-makers, business organizations and trades unions.

The second aim, identification of common problems, includes a wide range of issues such as:

- (a) A serious long-term unemployment problem in both regions, with related emigration flows and low participation rates, especially for females.
- (b) A poor competitiveness record for indigenous industry, with consequential weak demand for labour.
- (c) Wage determination and wage bargaining mechanisms that may be hindering the sustained growth of employment.

- (d) Extreme vulnerability to fluctuations in the world economy and excessive dependence on foreign or externally-owned multinationals for dynamic growth.
- (e) The consequences of imbalances in the public finances in recent years, explicit in the case of the Republic of Ireland and implicit in the case of Northern Ireland.
- (f) Labour supply and demographic trends that are still at variance with the other EC States.
- (g) A much lower level of mutual trade between two adjacent regions than would be expected on the basis of intra-regional sales.

The third aim, identification of successes and opportunities, is more challenging. A striking example during the mid and late 1980s is the success of the Republic of Ireland in reducing wage and price inflation to the lowest levels within the EC, which has considerable policy relevance for Northern Ireland and for future North-South economic developments. However, the asymmetric nature of the external exchange and interest rate regimes is a potentially de-stabilising force, with the North inside the United Kingdom, which has had a somewhat tempestuous relationship with the EMS and the South in the EMS narrow band since the inception of the EMS. Dr George Quigley commenting on his foreword to *Co-operation North 1991* has said that:

The situation would be likely to change radically if the European Community becomes a fully developed Economic and Monetary Union, with fixed exchange rates or a single currency. The island would then in effect be a single financial hinterland for purposes of resource gathering and marketing of products and services by the financial services institutions.

Thus, an obvious area of research collaboration will involve a comparative analysis of wage and price setting in the two regional economies, to see how lessons from the Republic of Ireland might be transferred to Northern Ireland. There is some evidence that industrial wages in Northern Ireland have fallen behind Britain over the 1980s and that this has lowered unit labour costs, with consequential improvement in Northern cost competitiveness. There is also evidence that the UK government may attempt to introduce wage flexibility into the public sector in a way that will reduce wages in Northern Ireland below the British norm. Such changes in both the public and private sectors will tend to detach Northern Ireland from the UK system of nationally uniform wage bargaining, and make the North more akin to an independent state, like the South, in this respect. The NIEC has even raised the theoretical possibility that Northern Ireland might copy the

South's use of corporate tax relief for industry, although consider it unlikely, given Northern Ireland's position within the UK (NIEC, 1992, p. 62).

A further area of analysis is cross-border trade between the two regions. The recent CII calculation referred to in Section 2 above, asserted that up to 75,000 jobs might be gained in both regions if inter-regional sales could reach the levels of intra-regional sales. Although this projection is most likely on the optimistic side, nevertheless there may be a wide range of trade opportunities to be exploited. Research is urgently needed to establish the true position, and to investigate constraints and difficulties in mutual trade, including transport, border and other regulations and payments difficulties. In particular, it is vital to understand the possible scale or agglomeration economies that could arise from the growth of indigenous industries by providing a wider and more integrated home market than each region in isolation (Porter, 1990).

Finally, the common position of Ireland, North and South, on the periphery of the EC means that the two regional economies will face many similar challenges in the years to come. Fiscal harmonisation and changes to the CAP are likely to have major effects on both economies, with a need to have analytic tools available to analyse the situation. This will be especially important in the post-1992 period as trade barriers are removed and economic integration between Ireland, North and South, becomes ever closer.

Clearly official thinking on the regional problems of Ireland is shifting rapidly. The NIEC rightly identify this as being:

In part ... a response to a growing body of research which has called into question many assumptions about what was being achieved by current policies. It also perhaps reflects a dissatisfaction with the intellectual foundation of economic strategy in the Province, which has largely been unchallenged in the post-war period. (NIEC, 1991.)

Both North and South these changes have been slow and have been approached reluctantly only after the manifest failure of previous policies. The new competitiveness thinking has hardly been embraced with enthusiasm:

... difficulties have been caused by the introduction of unfamiliar terms such as "market failure" and "competitiveness" (which have precise technical interpretations within the economics literature but have been somewhat loosely applied in the context of the strategy) into the lexicon of economic development policies. (NIEC, 1991.)

In discussing the possible benefits of greater North-South economic co-operation with a view to building greater competitive advantage, Teague (1987) points out that there are several examples of economic integration in Europe which have not involved political matters: the Belgium-Luxembourg Economic Union and the Benelux Economic Union. He goes on to assert that:

The objective of industrial policy, and economic policy more generally, needs to be more far reaching. It should be nothing less than the integration of the economies of Northern and Southern Ireland. (Teague, 1987.)

and suggests that some form of informal rolling economic integration be pursued on a case-by-case basis. In his speech to the CII on February 28th, 1992, Dr George Quigley stated:

I find no difficulty with the proposition that Ireland is - or should be - an *island* economy

though adding the important rider that

Making the island a single market must be an exercise in synergy, not a zero sum game where a wholly insufficient quantity of existing island wealth is simply redistributed.

Even if these views are not uncontroversial on the island, nevertheless they challenge economists to reach out for wider agendas for the improvement of the well-being of citizens of the two regional economies of Ireland.

Footnotes

1. As we will see later, Northern Ireland runs a large trade deficit with the Republic of Ireland. This can be interpreted as either a failure of Northern industry or a lack of interest by Northern exporters in the Southern market for non-economic reasons, or a mixture of both.
2. For brevity, we will sometimes refer to Northern Ireland as the "North", and to the Republic of Ireland as the "South". The term "Province" is in common usage in Northern Ireland, but is misleading in an island context.

3. Gibson and Spencer (eds.), 1977 is almost unique in its effort to place analysis of the two regions of the island economy within a common economic framework. We will return to it later in Section 3 when we examine formal economic modelling.
4. None of the four published ESRI *Medium-Term Reviews* of 1986, 1987, 1989 and 1991 made any reference to Northern Ireland (Bradley, Fitz Gerald and McCoy, 1991, is the most recent). The NIERC Medium-Term Forecast for Northern Ireland (Roper and Gudgin, 1991) refers only in passing to comparative North-South demographic trends.
5. Recent references for Northern Ireland include Teague, 1987; Harris, 1989 and 1991; Harris, Jefferson and Spencer, 1990; and the publications of the NIERC and NIEC (particularly Gudgin and Roper, 1990; Roper and Gudgin, 1991; NIERC, 1992; NIEC, 1990; and NIEC, 1991). For the Republic of Ireland, see Kennedy and Dowling (1975); Kennedy, Giblin and McHugh (1988); and the recent issues of the ESRI *Quarterly Economic Commentary* and *Medium-Term Review*. Breen *et al* (1990) and Goldthorpe and Whelan (1992) place the Southern economy in a wider sociological perspective.
6. A distinction must be made between sales by Northern Ireland to the British market (external sales) and sales to areas outside the UK (export sales).
7. For the period 1932-1960 there was a rapid growth of all kinds of indigenous industry in the South, protected from international competition by high tariff barriers. After the advent of free trade in the 1960s (The Anglo Irish Free Trade Agreement) and EC entry, much of this industrial base vanished, unable to compete with more efficient foreign firms (see Kennedy, Giblin and McHugh, 1988).
8. Hitchens and Birnie (1992a and 1992b) provide a more detailed examination of the North-South industrial comparison and show that the South's relative success rests on a narrow base of key foreign multinational firms and that indigenous industry suffered in both regions. Nevertheless, dependent and all as it is on foreign direct investment, the South did succeed where the North manifestly failed.
9. No adjustments have been made to the average annual earnings data for exchange rate changes or for the very different direct tax regimes that apply in the two regions.

10. The term "troubles" is normally used in the literature to describe what we refer to as "civil unrest" in the North. No single term can possibly capture all the complexities of the issues involved.
11. Economists call this the Phillips curve. It basically implies that the more people who are unemployed in an economy, the lower will be the subsequent wage demands from those still with jobs, and vice versa.
12. It is true that the United Kingdom is one of the least federal state in the EC. Nevertheless, there are cabinet-level Secretaries of State for Wales, Scotland and Northern Ireland and a limited measure of regional autonomous policy-making.
13. The suggested multiplier of 1.3 may be on the pessimistic side. Recent work by O'Malley (1993) indicates that each manufacturing job in the South supports approximately one more job in the service sector. At the margin, of course, the multiplier is likely to be somewhat lower than 2.
14. Bradley (1990) also contains a detailed comparison of the tax systems in the two regions, a comparison that shows up the well known problems with the Southern arrangements.
15. In some preliminary data construction associated with the NIMIN model of Northern Ireland, we have derived a similar measure of the Northern Ireland regional borrowing requirement (Bradley and Wright, 1992a).
16. This work is part of a project on *Growth and Development in Two Regional Economies: Ireland, North and South*, financed in part by the *International Fund for Ireland* in association with the Irish business community.
17. This approach has recently been taken up by Pain (1993) in his study of the determinants of FDI in the United Kingdom.
18. This result needs qualification if output itself is variable and influenced by regional competitiveness (Bradley and Fitz Gerald, 1988).
19. Technical descriptions of the two new models, NIMIN and HERMIN, are given in Bradley and Wright (1992(a) and (b)).
20. Bradley, Whelan and Wright (1993) provide a reasonably accessible recent survey of the field of new growth theory, with an emphasis on peripheral small open economies and regions.

21. The concept of a production externality is central to the new growth theory, where the essence of an externality is that its costs or benefits are not reflected in market prices and private agents' individual optimizing behaviour.
22. NESG (1992) is a recent examination of the association between growth and employment in the Republic of Ireland, and highlights the low job-intensity of recent Irish growth. This is identified as an EC pattern, and is in contrast to some non-EC countries such as the United States.

References

Barro, Robert J., 1991. "Economic Growth in a Cross Section of Countries", *The Quarterly Journal of Economics*, CVI, May, pp. 407-444.

Barry, Frank and John Bradley, 1991. "On the Causes of Ireland's Unemployment", *The Economic and Social Review*, Vol. 22, No. 4, pp. 253-286.

Borooah, V.K. and K.C. Lee, 1991. "The Regional Dimension of Competitiveness in Manufacturing: Productivity, Employment and Wages in Northern Ireland and the United Kingdom", *Regional Studies*, Vol. 25, No. 3, pp. 219-229.

Bradley, James F., 1990. "The Irish Economies: Some Comparisons and Contrasts", in R. Harris *et al.* (eds.), *The Northern Ireland Economy*. London: Longman.

Bradley, J., C. Fanning, C. Prendergast and M. Wynne, 1985. *Medium-Term Analysis of Fiscal Policy in Ireland: A Macroeconometric Study of the Period 1967-1980*. Paper No. 122, Dublin: The Economic and Social Research Institute.

Bradley, J. and J. Fitz Gerald, 1988. "Industrial Output and Factor Input Determination in an Econometric Model of a Small Open Economy", *European Economic Review*, Vol. 32, pp. 1227-1241.

Bradley, J., J. Fitz Gerald and I. Kearney, 1992. *The Role of the Structural Funds: Analysis of Consequences for Ireland in the Context of 1992*, Policy Research Series No. 13, Dublin: The Economic and Social Research Institute.

Bradley, John, John Fitz Gerald, and Daniel McCoy, 1991. *Medium-Term Review: 1991-1996*. Dublin: The Economic and Social Research Institute, June.

Bradley, J., K. Whelan and J. Wright, 1993. *Stabilization and Growth in the EC Periphery: A Study of the Irish Economy*, Aldershot: Avebury.

Bradley, J. and J. Wright, 1992a. "NIMIN: A Small-Scale Structural Model of the Northern Ireland Economy", Discussion Paper No IFI/NS 01/92.

Bradley, J. and J. Wright, 1992b. "HERMIN: A Small-Scale Structural Model of the Republic of Ireland", Technical paper No. IFI/NS 01-92, Dublin: The Economic and Social Research Institute.

- Breen, Richard, Damian Hannan, David Rottman, Christopher Whelan, 1990.** *Understanding Contemporary Ireland*, Dublin: Gill and Macmillan.
- The Cadogan Group, 1992.** "Northern Limits: Boundaries of the Attainable in Northern Ireland Politics", Belfast: the Cadogan Group, November.
- Callan, T. and J. Fitz Gerald, 1989.** "Price Determination in Ireland: Effects of Changes in Exchange Rates and Exchange Rate Regimes", *The Economic and Social Review*, Vol. 20, pp. 165-188.
- Canning, D., B. Moore and J. Rhodes, 1987.** "Economic Growth in Northern Ireland: Problems and Prospects", in P. Teague (ed.), *Beyond the Rhetoric*, London: Lawrence and Wishart.
- Commission of the European Communities (ed.) 1993.** *HERMES: Harmonised Econometric Research for Modelling Economic Systems*, Amsterdam: North-Holland.
- Co-operation North, 1991.** "Potential Synergies in the Development of Financial Services North and South", Third Study Series, Report No. 2, Belfast/Dublin: Co-operation North.
- Dixon, R. and A. P. Thirlwall, 1975.** "A Model of Regional Growth Rate Differences on Kaldorian Lines", *Oxford Economic Papers* 27, pp. 201-214.
- Dreze, J.H. and C.R. Bean, 1990.** "Europe's Unemployment Problem: Introduction and Synthesis", in J.H. Dreze and C.R. Bean (eds.), *Europe's Unemployment Problem*, Cambridge, Massachusetts: MIT Press, pp. 1-65.
- Fanning, R., 1978.** *The Irish Department of Finance 1922-58*. Dublin: The Institute of Public Administration.
- Fitz Gerald, J., 1986.** *The National Debt and Economic Policy in the Medium Term*, Policy Research Series No. 7, Dublin: The Economic and Social Research Institute.
- Geary, P.T., 1976.** "World Prices and the Inflationary Process in a Small Open Economy: The Case of Ireland", *The Economic and Social Review*, Vol. 7, pp. 391-400.
- Giavazzi, F. and M. Pagano, 1990.** "Can Severe Fiscal Contractions be Expansionary? Tales of Two Small European Countries", Discussion Paper No. 417, London: CEPR.

- Gibson, N. J. (ed.), 1974.** *Economic and Social Implications of the Political Alternatives that may be Open to Northern Ireland*, Coleraine: The New University of Ulster.
- Gibson, Norman J. and John E. Spencer (eds), 1977.** *Economic Activity in Ireland: A Study of Two Open Economies*, Dublin: Gill and Macmillan.
- Goldthorpe, J. H., and C. T. Whelan, 1992.** *The Development of Industrial Society in Ireland*, Oxford: Oxford University Press.
- Gudgin, G. and S. Roper, 1990.** *The Northern Ireland Economy: Review and Forecasts to 1995*, Belfast: Northern Ireland Economic Research Centre.
- Gudgin, G. and G. O'Shea, 1992.** "Avoiding the Worst: Northern Ireland in Recession", *The Irish Banking Review*, Winter, pp. 17-32.
- Harris, R.I.D., 1989.** *The Growth and Structure of the UK Regional Economy 1963-85*, Aldershot: Avebury.
- Harris, Richard I. D., 1991.** *Regional Economic Policy in Northern Ireland 1945-1988*, Aldershot: Avebury (Gower Publishing).
- Harris, Richard, Clifford Jefferson and John Spenser, 1990.** *The Northern Ireland Economy: A Comparative Study in the Economic Development of a Peripheral Region*, London: Longman.
- Hitchens, D. and J. Birnie, 1992a.** "The Competitive Performance of the Republic of Ireland: A Case of the British Disease"?. *Journal of the Statistical and Social Inquiry Society of Ireland*, March 26, 1992.
- Hitchens, D. and J. Birnie, 1992b.** "The Scope for Economic Co-operation between Northern Ireland and the Republic of Ireland: Reversing the Competitive Failure of the Irish Economies", Working Paper No. 36, The Queen's University of Belfast, May.
- Honohan, P., 1984.** "The Evolution of the Rate of Unemployment in Ireland 1962-83", *Quarterly Economic Commentary*, Dublin: The Economic and Social Research Institute.
- Honohan, P., 1992.** "The Link Between Irish and UK Unemployment", *Quarterly Economic Commentary*, Spring, Dublin: The Economic and Social Research Institute.

- Jacobs, Jane, 1986.** *Cities and the Wealth of Nations: Principles of Economic Life*, London: Pelican Books.
- Kaldor, N., 1970.** "The Case for Regional Policies", *Scottish Journal of Political Economy*, Vol. XVII, No. 3, pp. 337-348.
- Kennedy, K.A., 1992.** "Real Convergence, the European Community and Ireland", Presidential Address, *Journal of the Statistical and Social Inquiry Society of Ireland*, May 14, 1992.
- Kennedy, K.A. and B. R. Dowling, 1975.** *Economic Growth in Ireland: The Experience Since 1947*, Dublin: Gill and Macmillan.
- Kennedy, K.A., T. Giblin and D. McHugh, 1988.** *The Economic Development of Ireland in the Twentieth Century*, London: Routledge.
- Larre, B. and R. Torres, 1991.** "Is Convergence a Spontaneous Process? The Experience of Spain, Portugal and Greece", *OECD Economic Studies* No. 16, pp. 169-198.
- Layard, R., S. Nickell and R. Jackman, 1991.** *Unemployment: Macroeconomic Performance and the Labour Market*, Oxford: Oxford University Press.
- Leddin, A.J. and B.M. Walsh, 1990.** *The Macroeconomy of Ireland*, Dublin: Gill and Macmillan.
- Lucas, Robert E., 1990.** "Why Doesn't Capital Flow from Rich to Poor Countries?", *American Economic Review*, Papers and Proceedings 80, No. 2, pp. 92-96.
- Moore, B. and J. Rhodes, 1973.** "Evaluating the Effects of British Regional Economic Policy", *Economic Journal*, 83(329), March, pp. 87-110.
- NESC, 1992.** *The Association between Economic Growth and Employment Growth in Ireland*, Report No. 94, Dublin: National Economic and Social Council.
- Newell, A. and J. Symons, 1990.** "The Causes of Ireland's Unemployment", Dublin: *The Economic and Social Review*, Vol. 21, pp. 409-429.
- Northern Ireland Economic Council, 1990.** *The Private Sector in the Northern Ireland Economy*, Report 82, Belfast: Northern Ireland Economic Development Office.

Northern Ireland Economic Council, 1991. *Economic Strategy in Northern Ireland*, Report 88, Belfast: Northern Ireland Economic Development Office.

Northern Ireland Economic Council, 1992. *Inward Investment in Northern Ireland*, Belfast: Northern Ireland Economic Development Office.

Northern Ireland Economic Research Centre, 1990. *The Northern Ireland Economy: Review and Forecasts to 1995*, Belfast: The Northern Ireland Economic Research Centre.

Northern Ireland Economic Research Centre, 1992. *Regional Economic Outlook: Analysis and Forecasts to the Year 2000*, Belfast: The Northern Ireland Economic Research Centre.

O'Malley, E., 1989. *Industry and Economic Development: The Challenge for the Latecomer*, Dublin: Gill and Macmillan.

O'Malley, E., 1993. "The Employment Effects of Manufacturing Industry", Working Paper, Industrial Development Research Centre, Dublin: The Economic and Social Research Institute.

Pain, N., 1993. "An Econometric Analysis of Foreign Direct Investment in the United Kingdom", *Scottish Journal of Political Economy*, Vol. 40, No. 1, pp. 1-23.

Porter, Michael P., 1990. *The Competitive Advantage of Nations*, London: Macmillan.

Quigley, W. G. H., 1991. "Potential Synergies in the Development of Financial Services North and South" Third Study Series, Report No. 2, Belfast/Dublin: Co-operation North.

Quigley, W. G. H., 1992a. "Ireland - An Island Economy", paper presented at the Annual Conference of the Confederation of Irish Industry, Dublin, February 28, 1992.

Quigley, W. G. H., 1992b. "Northern Ireland: A Decade for Decision", Annual Sir Charles Carter Lecture, Report 95, Belfast: Northern Ireland Economic Development Office.

Richardson, H. W. and P. M. Townroe, 1986. "Regional Policies in Developing Countries", in P. Nijkamp (ed.), *Handbook of Regional and Urban Economics*, Volume I, Amsterdam: North-Holland.

Roper, Stephen and Graham Gudgin, 1991. *Economic Forecasts for Northern Ireland 1991-2000*, Belfast: Northern Ireland Economic Research Centre.

- Roper, Stephen and Geraldine O'Shea, 1991.** "The Effect of Labour Subsidies in Northern Ireland 1967-79: A Simulation Analysis", *Scottish Journal of Political Economy*, Vol. 38, No. 3, pp. 273-292.
- Roper, Stephen and Andrew Schofield, 1990.** "NIMOD - An Econometric Model of Northern Ireland", mimeo, Northern Ireland Economic Research Centre, February.
- Roper, Stephen, Andrew Schofield, Graham Gudgin and Manouch Tavakoli, 1989.** "The NIERC Econometric Model of Northern Ireland: Technical Guide", mimeo, Northern Ireland Economic Research Centre.
- Rowthorn, B., 1987.** "Northern Ireland: An Economy in Crisis", in P. Teague (ed.), *Beyond the Rhetoric*, London: Lawrence and Wishart pp. 111-135.
- Scott, R. and M. O'Reilly, 1992.** *Exports of Northern Ireland Manufacturing Companies 1990*, Belfast: Northern Ireland Economic Research Centre.
- Spencer, J. E. and M. J. Harrison, 1977.** "The Structure and Behaviour of the Irish Economies", in *Economic Activity in Ireland: A Study of Two Open Economies*, in N.J. Gibson and J.E. Spencer, (eds.) Dublin: Gill and Macmillan.
- Stationery Office, 1985.** "The Economic Consequences of the Division of Ireland Since 1920", New Ireland Forum, Dublin: Stationery Office.
- Teague, P., 1987a.** *Beyond the Rhetoric: Politics, the Economy and Social Policy in Northern Ireland*, London: Lawrence and Wishart.
- Teague, P., 1987b.** "Multinational Companies in the Northern Ireland Economy: An Outmoded Model of Industrial Development?", in P. Teague (ed.), *Beyond the Rhetoric*, London: Lawrence and Wishart.
- Thirlwell, A. P., 1980.** *Balance of Payments Theory and the United Kingdom Experience*, London: The Macmillan Press.
- World Bank, 1991.** "World Development Report 1991", Washington: Oxford University Press.

DISCUSSION

R. Kelleher: At the outset let me say how honoured I am to be asked to reply to this paper tonight. I am afraid it is quite some time since I have participated in a forum such as this.

Immediately let me begin by congratulating the authors on a wonderfully wide ranging paper. At first blush one would imagine that it is a topic that would be widely and frequently debated in our normal economic circles. However, that is not my experience. Indeed it is somewhat odd to note that many economists in Ireland are much more familiar with the economic affairs of the UK, US, mainland European and even far eastern economies than those of the only economy with whom we share a land border.

I gather that in debates on papers such as this one it is common to focus one's comments on econometric issues. I can assure you that in this case the temptation to begin in such a fashion lasted no longer than the proverbial fleeting second. I had the honour of working closely with John Bradley when he first ventured into the economics arena some 20 years ago. At that stage his knowledge of econometrics was far superior to mine. The gap now is so wide it would be the equivalent of pitting the local junior team against the might of Manchester United.

Rather I would like to focus my comments on four broad areas.

First, in reading the paper the most striking feature of the analysis is the apparent contrast in the performance of the industrial sectors North and South. The graphs in the paper depict an industrial sector South of the border which has enjoyed prodigious growth in recent years, in sharp contrast to the experience in the North. I have little doubt that the substance of such a picture is, in fact, a genuine reflection of reality but it does suggest two points to me.

(i) The magnitude of the increase in industrial production which is depicted for the South again calls into question the accuracy of the figures we use to measure the growth in output in this economy of ours. In most economies where industrial production grows by more than 10 per cent in a year, growing prosperity is visibly obvious to most of those who inhabit that economy and one normally expects asset prices to increase significantly. Last year manufacturing output is estimated to have grown by 10.2 per cent, yet most people I am acquainted with did not in any way feel 1992 was a boom year. Moreover asset prices fell significantly in the equity and property markets.

Perhaps the divergence in output performance is not quite so stark as illustrated in the paper, although, as stated earlier I do not believe the substance of the point is probably accurate.

(ii) The other interesting feature of that particular analysis is the contrast in policies pursued by the two regions in attracting overseas companies to establish a local production base. It has been fashionable in recent years to argue in the South that the policies pursued there have not delivered adequate value for money. The sort of analysis included in this paper would cast some doubts on those assertions.

Two, the second feature of the paper that strikes this reader most visibly was the utterly bankrupt nature of the Northern Ireland economy, if it were an independent unit. One is very tempted to add the main financial numbers of the two economies together and see what the financial position of the island as a whole would be if it were an independent unit. But that is a concept which is dismissed very summarily by the authors as being too static a concept.

However, whatever the reservations might be about the accuracy of the ensuing results, I believe it has very interesting consequences that are not always appreciated by those who still believe the troubles of this island could be solved by uniting the two economies.

The third feature that struck me most visibly about the paper was the assertion that trade interaction between the two economies was much smaller than one might expect. On the face of it that appears to be so - only 6 per cent of export sales and 4.3 per cent of total sales of Southern Irish industry go to the North. Two points again are worth noting on this topic.

(i) Our earlier reservations about the quality of the production statistics in the South are again relevant here. The overstatement of the value of output for the economy as a whole in the South is almost certainly much more pronounced in the case of sales to mainland Britain and, especially mainland Europe, than in the case of sales to Northern Ireland. Hence, these crude and simple ratios almost certainly understate the true level of sales between North and South.

(ii) These simple ratios also understate the degree of corporate involvement by Southern Irish companies in the Northern Ireland economy. Examples include CRH which is the largest player in the building materials industry. AIB which now has a market share of some 30 per cent in the North, Fitzwilton which has a major presence in the retail sector via its Wellworth investment as well as most of the food processing companies who have a

significant presence in certain market segments. Golden Vale now accounts for some 40 per cent of the processing of the entire Northern Ireland milk pool.

My final comment focuses on the absence of any mention of exchange rate policy in the explanation of the performance of both economies. This is rather odd given that the two economies operated as a fully integrated monetary union for almost 60 years up to 1979. In contrast, over the period since 1979 the two economies have been subject to quite sudden and violent shifts in real exchange rates which must have had some impact on real activity.

I would like to conclude, however, by reiterating my opening remarks and again I congratulate the authors on a most wide ranging and illuminating paper. It gives me great pleasure to propose the vote of thanks to the authors on behalf of the Society.

Noel J. J. Farley: It is an honour to be seconding the vote of thanks to John Bradley and Jonathan Wright. They have provided us with a technically competent piece of work on the two regional economies in Ireland and have opened up considerations in a refreshing way to our economic, political and social concerns in recent times. I was particularly pleased to be exposed to a paper which is rich in bibliographical references on the two regional economies of the island and I am using the opportunity to add to the collections in my own university library.

In listening to this paper, I am struck by the impact on the study of the partition of the island and, in particular, of how the events in the North over the last 25 years have influenced the outline of the story that is told, the nature of the emphases that are provided and the way the economist is constrained in making policy recommendations.

A big part of the story relates to the common starting point in the North and the South where emphasis is put on the role of foreign direct investment in the policy strategies. With the troubles after 1968 that role fades in the North and is more sustained in the South although it becomes more difficult to execute in the South after 1980. The results in the North are not surprising in the light of the turmoil that was experienced and it was also of no surprise that the government sector grew in significance. But in the details of that, the story contained imperfect and limited information. The data on non-market sector employment were said to cover health, education and public administration but there is no mention of data on defence and security. Are these incorporated in the data that are provided in the paper? The authors are probably constrained by the nature of available data but the difficulty is that non-market transactions cover the educational and infra-structural areas which are so important in assessing the record of economic growth as shown in the externality analyses in the growth literature of recent years.

A second omission in the paper is the lack of reference to the movements of labour and capital. The common assumption is that labour movements between the two parts of the island are meagre but there is much less sureness about the nature of the limited movements of capital. Again this is a serious problem for those who understand theories that deal with the transmission of economic growth between regions and between nations. Theories of economic integration, for example, make much of what migration of labour and capital can do for the economic growth of interacting economies.

Finally, the economist must feel significantly restrained in undertaking policy analyses regarding the North and the South. The paper very carefully lays out Teague's position that there are historical precedents for economic integration which have not involved political integration. Bradley and Wright then quote Quigley: "I find no difficulty with the proposition that Ireland is - or should be - an island economy making the island a single market must be an exercise in synergy, not a zero sum game where a wholly insufficient quantity of existing island wealth is simply redistributed."

The economist has the natural advantage of being specialised in analyses which show how interactions between regions and/or nations can be beneficial to all the participants. Bradley and Wright have the technical expertise, the competence and wisdom to continue such work, using the same skill with which they have started it, so that the insight they provide can point out to all that interactions between the two regions can be beneficial to both economies in the island of Ireland.

Dr Roy Johnston: I am impressed by the way in which Professor Bradley has managed to get the data for his modelling; the two-State situation has raised almost insurmountable barriers to this in the past. I tried to do something along similar lines in or about 1973, and I developed a sketch for a "what if" model, in Fortran, in which I put emphasis on the opportunity for cross-linking via the sector manufacturing equipment for productive process, which has maximal import-substitution potential. I ran it with dummy but plausible data, and got a feel for the sensitivities. However, when I went to seek real data I found it so difficult that I just gave up. So I am glad that in the end the data have been obtained, in co-operation with Northern researchers. I look forward to future developments, particularly at the micro level, in the regional hinterlands which were carved up by Partition (and which were studied by Joe Johnston, Ned Stephens and others in the context of the Boundary Commission).

Dr Fitz Gerald commented on the need for an all-Ireland approach to academic research. May I add some anecdotal evidence for how the two-State situation has put barriers in the way of this happening, in a situation which illustrates the cross-linking potential with which

.I was concerned in the early 1970s, and which underpins Professor Bradley's synergistic non-zero-sum game.

In or about 1977, when I was managing the TCD Applied Research Consultancy Group, we were seeking to market the results of academic research as a service primarily to high-technology industry. We had a microelectronics unit, which was able to do useful things with "microchips". We were also into physics-based instrumentation, and had encountered the Queens laser group, then under Professor Dan Bradley, which had floated a business in Belfast manufacturing tunable dye lasers for the world laboratory market. This was a world-leading enterprise, as the tunable dye laser was Bradley's invention. The idea arose of marrying the laser with the chip, so as to stabilise the output against temperature variations, and generally enhance the controllability.

Being a small firm, and limited by cash flow considerations, the grant-aiding of research was of prime importance. We both made enquiries of our respective State agencies, and found that in the Republic there would be no grant for the R & D because the production would be outside the State, and in the UK there would similarly be no grant for R & D done outside the State. The firm, regrettably, did not survive the move of Bradley to Imperial College.

May I therefore strengthen somewhat Dr FitzGerald's call for "all-Ireland academic research" and urge the setting up of an all-Ireland agency for the support of near-market R & D in support of innovative enterprise, with the objective of enhancing the cross-linking and the synergy, and the maximising of the draw-down of EC funding for R & D which enhances cross-linking over political boundaries.