
Sustaining Competitive Advantage

Proceedings of NESC Seminar

National Economic and Social Council

nesc

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Contents

Page

ACKNOWLEDGEMENTS	viii
------------------------	------

CHAPTER 1 INTRODUCTION

1. CLUSTERS AND THE PORTER MODEL	2
2. CLUSTERS IN IRELAND	4
(i) Interpretations of the Absence of Clusters in Ireland	6
3. NETWORKING FOR COMPETITIVE ADVANTAGE.....	7
(i) Enterprise Support Policies	7
(ii) Types of Networking	9
(iii) An Example of Networking.....	10
4. INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY	11
5. CONCLUSION	12

CHAPTER 2 CULLITON'S CLUSTERS: STILL THE WAY TO GO? by Paula Clancy, Eoin O'Malley, Larry O'Connell, Chris van Egeraat

1. CONTEXT: IRISH INDUSTRIAL DEVELOPMENT AND INDUSTRIAL POLICY.....	16
(i) Foreign-Owned Industry	16
(ii) Irish Indigenous Industry.....	17
(iii) Industrial Policy and Performance Since the Mid-1980s .	18
2. PORTER'S DIAMOND MODEL	21
(i) Factor Conditions.....	22
(ii) Demand Conditions	22
(iii) Related and Supporting Industries.....	22
(iv) Firm Strategy, Structure and Rivalry.....	23

4.	THE POLICY AND RESEARCH IMPLICATIONS OF REJECTING PORTER	55
(i)	Identifying the Issues	55
(ii)	Detailed Study of Irish Policy and its Role in Irish Sectors	59
(iii)	Exploring the Internationalisation of Irish Enterprises	62
(iv)	Does Strategy Matter?	64

CHAPTER 4 ENTERPRISE SUPPORT POLICIES IN DYNAMIC EUROPEAN REGIONS: POLICY IMPLICATIONS FOR IRELAND *by Philip Cooke*

1.	INTRODUCTION	68
2.	NETWORKS AS THE KEY TO REGIONAL ECONOMIC DEVELOPMENT	69
(i)	Baden-Württemberg	70
(ii)	Denmark	71
(iii)	Emilia-Romagna	72
3.	RELEVANCE OF THIS ANALYSIS FOR IRELAND	73
(i)	From Selectivity to Networks and Clusters	73
4.	FROM STATE SUPPORT TO NETWORKING AND CLUSTERS	75
(i)	Networking	76
(ii)	Clustering	77
(iii)	Networks as a Route to Clusters	78
(iv)	The National System of Innovation	79
5.	THREE FORERUNNERS OF A NETWORK PROGRAMME	82
(i)	The National Linkage Programme	83
(ii)	Orbitech	83
(iii)	Contract Mould-Making	84
6.	CONCLUSIONS AND RECOMMENDATIONS	85

(v)	Government and Chance	23
(vi)	Determinants as a System	23
(vii)	Clusters, Clustering and Competitive Success	24
3.	COMPETITIVE IRISH SECTORS AND SELECTION OF CASE STUDIES	29
4.	COMPETITIVE PERFORMANCE OF THE THREE INDUSTRIES	32
5.	CLUSTERING AND ROLE OF DETERMINANTS OF COMPETITIVE ADVANTAGE	34
(i)	Clustering	34
(ii)	Role of Determinants	35
6.	BENEFITS FROM GROUPINGS OF CONNECTED FIRMS AND INDUSTRIES	37
7.	CONCLUSIONS	39
(i)	Policy Implications: Elements of a Post-Porter Model	41
(ii)	Support for Existing Policies	41
(iii)	Support for the Emergence and Development of Groupings of Connected Companies and Industries	41
(iv)	Attraction of FDI with Certain Characteristics	43
(v)	Technology Focus	43
(vi)	Support for Co-Operative Alliances Between Companies	44

CHAPTER 3 POST-PORTER: EXPLORING POLICY FOR THE IRISH CONTEXT 'SUSTAINING COMPETITIVE ADVANTAGE' *by Rory O'Donnell*

1.	INTRODUCTION	48
2.	BACKGROUND	49
3.	THE APPLICABILITY OF PORTER TO IRELAND	50
(i)	Interpreting the Evidence	50
(ii)	Extending the Critique of Porter	52

CHAPTER 5 NETWORKING IN IRELAND - POLICY RESPONSES
by *Dermot O'Poliverty*

SUMMARY	89
1. THE NATURE AND EVOLUTION OF THE NETWORKING PHENOMENON	89
(i) Networks and Clusters	89
(ii) Why do firms Network?	90
(iii) What form does Networking/Inter-firm Co-Operation Take?	90
2. POLICY CONTEXT - THE INCREASING IMPORTANCE OF INNOVATION	92
(i) Networking and the National System of Innovation	92
(ii) The STIAC Report	93
3. PILOT INTER-FIRM CO-OPERATION INITIATIVE	94
(i) The Danish Networks Programme - Origins and Experience	95
(ii) Key Features of the Danish Programme	96
(iii) The Irish Pilot Programme	99
4. NETWORKS - THE IRISH EXPERIENCE	101
5. FORBAIRT REVIEW OF PILOT PROGRAMME	107
(i) Key Results of the Programme	107
(ii) Operation of the Pilot Programme	108
6. FUTURE POLICY FOR IRISH NETWORKS	111
(i) FÁSNET	111
(ii) Existing Irish Programmes with a Networking Dimension	112
(iii) European Programmes	113
(iv) Private Sector Initiatives	113
(v) Policy Issues and Principles for a Full Networks Initiative	113

CHAPTER 6 THE APPLICATION OF NETWORKING IN AN IRISH SME CONTEXT
by *Brian Nangle*

1. INTRODUCTION	116
2. GETTING THE BUSINESS STARTED	117
(i) Identification of Business Opportunity	117
(ii) Initial Customers	119
3. ESTABLISHING THE MANUFACTURING OPERATION	120
4. NETWORKING FOR COMPETITIVE ADVANTAGE	124

CHAPTER 7 INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY AND THE IMPLICATIONS FOR SUSTAINING COMPETITIVE ADVANTAGE
by *Alan Gray*

1. INTRODUCTION	127
2. PERSPECTIVES ON IRELAND'S ECONOMIC PERFORMANCE	128
(i) Labour Force Skills and Education	129
(ii) Importance of Foreign Investment	129
(iii) Shift in Balance of International Trade	130
(iv) English Speaking Workforce	131
(v) Role of Convergence	131
(vi) Impact of Fiscal Adjustment	132
(vii) EU Subsidies	132
(viii) Partnership Approach to Incomes Policy	132
(ix) Social Cohesion and Poverty	132
3. RISKS	133
4. WHAT POLICIES SHOULD BE PURSUED?	134
(i) Labour Force Issues	134
(ii) Social Cohesion	136

(iii) Maintaining the Attractiveness of Ireland for Foreign Investment	137
(iv) Development Measures	138
(v) Conclusion	139

CHAPTER 8 INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY AND THE IMPLICATIONS FOR SUSTAINING COMPETITIVE ADVANTAGE
by John Travers

1. INTRODUCTION	140
2. OVERVIEW OF IRISH ECONOMIC PERFORMANCE ...	140
3. INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY	143
(i) The Importance of the Social Partnership Arrangements	146
(ii) The Pervasive Influence of EU Membership	146
(iii) The Importance of Irish-Owned Enterprise	148
(iv) The Importance of Investment in Science and Technology	148
4. FINAL COMMENTS	149

LIST OF TABLES

Table 4.1 Networks and Clusters Summary Table	77
Table 5.1 Networks Facilitated by Forbairt Under Pilot Programme	109
Table 8.1 Selective Indicators of Economic Performance 1961-1997	141

LIST OF FIGURES

Figure 4.1 A Technology Policy Concept Model for Ireland	82
Figure 6.1 Identification of Business Opportunity	118
Figure 6.2 Initial Customers	119
Figure 6.3 Business Initiation Network Structure	121
Figure 6.4 The Business Tree	122
Figure 6.5 Simple Business Model/Complex Business Model	125
Figure 8.1 Business Expenditure on In-House Performed Research and Development, 1988-1995	151

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CHAPTER 1

INTRODUCTION¹

This publication arises from a Seminar held by NESC in November 1997. The objective of the Seminar and of this publication is to stimulate debate on issues related to sustaining competitive advantage in the Irish economy. The results of research on aspects of competitive advantage undertaken for NESC were discussed at the Seminar as were the implications for Irish economic policy of a recent series of studies, by internationally renowned analysts, of Irish economic progress and prospects.

The research undertaken for NESC was part of a broad research programme on output and employment. This included three projects on indigenous development. The first of these was an examination of the role of clustering in three Irish industries: the software, dairy and music industries. This study was undertaken by researchers from the Michael Smurfit Graduate School of Business, UCD, and the Economic and Social Research Institute. The three case studies were issued at the Seminar as NESC research papers.² The general issues arising from this research are discussed in the paper in this collection by Paula Clancy, Eoin O'Malley, Larry O'Connell and Chris van Egeraat. Rory O'Donnell's response to the findings of this research is reproduced as Chapter 3. Key issues arising from these papers are summarised in Section 2 of this introduction.

The second study in the NESC research programme on output and employment was a study of policy in dynamic European regions undertaken by Professor Philip Cooke, Centre for Advanced Studies in the Social Sciences, University of Wales. This was published in the

1. This introduction was drafted by Mr. Noel Cahill of the Council's Secretariat.
2. O'Connell, L., C. van Egeraat and P. Enright (1997), *Clusters in Ireland - The Irish Dairy Processing Industry: An Application of Porter's Cluster Analysis*, NESC Research Series Paper No. 1; Clancy, P. and M. Twomey (1997), *Clusters in Ireland - The Irish Popular Music Industry: An Application of Porter's Cluster Analysis*, NESC Research Series Paper No. 2; O'Gorman, C., E. O'Malley and J. Mooney (1997), *Clusters in Ireland - The Irish Indigenous Software Industry: An Application of Porter's Cluster Analysis*, NESC Research Series Paper No. 3.

The complete study, incorporating the three case studies is available on request from the NESC Secretariat: Clancy, P., E. O'Malley, L. O'Connell and C. van Egeraat. *Clusters in Ireland: A Study of the Application of Porter's Model of National Competitive Advantage to Three Irish Sectors*.

industries develop to serve it. Investment in education, training, R&D and infrastructure reinforce the process. As expertise further develops, it is spread to other industries that require similar skills, technologies and infrastructure. This process continues and spreads to other related industries. The growth and success of individual firms spills over to others' (Culliton, 1992, p.74).

The Culliton recommendation on clusters was informed by the work of Porter (1990), *The Competitive Advantage of Nations*. The research undertaken for NESc adapted Porter's methodology. The focus of Porter's work is on explaining why a nation becomes the 'home-base' for successful international competitors in an industry. Porter used the concept of home-base because he wished to explain not only trade but also foreign investment: 'a new theory must explain why a nation is home-base for successful global competitors in a particular industry that engage in both' (Porter, 1990, p.19).

The classical explanation of trade is the theory of comparative advantage based on factors of production. According to this theory, countries will specialise in those industries to which they are best suited given their endowment of factors of production which include labour, capital and natural resources. Countries will engage in trade with other countries which have a different endowment of factors and hence different areas of specialisation. While this theory can explain much of world trade, it has long been recognised that there are deficiencies in this theory. In particular, the fastest growth of world trade has not been between countries with differences in their basic factors of production (such as developed and less developed countries) but between advanced countries with similar factor endowments. As a leading American economist, Paul Krugman has put it:

If we are all pretty much the same, why do we need to ship such huge volumes of goods back and forth across the oceans? (Krugman, 1994, p.231).

During the 1980s, Krugman and other economists developed a new theory of international trade. This new theory used economies of scale, external economies and the dynamics of learning to explain international trade. For example, if a particular industry based in a particular country manages to capture economies of scale, then this industry can enjoy a cost advantage even in the absence of differences in basic factor endowments. The US, for example, has captured economies of scale in the aircraft industry. Similar reasoning applies to the cumulative effects of learning. Once an industry becomes established in a particular country (or region), then the benefits of learning may imply that its firms gain technical expertise in this particular industry which can provide a basis for trade

Council's Report, *Networking for Competitive Advantage* (NESc Report No. 100, 1996). Professor Cooke's Seminar paper discussed the policy implications of this study. This is reproduced as Chapter 4 of this collection. Responses were given by Dermot O'Doherty of Forfás focusing on the policy responses in the Irish context and by Brian Nangle of Munkata Precision Injection Mouldings who focused on the experience of SMEs with networking. Section 3 of this introduction provides a summary of the key issues arising in each of these three papers. The third NESc output and employment study was an examination of Ireland's investment performance. This has been published recently by the Council as *Private Sector Investment in Ireland* (NESc Report No. 103, 1998).

The final session of the Seminar included two papers. The first was presented by Alan Gray, Managing Director of Indecon Economic Consultants, on the conclusions of a recent series of analyses of the Irish economy by internationally recognised economists. These studies were published in November 1997 under the title *International Perspectives on the Irish Economy*.³ The respondent to this paper was John Travers, Chief Executive Officer, Forfás. Key issues arising from these papers are outlined in Section 4 of this introduction.

The Seminar was opened by Mr. Paddy Teahon, Chairperson of the NESc who outlined the context of the research. In relation to the research on clustering by Clancy *et al* which was informed by the theory developed by Porter (1990), he identified three broad options: One could take Porter's theory as a guide to policy, one could reject Porter's theory as being of relevance to policy or one could use a modified version of Porter's theory to help inform policy in Ireland.

1. CLUSTERS AND THE PORTER MODEL

The Council's work on clusters was motivated in part by the recommendation in the Culliton Report that industrial policy should be directed towards 'the establishment of industrial clusters around sources of national competitive advantage'. The dynamic of clustering was well summarised in the Culliton Report:

Industrial development in successful economies has usually been preceded by the development of such clusters. Thus: first one industry emerges from the local environment; soon supplier

3. Gray, A. (1996), *International Perspectives on the Irish Economy*. Dublin: Indecon Economic Consultants

with other countries even if these countries have similar factor endowments in broad terms. Porter acknowledges the value of the insights of new international trade theory. Factors such as economies of scale provide a basis for trade in many industries but this leaves unanswered the central question of interest to Porter: 'Which nation's firms will reap them and in what industries?' (Porter, 1990, p.16).

Porter's theory is that the answer to the question of why a nation gains international success in a particular industry lies in four broad attributes of a nation. These four attributes constitute the 'diamond': factor conditions, demand conditions, related and supported industries and firm strategy, structure and rivalry. Essentially, Porter argues that certain attributes of a nation shape its success or otherwise in particular industries. Porter acknowledges that successful global firms combine home-based advantages with other advantages derived from locating activities in other nations. Indeed, he warns that firms who fail to do this are vulnerable. However, he argues that, despite globalisation, home based advantages are usually more significant.

The focus of Porter's analysis is on competition in narrowly defined industries or industry segments. However, these narrowly defined industries are seen as part of a broader cluster. Porter finds that nations succeed not in isolated industries, but in *clusters* of industries connected through vertical and horizontal relationships. Thus, in Porter's terminology a cluster is a group of industries connected through vertical and horizontal relationships. There is a geographic dimension to clustering in Porter's usage of the term. Porter argues that his theory can also be applied at a smaller geographical level to explain why successful firms in a particular industry are often concentrated in particular cities or states within a nation.

2. CLUSTERS IN IRELAND

The results of the research undertaken for NESC on clusters were discussed in the first session of the Seminar which was chaired by Dr. Frank Barry, Department of Economics, University College Dublin.

The approach adopted in the NESC research on the applicability of a policy of fostering clusters in Ireland was to select three competitive sectors and to analyse the determinants of competitive advantage in each sector using the framework developed by Porter. The three sectors included one from indigenous manufacturing (the dairy sector), one in internationally traded services (music) and one in sectors engaged in sub-supply to the multinational sector (software). The general findings

which emerged from this research are presented in the paper by Clancy *et al* in this report.

The central question considered by the consultants was should Ireland's industrial policy be focused on the development of clusters of related industries, according to the model developed by Porter. Based on their evidence, the consultants conclude that this should not be the focus of policy. In each of the case studies, the consultants found that while many aspects of Porter's suggested determinants of competitive advantage are significant, there were a number of important divergences from Porter's model. These arise in relation to the limited role of domestic demand, domestic rivalry, domestic suppliers and the greater role of foreign owned multinationals in Ireland. More generally, the consultants found an absence of Porter-style clusters in Ireland. Despite this absence they point out that indigenous industry in Ireland has performed relatively well over the past eight to ten years.

Notwithstanding the absence of fully developed clusters in Porter's sense, the consultants still found that there *are* appreciable benefits arising from groupings of connected firms and industries. This was most obvious in the case of the indigenous software industry in which, 'there is a rich degree of beneficial interaction between companies within the sector, as well as between the software industry and other connected or related industries in Ireland'. In the dairy industry, they found that 'the direct and indirect information flow and knowledge transfer within the grouping of processors, customers, supporting organisations and related industries was seen as a valuable factor' (Clancy *et al*, p.20).

Given the advantages of groupings of companies and industries, the consultants conclude that it would be advantageous for industrial policy to include a somewhat more explicit focus on groupings of firms or industries although these would differ from Porter's concept of clusters. Such a focus would include a recognition that foreign influences can be as relevant as domestic ones and an acknowledgement of the positive role of multinationals in Ireland. They do not specify the precise form of grouping which is appropriate and say that this is likely to vary from one industry to another.

Other policy recommendations by Clancy *et al* include support of existing industrial policies, the attraction of foreign direct investment (FDI) with certain characteristics, a focus on technology and support for co-operative alliances between companies.

(i) Interpretations of the Absence of Clusters in Ireland

In his response, O'Donnell welcomed the conclusion of Clancy *et al* that Porter's theory does not explain the development of the dairy, music and software industries. Based on the research of Clancy *et al*, he identifies two interpretations of the absence of clustering in the Irish economy. *He labels the first of these the 'nascent cluster' interpretation. The limited clustering in the Irish economy could be interpreted as a reflection of the limited sense in which indigenous industry in Ireland has genuine international competitive advantage. This interpretation would suggest building on those groupings of companies or industries that do exist in order to develop deeper Porter-style clusters. Although O'Donnell acknowledges that this interpretation is logically valid, he argues that it does not capture the dynamic of the Irish economy. The alternative interpretation proposed by O'Donnell is that the limited fit between the Irish sectors and the Porter model is likely to be permanent.*

It reflects features of Irish development which are not consistent with Porter's key idea of 'home base'. Irish companies may not benefit from external economies associated with inter-firm interaction within Ireland, and limited geographic concentration may emerge. Transnational linkages may provide such interaction.

Rather than see the limited fit between Porter and the Irish economy as evidence of Ireland's late development, the 'facts' might be viewed as a harbinger of a new model or pattern of industrial development, with new possibilities for late developing peripheral countries, not included in Porter's theory (O'Donnell, this volume).

O'Donnell proposes that future research should concentrate on understanding the particular pattern of development in Ireland rather than looking abroad to seek an alternative model. He identifies two dimensions of such research. One area of research is a detailed study of how Irish industrial policy actually works in its relations with enterprises and sectors. Among other things this could help to clarify the appropriate balance in policy between firm and sector level support. The second area identified for research is exploration of the internationalisation of Irish enterprises.

Discussion at Seminar

In introducing the papers, the Chairperson of this session pointed out that in addition to macroeconomic factors, the development of a more complex industrial structure is relevant to the recent strong performance of the Irish economy. There are a number of theories which relate the achievement of self-sustaining growth to the development of a more complex industrial structure. Porter offers one such theory but other

theories emerge from the literature on economic geography, endogenous growth and development economies. One can reject Porter's model, but still think eclectically in terms of different theories of industrial complexity. The economic geography literature suggests that a poorer country will begin to converge with richer countries when "increasing returns sectors" (i.e. sectors where output grows more rapidly than inputs) begin to increase their representation in economic activity. This literature also shows that external economies can lead to self-sustaining growth. The endogenous growth literature emphasises the importance of sectors exhibiting learning-by-doing to sustained economic growth. Similar themes feature in literature on development economies, particularly the Big Push theory (for a discussion of these theories in the context of recent Irish growth experience see Barry, 1998).

In response to the papers a wide range of specific points were raised. One of the questions was why the study did not look at existing clusters such as the furniture industry in Navan. The authors pointed out that the furniture industry does not meet Porter's criterion of accounting for a significant share of exports.

In response to a question concerning the role of government in the study on clusters, the authors acknowledged that the role of government is important, but that their study identified its role indirectly through the various factors which comprise the 'diamond'.

In discussing the relevance of clusters or sectors to policy in the Irish context it was noted that existing policy has a sectoral dimension; for example, there is a policy focus on the consumer foods industry. The National Software Directorate is another significant sectoral policy initiative. The advantages of a firm-centred approach to enterprise support were discussed but it was also noted that a firm-centred approach does not preclude a role for policy in relation to groupings of firms.

3. NETWORKING FOR COMPETITIVE ADVANTAGE

The role of networking was discussed in the second session of the Seminar which was chaired by Professor Frances Ruane, Department of Economics, Trinity College Dublin.

(i) Enterprise Support Policies

Professor Philip Cooke of the University of Wales undertook a study of enterprise support policies in dynamic European regions which was published by the Council in 1996. The regions of most relevance for

comparative study of policy from Ireland's point of view are those in which small and medium enterprises (SMEs) predominate. Based on this consideration, the following regions were chosen: Emilia Romagna (Italy), Baden-Württemberg (Germany), Denmark, Wales and Steiermark (Austria). The paper by Cooke in this report draws out the policy implications of this study for Ireland.

Cooke identifies three dimensions in respect of which it is desirable to take measures in support of building competitive advantage for Irish firms:

- Networking of firms;
- Clustering of firms;
- The National System of Innovation.

He recommends the development of clusters in Ireland as a medium-term objective. This appears to be in conflict with the conclusion of Clancy *et al* who state that Irish industrial policy should not be based on Porter's model of clusters. However, there are differences between the connotation of the term "cluster" as used by the different authors. Furthermore, it was pointed out by the Chairperson of this session that there is confusion in relation to the meaning of the concepts of clusters and networks. Consequently, it is worth examining how the authors use these terms.

Clancy *et al* consider that groupings of firms have a role in industrial policy, but, as noted above, they distinguish such groupings from Porter's clusters in a number of ways. These include a recognition that foreign influences (e.g. suppliers) can be as significant as domestic ones and an acknowledgement of the positive role of the FDI in Ireland. In relation to the second qualification of Clancy *et al* regarding FDI, Cooke's approach to clusters explicitly recognises that clusters can be based on FDI. In his report on dynamic regions for the Council, Cooke described the automotive and electronics clusters in Wales, in which the core enterprises are FDI companies. The first qualification of Clancy *et al* concerning foreign influences in a grouping of companies is not explicitly addressed by Cooke but there is nothing in his concept of clusters which would preclude a significant role for foreign influences.

While Cooke's concept of clusters is more flexible than that of Clancy *et al*, this does not mean that he would classify all groupings of firms as clusters. Cooke defines a cluster as a 'geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue.

that share specialised infrastructure, common opportunities and threats'.⁴ Clusters should be important to their economy and have a collective vision. The key feature of a cluster in the sense in which the term is used by Cooke is the active communication and dialogue between the firms, industries or support organisations that constitute the cluster. This active dialogue supports ongoing upgrading and innovation within a cluster.

This concept of a cluster is not synonymous with a network. Cooke defines a network as 'a group of firms with restricted membership and specific, even contractual objectives likely to result in mutual gains'. A network in this sense is a smaller and tighter entity than a cluster. Clusters do not have formal membership requirements. Several networks could exist within a single cluster. Moreover, this definition of a network cannot cover all the senses in which the term is used in the context of economic development. For example, the paper by Brian Nangle uses the term network to describe business relationships in a wider sense.

Cooke recommends that attention first be devoted to networking as a policy measure aimed at the indigenous Irish manufacturing sector through a Network Co-Operation Programme of the kind pioneered in Denmark. It is worth noting that many other countries, including Britain, Australia, New Zealand, Canada and several US states have developed programmes to promote networks, inspired by the Danish model. Cooke recommended that the feasibility of a network programme in Ireland should first be tested through a pilot programme. A network programme could be a first step towards the development of clusters. As the network programme proceeds, the number of firms receptive to this approach would increase and within a few years serious attention could be given to promoting the broader concept of clustering amongst receptive firms.

Cooke also identifies the need to build or strengthen an Irish National System of Innovation. A National System of Innovation has been defined as 'the institutions and economic structures which affect the rate and direction of innovative activities in the economy' (Edquist and Lundvall, 1993). He proposes the development of a consensus among players in the innovation and enterprise support field. Such consensus is required in order to focus resources for innovation on areas of strategic priority.

(ii) Types of Networking

Dermot O'Doherty of Forfás reports on developments in networking in Ireland, drawing on two reports arising from the Pilot Programme on networks which commenced in November 1996. He distinguishes four

4. The definitions of clusters and networks from Cooke's paper were originally proposed by Rosenfeld (1995).

different types of networking: informal networking in which firms help each other; membership based networks such as trade associations; customer-supplier networks; and independent networks of firms comprising small formal groups who co-operate in a significant way. The latter is consistent with how Cooke used the term network and is the focus of the Pilot Programme.

The Pilot Programme was successful in developing a formal networking methodology and seventeen new networks are at some stage of development. Trained network facilitators proved to be important. The feedback from the companies targeted in the Pilot Programme suggests that a high proportion of SMEs are receptive to this approach. It appeared easier to achieve co-operation between firms from different sectors than firms within the same sector, because of competitive pressures. A key benefit which emerged from the review of the Pilot Programme was that participation in the network process helped small companies to address strategic development issues. O'Doherty emphasises the need for any new programme to be integrated with existing schemes and programmes with a networking dimension.

(iii) An Example of Networking

The paper by Brian Nangle provides a perspective on the role of networking from the manager of a successful Irish manufacturing company. As noted above, Nangle uses the term networking to describe the development of a wide range of key business relationships. The fascinating story is told of the formation and development of Munkata Ireland. Internationalisation has been important to this company, even before the business was formally established. Nangle describes how he used his contacts to systematically identify a business opportunity and to form a joint venture with the leaders in the relevant technology field, Munkata Japan. The initial customers, which were targeted *before* the establishment of the business, were located in Wales. Nangle describes how the continuing development of this business requires an intensification of the network of interactions with each customer. This involves movement from a simple business model in which the relationship with the customer is concerned with price and delivery to a much more complex model in which the relationship with the customer is concerned with a range of other factors including quality, continuous improvement, employee skills, technology and communications. The development of the business also involves the development of the company's own capacity for innovation, emanating from involvement in structured R&D activities. To this end there are plans to develop interactions with two third level colleges.

Discussion

The discussion centred on definitional issues concerning formal and informal networks and network activity by the private sector and the state. The importance of existing networking activity through private sector associations was emphasised by a number of speakers.

4. INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY

This session was chaired by Mr. Paddy Teahon, Chairperson, NESC.

The paper by Alan Gray draws in part on a recently published book, *International Perspectives on the Irish Economy*, of which he is editor. This book includes contributions by leading economists from Europe and the United States. Three questions are considered: the reasons for Ireland's remarkable economic performance, the risks to sustaining growth and competitive advantage and the policies that should be pursued.

In relation to the policies required to sustain growth, Gray focuses on four areas which merit particular attention. First, labour force issues and a number of proposals designed to increase the supply of labour are discussed. The second area requiring greater attention is social cohesion - the idea of a basic income conditional on participation is considered. Third, the need for policy to maintain the attractiveness of Ireland for foreign investment is emphasised. Finally, he discussed the need for an ongoing analysis of longer term developmental issues. This includes aspects of industrial policy as explored in the other Seminar contributions. Gray also emphasises the importance of regulatory and competition policy and also the need to anticipate changes in economic geography which could give rise to new opportunities or risks.

John Travers expresses his agreement with a great many of the conclusions of the various contributors in Alan Gray's book. However, there are a number of areas which he considers merit greater emphasis. These are:

- the *social partnership arrangements* in place in Ireland since 1987;
- the pervasive influence of *EU membership* on developments in Ireland;
- the importance of an *Irish owned or home based* enterprise sector as a foundation for economic growth; and

- the importance of *investment in science and technology* as an instrument of economic growth.

This paper concludes with the identification of a number of potential points of policy leverage in sustaining Ireland's competitive advantage. It is emphasised that future progress will depend on a systematic and well-researched approach to policy formulation and implementation.

5. CONCLUSION

Ireland faces a challenge in sustaining its current strong economic performance. Of course, for purely cyclical reasons, the rate of economic growth will fluctuate. However, the longer term issue is how to maintain a high average rate of growth notwithstanding inevitable fluctuations around this average.

It is generally acknowledged that FDI has been a critical factor in Ireland's economic success. A number of the authors in Alan Gray's study identify possible threats to Ireland's ability to continue to attract a high level of FDI. One of the authors in that study, Jeffrey Sachs, highlights the intensely competitive nature of the FDI market and emphasises the critical importance of maintaining cost competitiveness. He notes that Ireland has a much higher level of taxation and public expenditure than its Asian competitors. Gray points to the difficult challenge of addressing the problem of social cohesion while simultaneously achieving cost competitiveness. There is no doubting the importance of cost competitiveness. However, if Ireland is to sustain a high standard of living and address social cohesion, cost competitiveness will not be sufficient. Leaving aside the variety of policies necessary to address social cohesion directly, it is also necessary to develop deeper sources of competitive advantage in order to achieve a high and rising standard of living.

A key policy issue, therefore, is how to develop such deeper sources of competitive advantage. The NESC research summarised here sought to develop insights as to how this can be achieved. It had been thought that one aspect of this policy was to develop industrial clusters around sources of national competitive advantage. The findings of the research by Clancy *et al* indicate that there are difficulties in applying Porter's model of clusters to Ireland. Nonetheless, they do identify significant advantages from interaction between groupings of companies and industries of various kinds. Cooke supports the development of clusters as a medium-term objective but his approach to clusters is more flexible than the Porter model which is rejected by Clancy *et al*.

What is the significance of groupings of firms or industries? Groupings of firms of various kinds facilitate the flow of knowledge which in turn can support innovation. This can be at its most dynamic when leading customers, suppliers, related industries and research institutes are all located in the same region and there is intensive interaction and sharing of knowledge across firms. Clusters of this scale and depth are unlikely to develop in Ireland although as has been illustrated, knowledge flows and interaction across more limited groupings can still be beneficial.

There are various ways in which groupings of firms or industries may be of policy relevance. This is most obvious in relation to the first element of the Porter diamond: factor conditions. Porter argues that advanced and specialised factors of production, such as highly skilled personnel, industry specific infrastructure and local scientific expertise in a particular field are the *sine qua non* of competitive advantage. Addressing these issues, in Porter's view, is the responsibility of both firms and governments. In nearly every competitive industry in Porter's study, leading firms did not simply accept the status quo in relation to factor development but took active steps to upgrade it. Investment in factors can be done directly by firms, but particularly for the smaller firms, this may sometimes be best done collectively, through institutions such as trade associations. In view of the potential reduction in structural funds post 1999, industry associations may need to play a greater role in factor development in Ireland, for example in relation to training. The Education Technology Investment Fund, although not consciously part of a cluster strategy, is an example of a policy measure to address the collective needs of groups of firms. This initiative is built on the expectation of private sector support. An important dimension of innovation is the relationship between research institutions, including universities and firms. The Cooke paper in this collection emphasises the need to develop consensus between those involved in the area of innovation and enterprise in order to achieve a focus on key priorities for research and innovation.

The papers brought together here do not propose any blueprint on the approach to be adopted to policy in relation to groupings of firms. There is evidence, as is clear from the papers by Philip Cooke and Dermot O'Doherty, that the promotion of networks of firms, in the sense of small groups of firms who co-operate in a significant way, can be beneficial. Cooke argues that the promotion of networks could be the first step in the development of wider clusters. The views expressed at the Seminar on the approach to groupings of firms ranged from the argument that active industrial policy should be almost solely focused on individual firms to the view that Porter-style clusters should be the objective. Insofar as there was a general view, it was that groupings of firms or industries are

beneficial but there is not any specific model which can be adopted. It is hoped that this publication will stimulate debate on how firms can both compete and work together to address collective challenges in order to sustain competitive advantage.

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CHAPTER 2

CULLITON'S CLUSTERS: STILL THE WAY TO GO?

by

*Paula Clancy, The Graduate School of Business, UCD,
Eoin O'Malley, Economic and Social Research Institute,
Larry O'Connell, The Graduate School of Business, UCD,
Chris van Egeraat, Dublin City University*

In recent years, much discussion of Irish industrial policy has focused on the proposition that a competitive and successful industrial performance requires the development of competitive advantage in a range of interlinked industries or sectors. This discussion reflects the insights of international researchers, particularly Porter (1990). It has also influenced the Culliton review of industrial policy, which recommended that policy should aim to develop clusters of related industries, building on sources of national competitive advantage (Culliton, 1992, pp. 73, 74).

In order to explore further the implications of this issue for Ireland, the National Economic and Social Council (NESC) commissioned us to undertake a study to examine the importance of clusters for industrial development, and the suitability of Porter's diamond model, in the Irish context. Our study analysed the experience of three relatively successful Irish sectors and considered the extent to which the presence of clusters of related or connected industries has been important in accounting for the degree of competitive success attained in each case. This paper outlines the principal findings and conclusions from the study.

To set the paper in context we first provide a brief review of some of the principal features of recent Irish industrial development. We then describe Porter's model and outline those critiques of the theory which are of particular relevance to our research. We discuss in some detail the manner of selection of the three case study industries which offer important insights on Porter's cluster methodology. The findings of the research are analysed under four main headings: competitiveness, clustering, role of determinants of competitive advantage and benefits from interactions between groups of connected companies and industries. Finally, we present our conclusions from the findings and offer some suggestions for policy.

1. CONTEXT: IRISH INDUSTRIAL DEVELOPMENT AND INDUSTRIAL POLICY

Since the time when Ireland abandoned the protectionist policies which had been in operation from the early 1930s to the early 1960s, industrial policy has been "outward-looking" and has aimed to develop internationally competitive industries. Building this competitiveness has come to be seen as a primary objective of industrial policy in order to enhance the prospects for increasing employment and incomes.

(i) Foreign-Owned Industry

Under this outward-looking policy, industrial growth picked up considerably in the 1960s and 1970s compared with the prolonged recession of the 1950s. The trends in industrial output, exports and employment all showed a sustained improvement. A prominent feature of this performance was that the main source of growth of industry in Ireland after the end of the 1950s was new investment by foreign-owned multinational companies which chose Ireland as a site in which to produce for export markets. From the beginning, such export-oriented foreign investment was motivated mainly by tax concessions, grants and relatively low wage costs (by Western European standards). Later, after Ireland joined the EC in 1973, there was also the further significant attraction of assured access to the large EC market. An additional enticement for many overseas investors since the 1970s has been the fact that the Irish education system managed to produce a good supply of people with certain key types of qualifications at times when these were in strong demand for some rapidly growing industries internationally, e.g., electronics, pharmaceuticals and, more recently, software.

Although the export-oriented foreign-owned firms contributed substantially to industrial growth in the 1960s and 1970s, employment in foreign-owned manufacturing peaked in 1980 and then declined by 11 per cent over the period 1980-87. Even while their employment was declining the output of foreign-owned firms continued to grow quite strongly for much of the 1980s. However, most of this growth occurred at very high rates in a small number of sectors which purchased a relatively low proportion of their materials within the local economy while withdrawing very substantial profits from the country. Taken together with the declining employment trend in foreign-owned industry, this led to a growing perception that heavy reliance on foreign-owned firms was no longer an adequate strategy for industrial development.

(ii) Irish Indigenous Industry

Even during the period of strong industrial growth in the 1960s and 1970s, native Irish-owned or indigenous industry never fared very well. Indigenous industry did not have a great deal of success in developing exports and at the same time was quite rapidly losing market share to competing imports in the home market as the protectionist measures were dismantled. In this context, there was no employment growth in indigenous industry between the mid-1960s and the end of the 1970s. Then in the period 1980-1988 its employment fell sharply by 22.3 per cent. Essentially in the late 1960s and the 1970s, native Irish industry was just about able to maintain its overall employment level while domestic demand was growing sufficiently strongly to compensate for the loss of market share to competing imports. But when for a variety of reasons domestic demand weakened considerably in the 1980s, employment in this sector of the economy slumped.

Within indigenous industry however some sectors fared relatively well. These mostly involved either basic processing of local primary products such as food, or else sheltered or "non-traded" activities which have a significant degree of natural protection against distant competitors and do not usually enter much into international trade. In addition, there was considerable growth in the numbers of small Irish-owned manufacturing firms. In fact the rate of establishment of new small native industrial firms in the 1970s in relation to the size of indigenous industry was relatively high, compared to North America or the United Kingdom (O'Farrell and Crouchley, 1984).

However, there was a particularly rapid decline in the more internationally traded activities among the larger Irish-owned firms. Such larger firms were generally engaged in activities with significant economies of scale: hence their own relatively large size, by Irish standards. However, under free trade these were generally not large enough to match still larger and longer established foreign competitors and so were at a disadvantage due to inferior economies of scale which hastened their decline (O'Malley, 1989, Ch.6).

Irish indigenous industry was relatively lacking in large-scale enterprises by the 1980s, and there was generally little indigenous activity in those sectors in which economies of scale are most important and which are consequently dominated by large firms in more advanced European economies (O'Malley, 1992). The existence of significant economies of scale and the consequent presence of large established firms in a range of important industries in more advanced industrial countries presents an obstacle to the development of such industries by new or small firms in a

country such as Ireland, which has been relatively late in developing and which trades freely with more advanced economies.

Other significant types of barriers to the development of latecomers also arise from the strength of established competitors elsewhere. For example, it can be difficult for new or small local firms in a late-industrialising country to match the technological capabilities already developed by companies in advanced economies in sectors where technology is of key importance. Similarly, if strong marketing is a key requirement for an industry, the established marketing strength of existing firms presents an important entry barrier for new or small firms. It is likely that such barriers or obstacles to the development of latecomers largely explain the relatively poor performance of Irish indigenous industry up to the mid-1980s.

In the early 1980s, Telesis (1982) and the NESC (1982) made a number of criticisms of the practice of relying so heavily on foreign investment. The trend of events in the first half of the 1980s, including the unprecedented and continuous decline in employment in foreign-owned industry, tended to give weight to their view that more had to be done to develop a stronger indigenous sector. In this context, there were some significant changes in industrial policy.

(iii) Industrial Policy and Performance Since the Mid-1980s

In particular, since the White Paper on *Industrial Policy* (1984), there has been an increased emphasis in official policy statements on the aim of developing Irish indigenous industry. More specifically, policy statements after 1984 referred to a need for policy towards indigenous industry to be somewhat more selective, aiming to develop larger and stronger firms by building on those with a reasonable track record, rather than assisting a great many firms indiscriminately. Policy was also intended to move towards concentrating state supports and incentives more on correcting specific areas of weakness which would be common in indigenous firms (but not so common in foreign-owned firms), such as technological capability, export marketing, and management skills (*Industrial Policy*, 1984, Chapters 1 and 5; Department of Industry and Commerce, 1987, Chapter 2). Another notable theme in statements of industrial policy objectives after the early 1980s was the objective of not only attracting foreign enterprises to produce in Ireland, but also aiming to strengthen their linkages and their degree of integration with the Irish economy.

In 1992, the Review of Industrial Policy (Culliton, 1992, p.67) recognised that greater efforts had been undertaken by then to promote

indigenous industry, but still considered that there had not been a "full commitment" to this process. The Group called for a more decisive shift in the focus of policy towards developing indigenous industry. This objective has since been re-emphasised.

However, even going back to the mid-1980s, there were in fact quite a number of relevant policy changes, introduced over a period of some years. For example, the Company Development Programme was introduced in 1984, with the aim of building on selected indigenous companies which were regarded as relatively promising. In addition, the National Linkage Programme, with the aim of further developing selected indigenous sub-suppliers to foreign multinational companies, was launched in 1985. After the mid-1980s efforts were also made to award grants more selectively to firms which would have good prospects for growth in international markets, in order to concentrate resources more on building larger and stronger firms (O'Malley, Kennedy and O'Donnell, 1992, chapter 3, pp. 94, 95). Significantly, too, the award of such grants was made increasingly dependent on firms having prepared overall company development plans.

Furthermore, the share of the industrial policy budget going to support capital investment declined from 61.2 per cent in 1985 to 46.8 per cent in 1992. At the same time, a range of new initiatives were introduced to strengthen export marketing capabilities of indigenous firms, and the share of the industrial policy budget going to support marketing increased. Science and technology policies for industry were also reorganised considerably after the mid-1980s, with new technology policy measures being introduced, while the share of the industrial policy budget going to science and technology measures increased significantly. New management development grants and other measures intended to strengthen the quality of management in indigenous firms were also introduced. These policy changes were accompanied by reorganisation among the industrial development agencies, including the separation - within the IDA - of responsibility for promoting indigenous industry from responsibility for the task of encouraging overseas investors.

Over the past decade or so, Irish industry has had a strong growth performance, both by comparison with trends earlier in the 1980s and by comparison with trends in other industrial countries. An increase in foreign direct investment was a large part of the reason for this, but there was also a very significant improvement in Irish indigenous industry.

Total manufacturing employment in Ireland fell by 16.6 per cent in the eight-year period between 1980 and 1988. After that, however, it grew by 12.6 per cent over the next eight years, from 1988 to 1996. In Irish indigenous manufacturing, employment fell by as much as 22.3 per cent

between 1980 and 1988, but it then increased by 6.5 per cent between 1988 and 1996. The decline by 22.3 per cent in indigenous manufacturing employment in 1980-88 was a very much weaker performance than the decline in manufacturing employment by 11.7 per cent in the EU (15 countries) and by 4.8 per cent in the OECD over the same period. In marked contrast, however, the increase in indigenous manufacturing employment by 6.5 per cent in 1988-96 marked a much stronger performance than the continuing decline in manufacturing employment by 14.5 per cent in the EU (15 countries) over the same period. It was also considerably more impressive by comparison with the decline in manufacturing employment recorded in 1988-96 in the other major OECD economies: Canada (-15.0 per cent), the USA (-4.6 per cent), Australia (-4.7 per cent) and Japan (-0.1 per cent).¹

Its failure to make much progress in developing exports had been a long-term weakness of Irish indigenous industry. *Census of Industrial Production* (CIP) data show that 26.6 per cent of the output of indigenous manufacturing was exported in 1986. This indicates little or no change from estimates of about 26 or 27 per cent in 1973 and 1976 (O'Malley, 1989, Chapter 6). However, the CIP data show an increase from 26.6 per cent in 1986 to 33.4 per cent in 1990 and 35.9 per cent in 1995. The value of indigenous manufacturing exports, measured in current US dollars, increased by 155.5 per cent in the period 1986-95. This compares favourably with the increase by 139.0 per cent for the manufacturing exports of the EU, and the increase by 145.1 per cent for the OECD, also valued in current US dollars, in the same period 1986-95.²

Thus, the employment and export performance of Irish indigenous industry over the past decade or so was much better than previous experience and was also relatively strong by international standards. This has almost certainly been the most successful period since the foundation of the state for the development of internationally competitive Irish indigenous industry and suggests that the policies introduced since the mid-1980s to give a new impetus to the development of a stronger, competitive indigenous sector have had some success.

1. The employment data for Ireland which are quoted here come from the Forfás employment survey. For the EU, the data are taken from the OECD's *Historical Statistics 1960-1993*, for years up to 1993, and these are updated to 1996 using data from *European Economy - Supplement 4*, May 1997. For the OECD in the period 1980-88, the data are also taken from the OECD's *Historical Statistics 1960-1993*. For the individual OECD countries in the period 1988-96, the data are derived from the OECD's *Main Economic Indicators*.

2. OECD, *Historical Statistics 1960-1995*.

In the early 1990s, the Culliton Report recommended that policy should aim to develop clusters of related industries in order to build sustained competitive advantage. This means aiming to develop clusters of sectors, each of which would be internationally competitive and would be related or connected to each other in ways which would help to develop and sustain the competitive advantage of each sector in a cluster in a mutually reinforcing manner. This recommendation was influenced by international research, particularly Porter (1990), and indeed the Culliton report (page 73) alluded to examples drawn from Porter to illustrate the concept of clusters.

In order to explore the implications of this issue for Ireland, our study was undertaken to examine the importance of this type of cluster for industrial development, and the suitability of Porter's clustering model in the Irish context. The study undertook the analysis of three relatively successful Irish sectors. It considered the extent to which the presence of clusters of related or connected industries has been important in accounting for the degree of competitive success attained in each case and it assessed the applicability of Porter's approach to these cases. In view of the centrality of Porter's theoretical model in this process, the next section very briefly outlines the principal features of Porter's model and the main critiques of that model.

2. PORTER'S DIAMOND MODEL

Porter's model is discussed in detail in Porter (1990) and will be only briefly summarised here. His thesis is that to understand why nations gain competitive advantage the focus should be on particular competitive industries within the nation. For national competitive advantage to occur, however, it is not sufficient to have a number of unconnected successful industries; rather it is necessary to develop clusters of competitive indigenous or "home-base" industries which are linked together through a range of common, supporting conditions. Porter maintains that all of this is much more likely to occur if the clusters are located in the same geographical space since proximity facilitates the flow of information central to the capability to innovate and to upgrade competitive advantage. Porter states that this claim can be empirically supported. His study found that "the phenomenon of industry clustering is so pervasive that it appears to be a central feature of advanced national economies" (Porter, 1990 p.149).

According to Porter the competitive advantage of an industry derives from four different determinants which are created within the home base of the nation state: factor conditions, demand conditions, related and

supporting industries, and firm strategy, structure and rivalry. He also identifies two residual influences: government and chance events.

(i) Factor Conditions

The quantity and quality of factors of production, such as labour, capital and infrastructure, are clearly one determinant of competitive advantage. However, in Porter's view the factors of greatest significance to sustainable competitive advantage are those which are *advanced* and those which are tailored to the needs of specific industries, i.e. *specialised*. For example a university research institute constitutes an advanced factor, and a specialised factor is an institute with specific expertise. These key inputs are not inherited but are *created* within a nation. What matters for competitive advantage is the rate at which factors are created, upgraded and made more specialised to particular industries. The rate of creation of factors varies widely across nations and among industries.

(ii) Demand Conditions

Domestic demand conditions can play an important role in shaping the rate and character of improvement and innovation by firms. Porter considers three broad attributes of home demand to be important;

- *composition* of home demand: especially sophisticated, demanding and anticipatory buyers.
- *size and pattern of growth*: e.g. early home demand which anticipates international trends.
- *internationalisation* of demand: transmission of a nation's domestic preferences to foreign markets.

(iii) Related and Supporting Industries

The third broad determinant of advantage in an industry is the presence of related and supporting or supplier industries which are also internationally competitive. The geographic proximity of internationally competitive supplier industries facilitates the process of innovation and upgrading in downstream industries in several ways;

- efficient, early and rapid access to the most cost-effective inputs;
- facilitation of ongoing co-ordination of firms and their suppliers;
- access to valuable sources of information and insights, harvested by supplier companies from their international positions.

Competitive advantage in related industries - i.e. those that can share technology or skills or which involve products that are complementary - provides opportunities for information flow and technological inter-change and often leads to new competitive industries. In addition, small entrepreneurial firms are frequently spun-off from larger companies. As with home-based suppliers, proximity and cultural similarity make such interchange easier than is the case with foreign firms.

(iv) Firm Strategy, Structure and Rivalry

The fourth broad determinant of national competitive advantage in an industry is the context in which firms are created, organised and managed, as well as the nature of domestic rivalry. Porter argues that the goals and strategies of firms and the way they organise vary widely among nations, in ways that are influenced by their national environments and that in turn affect their competitive advantage.

Porter's model accords particular importance to the presence of strong local rivals as a key to the development of successful industries in all nations. Even where substantial economies of scale are necessary, a number of rival local firms are important. The domestic nature of the rivalry is important, the beneficial effects of visibility ensuring that rivalry will be particularly intense because of personal pride. Domestic rivalry also stimulates pressure to innovate since individual enterprises cannot rely on advantages which are common to all, such as national factor costs or a local supplier base.

(v) Government and Chance

Two other elements of the Porter diamond model are the role of government and the role of chance. While acknowledging the influence of both these elements, Porter argues that the way in which they affect competitive advantage is mediated through each of the four major determinants of competitive advantage and can have either a positive or negative effect.

(vi) Determinants as a System

A key feature of the model is that the determinants operate as a system. One determinant is almost never sufficient on its own to ensure competitive success. Furthermore each determinant affects the others, some interactions being stronger and more important. For example:

- the effect of home demand on the development of related and supporting industries may be dependent on its overall size and rate of growth.
- domestic rivalry is shaped by rapidly increasing and sophisticated demand which attracts new entrants into an industry as well as factor creating mechanisms which provide entrepreneurs for the industry.

(vii) Clusters, Clustering and Competitive Success

The conditions which bring about industry clustering grow directly out of the determinants of competitive advantage and are a manifestation of their systemic character. One competitive industry helps to develop and to support another in a mutually reinforcing process. For example, one competitive industry may be a sophisticated buyer of the products and services of its supplier industries. In this situation, the purchasing industry helps to create the domestic demand conditions which support the competitive advantage of the supplier industries, while the suppliers, if they are competitive, help to sustain the competitive advantage of the purchasing industry through their supporting role. As another example, two or more "related" industries may require similar sets of specialised labour skills. Each of the industries can help to develop the pool of labour skills through training and experience gained on-the-job, and each can benefit from the enhanced factor conditions (skilled labour) resulting in part from the presence of the other related industries. This process of clustering, i.e. the development of vertical and horizontal linkages between industries, is promoted by the interactions between the four determinants of competitive advantage. Porter's contention is that competitive advantage is a function of the overall configuration of the diamond. Sectors achieve optimal competitive advantage when they have strengths which reinforce each other in each corner of the diamond.

Critiques of Porter

The purpose of the research was to explore the relevance of Porter's cluster concept to the development of the competitive advantage of Irish industries. In doing so it was important to bear in mind that, while Porter's model has had a seminal influence on approaches to issues of industrial organisation, by now a significant body of critical work in relation to his framework has developed. Different aspects of his model have been found to be open to question both empirically and theoretically. This body of critical work, insofar as it is relevant to our study, is briefly reviewed here.

Theoretical Specification

Since the publication of Porter's *Competitive Advantage of Nations* (1990) research teams in a large number of countries have attempted to empirically apply the diamond framework and there is an accumulation of evidence which suggests that it does not always successfully explain either the presence or absence of competitiveness in a range of different kinds of industries (Rugman and D'Cruz, 1993; Cartwright, 1993; Yetton *et al.*, 1992). The finding that competitive industries can be identified which lack one or more of the four determinants which the model deems to be necessary for success is common to most of these studies/critiques. Porter overcomes this criticism by arguing that all four elements do not necessarily have to be present since particular strength in one can sometimes be sufficient to compensate. The all-encompassing seemingly infinite nature of the variables indicated as part of the four determinants are such, however, as to make it impossible not to find some explanatory variable which is particularly important. An alternative explanation by Porter of the existence of empirically identifiable competitive industries in conditions which are not favourable, makes reference to another concept in his theoretical framework, i.e. the notion of different "stages of development". Both of these responses mean that the theory can never be refuted (Davies *et al.*, 1995, p.26).

At the empirical level, the model is applied selectively and his analysis is confined to successful industries and nations. The holistic nature of Porter's approach and its recognition of history and dynamics is widely regarded as making an important contribution. However, the very broadness of the theory also limits its precision and universal applicability and leaves it weak in generating clear predictions on which to formulate policy recommendations (Grant, 1991; Beije and Nuys, 1995).

Geographic Concentration

An issue of considerable importance to a small peripheral country, such as Ireland, is that aspect of the model which lays stress on the importance of the national environment as the source of competitive advantage and the related emphasis on the importance of geographic proximity of firms, their suppliers and buyers as well as related industries. This notion of the importance of geography as a critical dimension of firm organisation and competitiveness is not new. However, critics argue that the importance of geographic proximity may be partial and industry specific (Penttinen, 1994). There also appears in many industries to be some tendency towards dispersal as the sector develops (Dalum *et al.*, 1991).

Importantly, the relative importance of domestic rivalry and domestic demand conditions provokes divergent views, particularly in the context of small open economies such as Ireland.

In many cases, small countries cannot support the number of firms necessary for domestic rivalry and these must instead benefit from competition with firms in other countries. Operators in small countries commonly are dependent on exports to attain a competitive scale of production, and it is claimed that they will encounter sufficiently intense competitive rivalry from foreign firms in international markets. Thus, it is argued that companies in these circumstances have been able to be internationally successful even without significant domestic rivalry.

There is disagreement as to whether the domestic demand conditions of small countries such as Ireland can be a major determinant of competitive advantage in the way which is feasible in large countries such as the USA. It has been argued that the model does not work very well for smaller open economies (SOEs) such as Canada, Finland, Austria, New Zealand and Ireland (Rugman and D'Cruz, 1993; Bellak and Weiss, 1993; O'Donnellan, 1994 and O'Donnell, 1997). In order to attain a minimum efficient size, industries from SOEs, especially those focused on niche markets, commonly have to export a substantial proportion of their output, from the early stages of their development. Such specialised niches, within an already small total domestic market, can be too small to be the main or even an important market for the industries concerned. Hence, it is argued, domestic demand compared to the influence of relevant foreign demand often has rather little influence on many producers in small countries and this reduces its impact as a major determinant of competitive advantage for industries in small countries.

Co-Operation and Competition

For Porter a key outcome of geographic clustering is the way in which it promotes interaction among competing companies. His primary emphasis is on competitive "rivalry" and his preference is to rely, first and foremost, on "proximity" to facilitate flows of information between rival firms. He is concerned that direct co-operative arrangements between firms will have a negative impact on long term competitiveness. In his view today's collaborators are tomorrow's competitors. Collaborative arrangements are also costly in terms of co-ordination costs and in the long-run, firms need to develop their own core competencies if they are not to run the risk of losing the basis of their competitive advantage (Nuys, 1995).

Other theorists, including those working within the industrial district paradigm as well as the emerging network paradigm, diverge from Porter

in the emphasis they place on co-operation between firms coexisting with competition as an explicit strategy for industrial development. However, despite the prevalence of these co-operative arrangements, management of the balance between competition and co-operation is not unproblematic and Porter's justifiable concerns about the problems of direct co-operation are shared by others. Enright (1995), while recognising that geographic proximity can increase the level and range of co-operative behaviour open to firms as well as providing greater efficiency in monitoring collusive agreements, also warns of the dangers of using co-ordination to protect firms from competitive pressures.

The challenge is to establish a means of co-operation that generates common benefits to the firms involved and to the local economy without the stifling effects. But, while much has been written about the need for co-operation/collaboration and while there has been some recognition of the difficulties in striking the right balance and avoiding pitfalls, little has been said about the risk of failure. The most important feature underpinning successful collaborative arrangements is a high level of trust between the parties. This is encouraged within a shared socio-cultural identity and facilitated by close face-to-face interaction. Porter (1990) does not provide any description of networks in the context of his cluster concept and pays little attention to the manner in which relationships actually operate (Nuys, 1995, p.28). Neither does he address directly the major principles of interaction between enterprises - such as trust, dependency, status, power and economic motive. So it remains unclear in his work as to why and how interaction between firms is set up. (Boekema and Van Houtum, 1995).

Role of Multinational Enterprises

The role of inward and outward foreign direct investment is an important consideration in any study of Irish competitive advantage. Porter's procedure actually excludes foreign-owned firms as contributors to national competitive advantage and this is widely criticised. It is particularly problematic in the Irish case since inward foreign direct investment (FDI) represents a very large segment of Irish economic activity. Because of this, the brief for this research contained a requirement to include a consideration of the importance of FDI and to select one of the industries with this requirement specifically in mind. From Dunning's (1992) work on the "internationalisation" of Porter's diamond, which suggests that more explicit attention should be given to the ways in which the transnationalisation of business activity could have either a positive or negative impact on the competitive advantage of the host country, we conclude that it is necessary to take account of the nature

of multinational enterprises (MNEs) investments when analysing the implications of FDI.

A number of Dunning's ideas are particularly relevant for studying the competitiveness of Ireland, as has been described by O'Donnell (1997). The first relates to the four types of foreign direct investment which he identified: market-seeking, resource-seeking, efficiency-seeking and strategic-asset-seeking. Dunning (1992) suggests that, in the right circumstances, efficiency-seeking investment can assist host countries to restructure their economic activities to be more in line with their dynamic comparative advantages; to reduce the costs of structural adjustment; and to foster more demanding purchasing standards by firms and consumers. Strategic-asset-seeking investments are designed to acquire resources and capabilities that an investing firm believes will sustain or advance its core competencies in global markets. This type of investment can integrate the competitive advantage of the acquired firm with those of the acquiring firm and increase competition between domestic firms. In considering the impact of FDI on the competitiveness of Irish industries, therefore, it is important to take into account the predominant nature of the investments in the particular industries under consideration.

Dunning (1992, p.158) also discusses the impact of inbound foreign direct investment on related and supporting industries, which he calls "agglomerative economies and clustering". In considering this impact, Dunning refers to a large body of literature that suggests that transnational companies (TNCs) may create their own clusters of foreign-owned activity (*ibid.*, p.160).

Resource-Based Industries

In view of the importance of resource-based industries to the Irish economy, of which the dairy industry is one example, we also reviewed those critiques of Porter's treatment of this issue in his model, and concluded that there is a need to carefully consider the applicability of Porter's recommendations to this type of industry.

Porter avoided including in his research industries that were highly dependent on natural resources, arguing that such industries do not provide the basis for competitive advantage in advanced economies. Studies of two relatively small economies dependent on resource-based industries, Canada and New Zealand (Yetton *et al.*, 1992; Cartwright, 1993), concluded that Porter's model was inadequate for resource intensive industries. These studies also questioned the implicit assumption that a causal relationship exists between the home-based diamond and competitive success and found that the model worked poorly in predicting or prescribing the characteristics of internationally

competitive resource-based industries. The studies found too that successful resource-based industries often have substantial overseas investment and suggest that there is a need to incorporate a broader range of off-shore variables in the analysis of competitive advantage of these industries.

3. COMPETITIVE IRISH SECTORS AND SELECTION OF CASE STUDIES

The brief from NESC for our study required us to select for examination three relatively competitive Irish indigenous sectors. One was to be in manufacturing, one in internationally traded services, and the other was to be a sector which is influenced to an appreciable degree by some form of contact or interaction with foreign-owned companies in Ireland. As a step towards selecting three sectors for these case studies, we attempted to identify those sectors in which Irish indigenous industry shows signs of having achieved the greatest international competitive success, following the methodology employed by Porter (1990) - initially at least. It is worth briefly outlining this procedure, because it actually casts significant doubts on the applicability to Ireland of Porter's approach to identifying relatively competitive indigenous industries.

Porter's methodology for identifying the relatively competitive industries in a country requires that the country's exports of each product are calculated as a percentage of all country's exports (or "world exports") of that product. If a country's share of world exports of a particular product is greater than its share of world exports of all products, this is taken as an initial indication that the country is relatively competitive or has a comparative advantage in that product. In the case of Ireland, total Irish exports amounted to 0.79 per cent of total world exports. Thus, all products in which Ireland has a share of world exports that is greater than 0.79 per cent would be initially regarded as relatively competitive according to Porter's approach (subject to some qualifications concerning Ireland's balance of trade in the products concerned).

Not surprisingly, very many of the products in which Ireland has a relatively large share of world exports proved to come from industrial sectors which are predominantly foreign-owned. In Porter's approach to identifying the relatively competitive industries, those whose exports come mainly from foreign-owned firms are excluded from consideration; he does not regard these as reflecting the nation's own competitive advantage. Porter (1990, p.740) remarks that, in general, relatively few industries are excluded for this reason. In the case of Ireland, however,

exports from foreign-owned companies constitute a large majority of its total exports. Thus, we found that the exclusion of foreign-dominated industries made a major difference to the overall picture and left only quite a limited range of predominantly indigenous export categories in which Ireland had more than 0.79 per cent of world exports.

It was clear, however, that the figure of 0.79 per cent results mainly from the unusually large contribution of foreign-owned firms to Irish exports. Therefore, it arguably sets a standard which is inappropriately high for identifying which *indigenous* industries have a relatively large share of world exports. Since most Irish exports come from foreign-owned firms, the share of Irish indigenous exports in total world exports amounts to a good deal less than half of 0.79 per cent. Consequently, an Irish indigenous industry which accounts for, say, 0.4 per cent of world exports of its products would actually have a relatively large share of world exports *by the standards of indigenous industry in general*. To take account of this point, we included in our preliminary list of relatively competitive indigenous sectors all those predominantly native Irish industries which account for 0.4 per cent or more of world exports of their type of products.

Even then, however, we had to recognise that this approach could still be overlooking some relatively successful and competitive indigenous sectors. Because of the unusual extent of foreign ownership of industry in Ireland, there could well be quite a number of sectors which, though mainly foreign-owned, have nevertheless a significant minority indigenous component which is quite strong and competitive in its own right. If we were to discard all predominantly foreign-owned sectors, as Porter does, we would be overlooking such relatively successful and competitive indigenous sectors.

For this reason, we decided to look beyond the international trade statistics, which do not provide data by nationality of ownership, for other indicators of a successful performance by indigenous firms - including those in predominantly foreign-owned sectors. Thus, we identified all industrial sectors (even if mainly foreign-owned) in which there has been positive growth in indigenous employment, and we also identified all sectors in which Irish-owned firms had relatively high profitability. Any new sectors arising from this exercise were then added to the preliminary list of relatively successful indigenous industries.

At this stage we had a list of 46 indigenous (NACE³ 3-digit) sectors which had some claim to be relatively strong or competitive on grounds

3. General Industrial Classification of Economic Activities in the European Community.

of one or more of the following: international trade performance, employment growth and/or profitability. We then assembled further statistical information relating to these industries - information such as rate of growth of exports, rate of change in Ireland's share of world exports, and rate of change in the balance of trade.

From this, there emerged a "short-list" of 11 industries, which looked like the clearest examples of indigenous competitive success in manufacturing. This short-list comprised: glass and glassware, basic industrial chemicals (including fertilisers), the indigenous part of pharmaceuticals (which is mainly foreign), agricultural machinery and tractors, the indigenous part of electric appliances (which is mainly foreign), aerospace equipment manufacturing and repairing, meat processing, dairy products, animal and poultry foods, "other" food products, and printing and allied industries.

It is important to note that, while these should be about the best examples available, in fact they are not very clear-cut examples of strong and competitive indigenous manufacturing industries, for various reasons. In six of these sectors - namely glass and glassware, basic industrial chemicals, pharmaceuticals, electric appliances, aerospace equipment, and "other" food products - the indicators of a competitive and successful performance depend greatly on just one large company (or maybe two in the case of "other" foods). It would be difficult, therefore, to maintain that these are definitive examples of strong indigenous *industries or sectors*. Two of the other sectors, meat processing and dairy products, were performing well according to our indicators, but they operate to a great extent in a regulated and supported environment which is not subject to the full normal forces of competition. Hence it is questionable if they represent real *competitive* success. The remaining three industries on the "short-list" of 11 are really only moderately successful rather than outstanding on the various performance indicators, so that it was not really obvious that they qualified for the list.

Thus, despite our observations above concerning the relatively strong performance by Irish indigenous industry over the past decade or so, it is difficult to identify unequivocal examples of strong and competitive indigenous manufacturing industries or sectors. This is an important point because strong and competitive individual indigenous sectors are the basic building blocks of Porter's concept of "clusters". Hence, if Ireland has few such sectors, this in itself suggests that it is doubtful whether there can be significant examples, in manufacturing at least, of clusters of the type and scale described by Porter.

In view of the data sources from which it was compiled, our "short-list" of 11 sectors included no services sectors. But we were required to carry out a case study on a relatively competitive sector in internationally traded

services. The process of identifying such sectors had to be rather more informal, since systematic data are less readily available for services. Mainly by means of a literature review, as well as by interviews of informed individuals, we drew up a short-list of four internationally traded services sectors: tourism (or a selected segment of it), software, international financial services, and music/entertainment.

Following consultations with NESF, it was decided that the manufacturing case study would cover dairy products, the internationally traded services case study would address the music industry and the indigenous software industry would serve as a case study of a sector with significant contact or interactions with foreign multinationals in Ireland. The relative concentration of indigenous competitive advantage in the area of food justified the selection of one case study from the food industry, and the dairy products industry met this requirement. In spite of some misgivings about the likelihood of being able to establish its real scale and significance the music industry emerged as a preferred choice primarily on the basis of a number of recent reports which had highlighted its relatively strong growth and continuing potential. The software industry was chosen because, although it is predominantly foreign-owned, the indigenous component of the sector was clearly a significant success story in its own right, and it was also believed to have significant interactions with multinational companies in Ireland.

4. COMPETITIVE PERFORMANCE OF THE THREE INDUSTRIES

The remainder of this paper is a discussion of the main findings of the research conducted on the three chosen industries and the conclusions and policy implications arising from these results. The case studies which analyse each of the industries in detail are published separately.⁴ In this paper our concern is to make a number of general points about Porter's model and its relevance to Ireland, summarising the findings from the case studies as illustration.

Of the three case studies, the indigenous software industry is the most clearly successful and competitive. Growth rates for the number of companies, employment and sales have all been exceptionally high, while exports have grown even faster than sales. The industry's sales and exports have been growing a good deal faster than international demand in the 1990s, indicating that it has been gaining a quite rapidly increasing market share and can therefore be regarded as internationally competitive.

4. See O'Gorman, O'Malley & Mooney (1997); Clancy & Twomey (1997) and O'Connell, van Egeraat and Enright, (1997).

The Irish dairy industry has a good performance record, particularly in terms of exports. It performed strongly during the 1980s and up to the mid-1990s. Trade statistics demonstrate that Ireland has a comparative advantage in dairy products (United Nations, *International Trade Statistics Yearbook*) and a "basket" of cross-country measures provides us with evidence of relative international competitive performance in the sector. In summary, Irish growth rates have been among the highest in Europe, as has productivity and the level of investment. Profitability has also improved strongly. At the same time employment has decreased but this is broadly in line with trends elsewhere while the value added of Irish companies remains somewhat below that of competitors. However, despite the strong overall performance, it is by no means clear that the industry can really be described as *competitive*. To a very important degree, it operates in a regulated and supported environment which is not subject to the full normal forces of competition. Porter's model, on the other hand - with its emphasis on the importance of clusters for competitive success - refers to the determinants of substantial and sustained success in an internationally competitive environment.

The Irish music industry is really only successful in a limited sense; the major Irish artists, rather than the whole industry, are relatively competitive. The available information indicates that Ireland has achieved considerable comparative success in terms of a number of internationally successful artists which is quite disproportionate to the size of the country's population. Although industry informants suggest that most are Irish residents it is difficult to estimate the economic contribution of these artists to Ireland. Certainly, since the majority signs to international record companies located in either the UK or the US, most of the financial benefits accrue to these economies. Stripping out the activities of these artists the picture of the music industry is less impressive. In terms of its structure the Irish recording industry is dominated by a handful of foreign-owned global record companies. Indigenous enterprises are small scale and very few are either economically viable or can be regarded as competitive in the sense in which Porter (1990) would use the term. The domestic market for recorded music is dominated by imports. Its growth rate lags somewhat behind the global rate and is surpassed by a number of other fast growing countries and regions. Access to export markets is constrained by lack of resources and the other major revenue generating activity of the industry, exploitation of intellectual property rights, is severely hampered by collection difficulties.

5. CLUSTERING AND ROLE OF DETERMINANTS OF COMPETITIVE ADVANTAGE

(i) Clustering

Next we consider whether the three case study industries can be seen as forming part of clusters of connected competitive industries, in Porter's sense of the term. The indigenous software industry can be regarded as part of a larger grouping of industries which has most of the important characteristics of a cluster. Although there are reservations about describing this as a mature and fully-formed cluster of the sort which Porter describes, it has most of its significant features and it is conceivable that these could develop and strengthen further. However, there are some important points of divergence from Porter's model. A noticeable feature of this grouping or cluster is the relatively prominent role of foreign-owned MNEs in Ireland among the related industries and important customer industries. Also, for a significant minority of firms in the indigenous software industry, domestic demand and domestic rivalry are not relevant influences, whereas customers and competitive rivals outside Ireland have a significant impact. Thus the doubts raised by other researchers concerning the importance or relevance of geographic proximity *within* the nation, particularly a small nation like Ireland, find support here.

The dairy industry participates in a cluster of related and connected industries to a more limited extent than the software industry. We identified some significant elements of a cluster and a clustering process of the sort described by Porter, which do appear to contribute to the competitiveness of the dairy industry. Thus, the industry does have a number of vertical and horizontal linkages of the type which one finds in a cluster. It is clear nevertheless that on a number of points this falls short of being a cluster in Porter's sense of the term. This "cluster" is limited in scale and scope, with relatively few competitive suppliers apart from suppliers of milk. Also, most of the important downstream and related industries consist mainly of foreign-owned MNEs with their home base outside Ireland. Although the dairy industry benefits from some elements of a clustering process, a real cluster has not developed here.

The music industry is not part of a cluster of competitive industries in Ireland which sustains the competitive advantage of the industry. Only the major Irish artists are clearly internationally competitive and successful. These can sell their services to and purchase services from companies outside Ireland without necessarily tapping into the Irish industry or related industries in a significant way. If they are contracted to a record company in Ireland, it is most likely to be a subsidiary of a

foreign-owned MNE. For other elements of the Irish music industry which cannot as yet be considered very competitive, links to other markets are at least as important, if not more important than linkages within Irish national boundaries.

(ii) Role of Determinants

Overall, each of the case studies indicated that while many aspects of Porter's suggested determinants of competitive advantage are in fact significant, there are a number of important divergences from Porter's model. First, the influence of *domestic demand conditions* is not always a key influence and can sometimes be replaced by overseas demand. Some Irish firms or parts of sectors can have interactions with overseas customers which are influential or beneficial, sometimes more so than their links to domestic demand. In fact, some such companies can be successful while having little or no contact with domestic demand. Second, strong *domestic rivalry* is not central to some parts of the industries which we studied. For some companies a degree of the competition or rivalry from competitors located abroad can be more influential than domestic rivalry. And some such Irish companies can be competitive and successful while experiencing little or no domestic rivalry. Third, the importance of *domestic suppliers* is limited in all three cases. And fourth, *foreign-owned MNEs in Ireland*, rather than Irish indigenous industries, at times play key roles as related and supporting industries or as customer industries.

In the dairy industry it is possible to identify some significant influence of *domestic demand* on competitive advantage. However, there are two important caveats to this general finding. First, the effect of domestic demand on the product portfolio of the Irish dairy companies tends to be overshadowed by the external demand conditions created by the CAP. Second, many companies in the dairy industry are fostering intensive and beneficial relations with retail and industrial customers located abroad, relations which can be as significant as links with customers in Ireland. In the music industry, the nature of domestic demand - being largely similar to the type of demand which is dominant in the UK, the USA and hence in the international market - probably has been significant in helping to foster a type of artist who can appeal to the international market. However, it is also the case that internationally successful artists commonly sell their services to companies located abroad rather than in Ireland, and they quite commonly experience their first significant success in overseas markets. In the indigenous software industry, domestic demand has had an influence which is undoubtedly disproportionate to its relatively small size. Nevertheless, there is a

sizeable minority of software firms for whom domestic demand has been of little or no relevance and who deal exclusively or almost exclusively with customers abroad. Many of these software companies are successful.

The influence of *domestic rivalry* is manifest in the dairy industry where there is vigorous competition between firms, but this competition is mainly between firms within limited geographic regions and it is mainly focused on competition for supplies of milk. However, on the demand side, although all the dairy companies stated that competition for market share in the Irish market place is very intense, most companies were in agreement that competition in foreign markets is even more intense. Neither is strong domestic rivalry an important influence in the music industry. In the software industry, however, rivalry among domestic firms has an importance which is disproportionate to the size of the local Irish industry. Nevertheless, there is a substantial minority of software firms for whom domestic rivalry has been of little or no relevance and whose real competitors are located abroad. Many of these Irish firms are competitive and successful.

Domestic suppliers have a limited effect on competitive advantage in all three industries. For the dairy industry, the role of domestic suppliers is minimal apart from the role played by dairy farmers as suppliers of milk. In the music industry, most internationally successful artists avail of supplier inputs from abroad and the important supplier industries in Ireland are relatively weak. And no Irish suppliers to the software industry have a significant impact on its competitive success, although this is more a reflection of the nature of the industry rather than a particular weakness on the supplier side in Ireland.

Following from some of the points outlined above, Porter's emphasis on the special importance of significant customers, competitors and suppliers which are located within national boundaries is not always reflected in our case studies. For at least some parts of the three industries which we have studied, the influential customers, competitors and suppliers are located abroad rather than in Ireland.

Finally, for some parts of the three industries, the important links with related, supporting and customer industries are with foreign-owned MNEs in Ireland, rather than with Irish indigenous companies. This contrasts with Porter's view that it is indigenous or "home-base" companies which generally have the key potential to be the important related, supporting and customer industries. Thus, for most Irish dairy companies links with foreign-owned MNE customers in Ireland have played a positive role. Foreign-owned MNEs in Ireland have also had particularly strong and positive influences on the indigenous software

industry - as customers, as developers of labour skills, and also through various forms of formal co-operation or alliances. Such connections with foreign MNEs in Ireland have been quite important in making the local software industry a success. The impact of foreign MNEs does not always have to be distinctly positive, however. Earlier, we noted Dunning's (1992) discussion of the way in which transnational business activity affects the strength and composition of a nation's competitive advantage. Dunning describes a number of scenarios for the possible impact of foreign MNEs. These can vary significantly. The impact of foreign MNE subsidiaries has been rather limited in the case of the music industry. Their presence is likely to have contributed to some positive outcomes for the indigenous music industry, principally market expansion and factor creation. They have, however, had relatively little effect on artist development or on growth of supplier and service industries. Neither are there direct linkages with local record companies.

Overall, then our study provides substantial support for many of the critiques of Porter's model reviewed earlier, particularly those which question the necessity or indeed relevance of geographic proximity to small open economies like Ireland. In contrast to Porter, our findings show that a real importance can be attributed to foreign rivalry and foreign demand. A second point of departure from Porter's model arising from our findings is that of the role played by foreign direct investment in fostering competitiveness. Foreign-owned MNEs in Ireland can have an important and positive influence on indigenous industry.

6. BENEFITS FROM GEOGRAPHIC PROXIMITY TO CUSTOMERS, SUPPLIERS AND INDUSTRIES

Fully-developed 'clusters' of the type and scale described by Porter have not developed in Ireland. However, there are nonetheless appreciable benefits arising from the presence of some form of groupings of connected or related companies and industries, and from interactions between them - to different degrees in the different sectors. Various aspects of the four determinants of competitive advantage are at work and can be seen to contribute appreciably to the competitive advantage of the industries. These aspects include not only factor conditions, but also domestic demand from customer industries, the influence of related and supporting industries, and the influence of domestic rivalry as well as co-operation.

In the case of the indigenous software industry, there is a rich degree of beneficial interaction between companies within the sector, as well as between the software industry and other connected or related industries in

Ireland. Thus, the individual Irish-owned software companies help to develop and then draw from a common pool of skilled labour. Many founding entrepreneurs of new companies come from employment in other indigenous software firms. Competition between Irish software firms is commonly a significant factor which improves competitiveness. And co-operation or social interaction between companies is often quite important. Looking beyond the industry itself, there are a number of customer sectors in Ireland which have been influential for its competitive advantage. There are also significant "related" industries in Ireland, some of them being the same as some of the influential customer industries. Such related industries have helped to develop relevant labour skills or to give experience to Irish software entrepreneurs, or they have engaged in co-operation with indigenous software firms.

In the case of the dairy industry, the direct and indirect information flow and knowledge transfer within the grouping of processors, customers, supporting organisations and related industries was seen as a valuable factor. The existence of two high-standard factor-creating research facilities is linked to the presence of a significant number of strong competitors in the dairy processing industry. In addition, educational institutes responded to the strong demand for skilled labour from both the dairy and other processing industries, thus increasing the availability and standards of skilled labour. Indirectly, the strong competition for raw milk supplies had a positive effect on processing innovation and international expansion of the dairy processors. The existence of a grouping of milk processors in Ireland has also affected demand conditions in the Irish market. The availability of (primary processed) milk formed an important attraction for a number of multinational companies to set up production facilities in Ireland. In turn, these companies increased the demand for skilled labour, the sophistication of production facilities and the standards of the Irish processing industry in general. Finally, there is some evidence that the presence of the milk processing sector, and other "related" processing industries, led to the formation of new firms and skills in the supply sectors.

In the case of the Irish music industry, the brand reputation of Ireland as a centre for popular music is partly an outcome of the international success of a number of Irish stars and is also likely to be a contributing factor in their decision to continue to live in Ireland. The increasing activity in record companies and supplier industry segments is likely to have been influenced by this reputation, while the development of industry institutional structures, including trade associations and advocacy groups, is likely to be at least in part an outcome of this growth in activity. The geographic concentration of these enterprises and activities within the greater Dublin area has facilitated the flow of information and the

development of explicit industry strategies in relation to some factor creation.

From these findings we can conclude that many companies in the three case study industries benefit from the influence of, and interactions with, other companies in their own sector and in other sectors in Ireland which are connected or related in some way. This shows that companies commonly benefit from being part of a wider grouping of connected companies and industries in Ireland.

7. CONCLUSIONS

Two broad interpretations are possible from this complex set of findings, either of which leads us to conclude that we should depart radically from Porter as a central plank of Irish industrial policy.

The first possible interpretation suggests that Porter's clusters are usually the way to go, but not in the particular context of Irish economic development. The general validity of Porter's model applies to most successful industries in most countries most of the time. Support for this interpretation can be found from the considerable evidence for the proposition that successful industries usually are part of competitive clusters, arising from all the research in a range of different countries reported in Porter (1990). Further studies undertaken by research teams in other countries, albeit with varying degrees of disagreement on some points and both additions to and qualification of others, also broadly support his findings on the importance of clusters for competitive advantage (Hernesnieme, Lammi and Yla-Antila, 1996; Beije and Nuys, 1995; Cartwright, 1993; Rugman and Verbeke, 1993; Solvell, Zander and Porter, 1991).

The fact that we do not find Porter-style clusters among our case studies could then be explained by the failure of at least two of these industries to meet Porter's definition of competitiveness. To the extent to which clustering is evident it is in direct proportion to the varying degrees of competitiveness found between the three industries examined. Thus software which is the most unambiguously competitive is also the most clustered. The more general scarcity of strong sectors or clusters among the rest of Irish indigenous industry could be seen as consistent with its weak long-term competitive performance over many decades.

In response to this, however, we would have to point out that, despite the fact that Irish indigenous industry does not appear to have Porterian clusters and although starting from an unimpressive position, it has been performing relatively well over the past 8-10 years. Following the

introduction of a series of policy changes aiming to promote the development of indigenous industry, employment in indigenous manufacturing increased by over 6 per cent in 1988-96, in contrast to the decline in manufacturing employment which was occurring in the EU and the OECD in the same period. In addition, the proportion of indigenous industrial output which was exported increased from 26.6 per cent in 1986 to 35.9 per cent by 1995, and the growth of the exports of Irish indigenous industry was substantially faster than the growth of industrial exports from the EU or the OECD. Thus, this has probably been the most successful period to date for the development of internationally competitive Irish indigenous industries.

To a considerable extent, this recent growth has occurred in small or medium-size enterprises, spread quite widely across a range of sectors, often in sectors which were quite weak to begin with and which are still not particularly strong. In addition, part of the growth of indigenous industry has occurred in a limited number of larger more prominent companies, in sectors which themselves still look rather insubstantial. Thus, the growth has not occurred in a concentrated manner within a limited number of sectors, so as to produce strong sectors or clusters of related sectors. This experience shows that progress in Irish indigenous development has been possible without having very strong indigenous sectors or clusters. Consequently, even if it is true that Porter's model of cluster development applies to most industries in most countries, experience suggests that there is likely to be enough scope for a small country such as Ireland to continue to make progress without strong Porterian clusters.

The second possible interpretation of our results is that critics of Porter are right. This follows from those findings of our study which attribute the sources of success and competitiveness of our three case-study industries to factors which in some important respects do not conform to Porter's model of the cluster. This interpretation suggests that his theory has at best limited applicability, i.e. it is confined to large mature manufacturing economies such as the US and Japan, and even then requires substantial modification. In particular, its relevance to small, open economies like Ireland is seriously open to question, particularly those aspects of the model which stress the importance of the 'home-base' and which dismiss the potentially positive role played by foreign direct investment in fostering competitiveness.

In conclusion, the question posed in this study is should Irish industrial policy be focused on the development of clusters of related industries, according to the model developed by Porter. From the evidence of our study the answer must be negative. Porter is a good starting point to

identify parameters in which Irish competitiveness can be addressed, but given the serious questions raised about the general applicability of the model and given the specific nature of Irish economic/industrial conditions, it is now necessary to search for an alternative model for Irish industrial development.

(i) Policy Implications: Elements of a Post-Porter Model

The primary concern of this study was to examine the relevance of one particular model, that of Porterian clusters, put forward as a major plank of Irish industrial policy by the Culliton Report. It is another task to determine what the alternatives should be. While we are not in a position to provide a blueprint for such an alternative model, our findings do suggest a number of its elements.

(ii) Support for Existing Policies

First, it is worth bearing in mind that a number of Irish industrial policies, which have aimed since about the mid-1980s to give a new impetus to the development of stronger indigenous industries, would not be in accord with the Porterian model but have nonetheless been meeting with some success. These policies, which have included a somewhat greater degree of selectivity than was exercised previously, have focused most on the further development of *companies* with a reasonable track record and good prospects for growth in international markets. Thus, existing policies include an element of focus on building on the strong, although this relates to building on strong companies more than strong sectors or clusters. In addition, Irish industrial policy has also included an important component which focuses on attracting foreign MNEs into the Irish economy. These policies are in some contrast to Porter's thinking which, with its key emphasis on *clusters* of *home-base* industries, would probably see little value either in aiming to develop individual companies or in attracting foreign MNEs.

(iii) Support for the Emergence and Development of Groupings of Connected Companies and Industries

Second, our conclusions do suggest that it would commonly be advantageous for Irish industrial policy to include a somewhat more explicit element of building on strong indigenous sectors or strong groups of connected companies or industries. Based on the evidence from our study such an approach would seek to foster groupings which would differ from Porter's concept of the cluster in a number of important respects. These would include a recognition that foreign demand,

competition and suppliers can be as relevant as domestic demand, competition and suppliers and an acknowledgement of the positive role often played by foreign-owned companies in Ireland. The precise form of grouping of connected companies, i.e. whether sector, industrial district, network, agglomeration etc., which is desirable and feasible, is likely to vary case by case.

As regards action which could be taken to support the development of groups of connected or related companies or industries, it is necessary first to identify the relatively promising opportunities for such development. This should then inform and guide the activities of the state development agencies in various ways. Most simply, it should mean that the agencies would be particularly receptive to assisting project proposals coming from companies which would help to develop the groupings concerned.

More than this, however, it should inform and guide some of the more proactive activities of the agencies. For example, the identified opportunities for development of groupings of connected or related industries should influence IDA Ireland in targeting the overseas industries and companies which it seeks to attract into Ireland. They should also influence Forbairt in the selection of companies for the Company Development Programme, and Forbairt should be involved in encouraging appropriate companies to develop proposals for expansion in the groupings concerned, with the offer of significant assistance to do so. This would not be a matter of state agencies simply deciding which industries and companies to develop, since there would also be an essential element of self-selection, with the companies concerned making their own decisions whether to participate and making their own proposals on how to do so. It should also be stressed that we are not arguing that all industrial policy efforts should be focused on developing groupings of connected or related industries or companies. The industrial development agencies should continue to be open to assisting other worthwhile projects put forward by firms which are not part of such identified groupings.

The National Linkage Programme is an existing measure which could be employed to foster development of groups of connected or related companies or industries. It should include a particular focus on developing linkages of a type which would foster groupings which are identified as relatively promising. As discussed above, there can also be merit in linkages which cross national boundaries. Thus, it could be beneficial to assist Irish supplier companies which are part of a promising grouping to develop linkages in supplying companies in, say, the UK.

(iv) Attraction of FDI with Certain Characteristics

A third element is a continuation of the effort to attract FDI to Ireland but with a special interest in certain types of FDI. The example of the software industry offered some indications about the type of foreign enterprise which it is most useful to attract to Ireland - most useful, that is, for the purpose of stimulating further development of related indigenous industries. Ideally, the most beneficial type of investment from abroad is in enterprises which have several desirable characteristics: they should employ a significant proportion of highly skilled labour, particularly employees engaged in R&D; they should be willing to purchase inputs of goods and services which would be produced by firms in Ireland; and, very importantly, there should be a match between these conditions and the type of industries which can realistically be developed by Irish firms. In other words, the skills which the foreign MNEs help to develop should be skills which could be beneficial to the development of Irish firms in industries which are realistically accessible to them - not skills which can only be used, for example, in very large-scale industries or in industries which present other very substantial barriers to entry. Similarly, at least some of the inputs which foreign MNEs would be willing to purchase in Ireland should be products of industries which are realistically accessible to Irish firms - not products of industries which present insuperable barriers to entry for existing or new Irish firms.

In the case of the music industry, we saw an example of a type of foreign-owned MNE which does relatively little to stimulate local indigenous development. The major MNE record companies in Ireland have been mainly concerned with selling their imported products into the Irish market and, at least until recently, they have not been very open to fostering Irish artists. Their attitude is very largely determined by the strategy of their overseas parent companies. It may not be feasible for Irish firms to begin to compete with these, and it may not be feasible to attract such foreign firms to invest in production in Ireland. Again, in the case of the music industry, any attempt to develop an Irish record company which could directly rival the giant MNEs in that business would lack realism.

(v) Technology Focus

A fourth aspect concerns the importance of technology. A technology focus is necessary but with a particular emphasis on acquiring and further developing technology from abroad. Enright's (1992) principal suggestion on how to foster the further development of an existing relatively successful cluster is to "invest in developing the major technologies and capabilities that cut across the industries in the cluster.

Such investments will have the greatest leverage in deepening and broadening the cluster. They should include development of indigenous technology as well as acquiring best practice technology from abroad." This suggestion is in line with the comment by Beije and Nuys (1995, p.269) that there has been an emerging interest over the last two decades in "ex ante support of firms and organisations which focus on or contribute to technological and organisation innovation".

Although our own concern is with building groups of connected or related companies or industries which would be quite different to clusters, for the most part we would agree with Enright's suggestion, although perhaps with some difference of emphasis. This recommendation has implications for the education system, industrial training, and research both within firms and in the higher education system or more specialised research institutes. We have some reservation about how Enright's idea of investing in "the *major* technologies" might be interpreted. A small country like Ireland is not in a position to make very large-scale investments in some of the major technologies. Hence we would put the emphasis very much on acquiring best practice technology from abroad and on focusing Ireland's own R&D efforts on developing new or specialised applications of technology. In the case of the software industry, for example, Ireland has little indigenous capability in the underlying major computer technology, but indigenous software firms can make use of such technology to develop many specialised software applications.

(vi) Support for Co-Operative Alliances Between Companies

Fifth, policies to foster the development of groupings of companies or industries should include support for co-operation and alliances between relevant companies. This can happen spontaneously, as in the case of the indigenous software industry where it is quite common for firms which are not direct competitors to co-operate in various ways. But there are also many examples in the literature on industrial districts and other types of groupings where institutional interventions, either public or private, have functioned to facilitate not only co-operative structures but also the development of infrastructure for the regulation of co-operation (Staber, 1996a). In Ireland, an example of such action is the National Software Directorate, which has implemented its own forms of assistance to the process of building co-operation and alliances. In the dairy industry, the Irish Dairy Board is an example of how firms can be helped to co-operate and pool their strengths for export marketing purposes. In the music industry, transnational co-operative linkages are seen to be important but at present small local companies are constrained by a lack of resources in

developing these to the extent necessary, and there are industry calls for the establishment of an Irish Music Board to develop specific policies for the development of the industry as a whole.

There is a further point related to the role of co-operative linkages with firms both within the country and transnationally. It is broadly the case that a set of common or universal principles for fostering the kind of co-operation which lends itself to upgrading competitive advantage has not as yet been established. Indeed, there is a strong argument to suggest that the nature of effective co-operative activity, and the mechanisms to facilitate its emergence, vary from industry to industry depending on the interplay of specific contextual variables. In addition, the problem of devising appropriate methodologies to evaluate the contribution of specific co-operative activity to competitiveness remains, although the indications are that a range of "soft" variables, including conformity, trust, flexibility and reciprocity are all relevant (Staber, 1996a). In this context it is important to avoid overly simplistic application of successful experiences drawn from other countries, regions or industries (Staber, 1996b). Instead, careful monitoring of pilot projects, together with detailed studies of selected industries, which would include the social and political aspects of personal relationships are called for. In this context, it will be of considerable interest to observe the experience of the pilot "Inter Firm Co-operation Programme" which began in Ireland in 1996.

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POST-PORTER: EXPLORING POLICY FOR THE IRISH CONTEXT 'SUSTAINING COMPETITIVE ADVANTAGE'

by
Rory O'Donnell, *The Graduate School of Business,
University College Dublin.*

Ideas become true just in so far as they help us to get into satisfactory relation with other parts of our experience, to summarize them and get about among them by conceptual short-cuts instead of following the interminable succession of particular phenomena. Any idea upon which we can ride, so to speak; any idea that will carry us prosperously from any one part of our experience to any other part, linking things satisfactory, working securely, simplifying, saving labour; is true...instrumentally.

William James, *Pragmatism* (1907).

1. INTRODUCTION

This note is intended to stimulate discussion on the important study of clusters in the Irish economy, undertaken for the NESC by Clancy, O'Malley, O'Connell and van Egeraat. Section 2 outlines the background to the study, a programme of NESC work on output and employment in the Irish economy. Section 3 considers the applicability of Porter's theory to Ireland, and welcomes the conclusion that it does not explain the development of the dairy, music and software industries. It is argued that exploration of the distinctive Irish model of business and economic development is no longer served by retaining Porter as our guiding analytical framework. Section 4 discusses the policy and research implications of rejecting Porter. It begins by asking: does the rejection of Porter matter for policy?; should policy focus only on environmental variables?; should policy focus on *firms*, rather than *sectors*?; and, should we now seek a new model from abroad? It is argued that satisfactory answers to these questions requires detailed study of how existing industrial policy relates to enterprises and sectors, and exploration of the internationalisation of Irish enterprises. Finally, I consider what role an over-arching industrial strategy, such as the Porter-inspired cluster strategy advocated by Culliton, has in national policy.

2. BACKGROUND

The study of clustering in the Irish economy, undertaken by Clancy *et al.*, was part of a programme of work on output and employment undertaken at NESC in the past three years. That programme explored aspects of indigenous economic development, with a view to enhancing policies for competitive advantage. Three studies were undertaken. The first was a comparative study of enterprise support policies in those European regions which have achieved dynamic, high-employment, economies. It was published in the Council's report, *Networking for Competitive Advantage*, and the Council's recommendations have been reflected in the pilot networking initiative, under the Department of Enterprise and Employment. It is discussed later in the symposium. The second study was of investment in Ireland. It focused on measuring and explaining the falling share of investment and assessing the role of policy in encouraging a high rate of investment. That study has recently been published by the Council (NESC, 1998). The final study was of the role of clusters in the competitive strength of the Irish economy.

The motivation for the study of clusters lay in the need to explore and develop the policy implications of the idea that successful economic and employment performance requires the development of competitive businesses in a range of inter-linked industries or sectors (Mjoset, 1992; Culliton, 1992; NESC, 1993). In particular, an important recommendation of the Industrial Policy Review Group (Culliton Report) was that industrial policy should be much more focused on the development of clusters, around sources of national competitive advantage. Despite the widespread consensus on the desirability of fostering clusters, little progress seemed to have been made in identifying precise policy measures to achieve this. The study was designed to explore the determinants of competitive advantage in the Irish economy, and to identify whether, and how, policy can promote the development of clusters.

For a variety of reasons, it was decided not to undertake a full-scale Porter-style study of Ireland, as has been done in countries such as Sweden, New Zealand and the Netherlands. Cost was one major reason for that decision. The study undertaken by Clancy *et al.*, cost a fraction of the full-scale cluster-chart studies in those countries – although it was a large-scale study by the standards of NESC consultancy. A second reason was a degree of scepticism about the applicability of Porter's model to Ireland. The research brief noted that 'it will not be surprising if the review of data does not indicate a strong instance of clustering in the Irish economy. Indeed, Mjoset's work on Ireland can be interpreted as diagnosing the fundamental problem of the Irish economy as the absence

or weakness of clusters'. It noted that in-depth research was necessary to decide how to interpret and respond to this possibility. Consequently, it was felt necessary to *test* the applicability of Porter's theory and policy recommendations in the Irish context. The idea of testing this in three different contexts – indigenous manufacturing, indigenous services and sub-supply – reflected the qualifications to Porter's theory that seemed most relevant in the Irish case.

3. THE APPLICABILITY OF PORTER TO IRELAND

(i) Interpreting the Evidence

It had been clear for some time that several of the criticisms of Porter are likely to apply in the Irish case. Three were noted as particularly relevant. First, as a small open economy, it seemed unlikely that the diamond generating competitive advantage would be contained within Ireland; it was suspected that we would need to incorporate a range of offshore variables to explain competitiveness (O'Donnell, 1994; O'Donnell, 1994; 1997). Second, a case was made for including foreign owned firms in the study of competitive advantage, a 'clear rejection of Porter's procedure' (O'Donnell, 1994; 1997, p. 56). In advocating this, it was argued that TNCs in Ireland might still have a 'home base' in the US, but contribute significantly to the creation of Irish competitive advantage. A third possibility was that indigenous firms may not have a home base in Porter's sense – an idea to which I return below.

On reading the very thorough studies of the dairy, software and music industries, one is immediately struck by the extent to which these successful sectors do not conform to Porter's model. As the studies proceed, the qualifications to Porter accumulate, as has been demonstrated in the paper by Clancy *et al.* On thinking through the range of possible verdicts which could be brought in, it seemed clear that evidence profoundly challenges the relevance of Porter's theory in the Irish context. I believe that the conclusion outlined by Clancy *et al.*, above, makes this study an important contribution to the debate on industrial policy, and vindicates the Council's decision to invest heavily in the research. This firm assertion of the significance of this work, is the context within which my questions and comments should be read.

The detailed and carefully assembled evidence in the study, combined with the international and Irish literature, provide the basis for a much deeper debate on the relevance of Porter's theory to Ireland and the potential for a cluster-based industrial policy. There are, indeed, two possible interpretations of the evidence assembled in the three studies – and a third possible reaction to the findings is identified later in this note.

Nascent Clusters: Limited Clustering as a Sign of Limited Competitiveness

The first of these might be labelled the 'nascent cluster' interpretation. Where limited clustering is found, and where some of Porter's four determinants are not active, this might be seen as a measure of the limited international competitiveness of the Irish sectors. Indeed, few, if any, indigenous sectors have overwhelming international competitive advantage in Porter's sense. Thus, it could be argued that the movement of Irish sectors to full competitive advantage will require the development of clusters and, consequently, that should be the focus of industrial policy. On this view, Porter still provides the intellectual framework for discussion and refinement of Irish industrial policy. This view can draw support from the evidence that it is very often of substantial benefit for Irish companies to be part of a wider grouping of connected or related companies or industries – even if these are not yet fully developed clusters. It suggests that further research should focus on the way in which clusters develop, and that policy makers must seek measures to encourage that development.

The Irish Model of Business Development

That 'nascent cluster' interpretation is logically valid and cannot be compellingly disproven. However, an alternative position begins from the sense that this view does not capture the dynamic of the Irish economy. This alternative view is that the limited fit between the Irish sectors and the Porter model is likely to be permanent. It reflects features of Irish development which are not consistent with Porter's key idea of 'home base'. Irish companies may not benefit from external economies associated with inter-firm interaction *within Ireland*, and limited geographic concentration may emerge. Transnational linkages may provide such interaction. Rather than see the limited fit between Porter and the Irish economy as evidence of Ireland's 'late development', the 'facts' might be viewed as a harbinger of a new model or pattern of industrial development, with new possibilities for late-developing peripheral countries, not included in Porter's theory. Some of the research and policy implications of this view are explored below. This interpretation suggests that exploration of the distinctive Irish model of business and economic development, and of policy approaches to enhance it, are no longer served by retaining Porter's theory as our guiding analytical framework.

Indeed, these interpretations, and the clear choice of the second, prompts two further lines of thought.

(ii) Extending the Critique of Porter

Porter's Concept of 'True Competitive Advantage'

The authors explain the difficulties they faced in finding competitive indigenous sectors and summarise the painstaking and skilful procedure they devised to overcome this problem. They note that the existence of few competitive sectors in indigenous industry, itself raises doubts about whether there can be significant clusters of the type and scale described by Porter. In my view, the absence of competitive sectors also raises doubts about Porter's *very concept* of competitive advantage. If the economy that has outperformed almost all others in manufacturing in the past decade, does not display clear competitive advantage, in Porter's sense, this suggests that 'competitive advantage' is not necessary for prosperity or development. In other words, it may be possible for a country to achieve business success without producing sectors which have a share of exports significantly greater than the country's share of world exports of all products. It would be interesting to test whether this possibility arises in other countries also.¹ Porter's concept of competitive advantage, quite apart from his theory, defines competitive success in very a particular way. It would seem to derive from his earlier work on corporate strategy and his industry analysis. I suspect that the difficulty of identifying sectors with 'competitive advantage' and, more generally, the pace and pattern of development in Ireland in recent years, indicates the need for a more general critique of Porter, including identification of alternative concepts and measures of competitiveness.²

Home Base

I would also like to develop the argument concerning the concept of home base. Here it is important to cut through some common confusions about what Porter's theory is. Porter's theory is not the diamond, for it is always necessary to have factors, demand etc; and it is always possible to explain why one element of the diamond is not in evidence. Porter's theory is that firms derive competitive advantage from characteristics of their national environment, or 'home base'. Furthermore, the influence of the nation applies to industries and segments, rather than firms. That influence consists of four determinants which are created within the nation state.

These determinants are transformed into a system by two elements: domestic rivalry and geographic agglomeration. It is the systemic nature of the diamond which promotes clustering. Hence, Porter's key thesis is that competitive advantage is created and sustained through a highly localised process.

Porter's concept of home base is supported by a number of authors, who suggest that leading multinationals are strongly influenced by their parent company's nationality, and that what are seen as 'global' or 'stateless' corporations are, in fact, 'national firms with international operations' (Hu, 1992). Others take issue with this, pointing to certain firms whose nationality is certainly indefinable, and noting that 'the nationality problem becomes more acute in defining the effective nationality of firms originating in small and medium-sized countries' (Graham and Krugman, 1989). In addition they argue that there are negligible difference between US firms and foreign firms in the US, in terms of import propensity, quality of jobs, R&D activity etc. (Graham and Krugman, 1989; Reich, 1990; Thomsen, 1992). I have earlier argued that we should not rely on the US debate (O'Donnell, 1997). Transnational companies (TNCs) in peripheral regions are unlikely to behave in the same way as TNCs in the United States (Cantwell, 1989). But this does not reinstate Porter's perspective in its entirety. Porter's case for the idea of 'home base' is founded on the argument that the 'process of creating skills and the important influences on the rate of improvement and innovation are intensely local', and that many external economies, a central feature of Porter's theory, 'do not cross national boundaries easily' (Porter, 1990, p.158, p. 144). But it seems possible that the Irish economy, and society, are so open that purely local processes of innovation are limited and many external economies do, in fact, cross national boundaries easily. In that case, 'even locally-owned firms may not have a home base in Porter's sense' (O'Donnell, 1994;1997, p. 57).

Within the tradition of Porter, and many similar theories, this would be seen as a most depressing suggestion. It implies that innovation and external economies are not retained within the economy. At an extreme, labour and capital are so mobile that there is little chance of any agglomerative, self-sustaining, economic activity. But there is another side to the same coin, which I believe might be relevant to our recent experience. A high degree of economic and social openness, means that locally-owned firms are not permanently *constrained* by the *paucity of local innovation processes* and by external *diseconomies*. If external economies can flow *out*, they can flow *in* too, in the right circumstances. It seems that, in recent years, Ireland has adopted a significant number of

1. In work being undertaken with my colleague Larry O'Connell, we are exploring the possibility of a general statistical test of that hypothesis.

2. This line of argument might be resisted, on the grounds that, when foreign-owned enterprises are included, Ireland displays very strong 'competitive advantage' or specialisation. While this is true, it clearly raises other difficulties for Porter's theory.

the new technologies, skills and, most of all, new methods of organisation and coordination, emerging in business worldwide (see Section 4.iii, below).³ An intriguing question is whether, having finally exploited the good side of openness, it is then possible (or necessary) to achieve a degree of 'closure' or 'localness', to provide a bulwark against international market forces.

It seems to me that the findings of the study underline the possibility that locally-owned enterprises do not have a 'home base' in Porter's sense. The authors note that the enterprises in the sectors they studied rely, to varying degrees, on foreign factors, foreign demand, foreign related and supporting industries and foreign rivalry. In discussing policy, they support the view that inward investment has had a major role in enhancing Ireland's competitive advantage, and they note that extra-national linkages can be as important or more important than linkages within the nation. In view of this, do they still attach significance to the distinction between indigenous and foreign-owned enterprises? Should Irish industrial policy be concerned if the enterprises which it nurtures, with taxpayers money, subsequently undertake outward, rather than domestic, investment, or are acquired by foreigners? To answer these questions we need more detailed knowledge on the internationalisation of Irish business (see Section 4 (iii) below).

The advantages of pushing for an even stronger rejection of 'home base' cannot be demonstrated at present. But a word of clarification and a hint at the possibilities can be given. The purpose is not to adopt a strong version of the globalisation thesis, that firms are genuinely global, or that a significant number of Irish companies will, or should, become multinationals. This is patently not true, and is of little relevance to the vast majority of companies in Ireland. The purpose is to clear a space for consideration of organisation and co-ordination: to draw attention, for a while, from the issue of *where firms are connected*, to the equally interesting question of *how firms are connected*. This tentative line of thought is pursued somewhat further in Section 4 (iii).

3. This suggestion will need to be tested against the evidence in a survey of management practice undertaken recently by the Business Research Programme at UCD, and against other sources.

4. THE POLICY AND RESEARCH IMPLICATIONS OF REJECTING PORTER

(i) Identifying the Issues

If this study warrants a firm rejection of Porter, as has been suggested, we need to identify the implications for policy and policy-oriented research. A number of questions might be considered:

- Does the rejection of Porter matter for policy?
- Should policy focus only on environmental variables?
- Should policy focus on firms, rather than sectors?
- Should we now seek a new model from abroad?

Below I suggest some tentative answers to these questions. All of these point to the need for detailed exploration of existing Irish industrial policy, as it interacts with enterprises and sectors. This idea is explained in Section (ii). The evidence in the study suggests a need for further research on the internationalisation of Irish businesses. This is discussed in Section (iii). Finally, in Section (iv), I return to the role of an over-arching industrial strategy, such as the cluster strategy advocated by Culliton, and consider whether its acceptance or rejection matters.

Does the Rejection of Porter Matter for Policy?

Above, I identified two possible interpretations of the limited applicability of Porter's model in the three sectors studied: the 'nascent cluster' view and a rejection of Porter. There is, however, a third possible response. It is that these positions, especially the rejection of Porter, take Porter too literally. It can be argued that Porter's work should be seen as merely a useful set of categories. That it provides agencies with a checklist of things to consider when assessing Irish competitiveness and devising measures to enhance it. It can be argued that his idea of clustering is no more than a reminder of the advantages of concentrating key educational and technological resources in a few locations – a reminder that we need, in a country which finds it hard to make strategic choices in these matters. For reasons that will emerge, this is a view that must, in my opinion, be taken seriously. Nevertheless, I do believe that there are benefits to be had from explicitly abandoning Porter's theory as our guiding analytical framework. These benefits may not be in the conduct of industrial policy itself, but in the way in which we discuss and debate industrial policy and, particularly, in the way in which we relate industrial policy to a range of other policies, such as industrial relations, training and technology (see Section 4 (iv) below).

Should Policy Focus Only on Environmental Variables?

We are all aware that Porter's ideas had an influence on the review which culminated in the Culliton Report (1992). It is important to recall that the main focus, and most developed argument, of that report, concerned the idea that a wide range of public policies should be seen as industrial policy. Policies on taxation, social welfare, energy, infrastructure, education, competition and the regulation of sectors such as telecommunications and insurance, all influence the competitiveness of Irish business. While that was its main message, the report did recommend that the selectivity of state agencies should be directed towards the establishment of industrial clusters around sources of national competitive advantage and that Ireland cannot rely on inward investment. In advocating an approach informed by Porter, Culliton confronted the problem that Porter's work (1990) contains very few specific policy proposals. However, work by Enright (1992), a co-worker of Porter, focused on policy initiatives and suggests a number of steps:

- identify existing or potential clusters;
- invest in developing major technologies and capabilities;
- identify 'holes' in the cluster;
- ensure rivalry permeates the cluster.

The Culliton Report recommended that explicit identification of a limited number of promising niches and segments in which to build clusters should be an important element guiding direct intervention by government.

In this context, we must ask whether the rejection of Porter's theory means that the correct role of policy is only, or primarily, to shape the environment for business through taxation, infrastructure, regulation etc. and a few incentive schemes. My own view, is that policy cannot be reduced to that. As suggested by Clancy *et al*, there is a case for a range of more focused industrial and business-support policies. Nevertheless, in saying that, we do face a difficulty in describing what the guiding principles of those policies is, or should be. Below, I argue that we could begin to address that difficulty by providing a detailed account of how the agencies conduct policy at present.

Should Policy Focus on Firms, Rather than Sectors?

One of the implications of Culliton's cluster proposal was that industrial policy should focus not only on firms, but also on *sectors*. Indeed, fairly or unfairly, that proposal was a feature of critiques of industrial policy going back as far as Telesis (1982), and it figured in a range of NESC

reports, as well as in important studies by O'Malley and others (NESC, 1986, 1989, 1990, 1993; O'Malley, 1989). Culliton advocated identification of potential clusters, as a guide to the operation of a more selective, sector-based, strategy. Implicit in all these critiques was the idea that Irish policy tends to rely too heavily on the identification of *firms* with potential, with insufficient focus on building *sectors*. Does the abandonment of Porter undermine these arguments, and vindicate a firm-based approach? Recall that part of the evidence in the cluster study is that a significant part of the success of indigenous business in the past decade consists of:

- SMEs spread across a range of sectors which are not particularly strong; and
- Individual prominent companies which virtually constitute their sector.

The consultants clearly reject the idea that a sectoral approach has lost its relevance, a view which I am inclined to agree with. Nevertheless, we face the task of identifying the guiding principles which do, and should, inform such an approach. Once again, it is difficult to say more without taking detailed account of how the agencies actually conduct policy. The outcomes suggest that they may combine their various instruments and programmes in a way which, somehow, achieves a sophisticated combination of a firm-led and sector-based approach.

We have also to consider the role of a sectoral approach in the attraction of inward investment. It could be argued that IDA Ireland pursues a distinctly sectoral approach, as evidenced in the developments in computer manufacture, software, pharmaceuticals the International Financial Services Centre. I have heard the suggestion that the IDA is virtually filling gaps in clusters in the foreign-owned sectors. It would be ironic, in the light of the close connection between 'indigenous development' and 'sectoral development' in the long series of critiques of industrial policy, if Irish policy was more cluster- or sector-focused in its handling of inward investment than in its approach to indigenous development.

In reaching a new, post-Porter, consensus on the balance of sector-based and firm-based approaches, we should openly acknowledge the fact that sectoral committees, bodies and published strategies have not been a great success in the past. Furthermore, I suspect this is related to the failure of the Porter model in the three studies. While Porter's theory is notoriously vague, one way to force it to a refutable hypothesis is to ask what perspective on the development of a particular sector the theory would imply. A good example would be the food industry. Numerous

sectoral reports have argued that the future of the sector must be secured by a move to value-added, branded, products, and this is also what a Porter-based strategy would advise. Yet the study by O'Connell *et al* indicates that the competitiveness of the sector has involved a quite different set of strategies. The strategy advocated by sector committees or studies did not seem to make sense to the key actors in the sector. We need to consider the implications of this for both research and policy.

Should We Now Seek an Alternative Model from Abroad?

An important feature of public policy in the past decade and a half has been a widening of our field of view, from comparison with Britain to close study of continental Europe and elsewhere. This has been particularly so in the area of industrial development, and is reflected in numerous studies (such as Telesis, 1982; O'Malley, 1989; several NESCC reports; Culliton, 1992; STIAC, 1995 and others). In these studies, perspectives and policies for the development of the Irish economy were derived from various models: the Japanese firm, the industrialisation of Korea and other late-developing economies, flexible specialisation, the industrial districts of Italy and Germany, the National System of Innovation of successful, small, European countries, Porter's clusters and the networks of resurgent Danish and other regions. One reaction to the failure of Porter's model, might be to seek an alternative model from abroad, (from that list or elsewhere), upon which to base and interpret Irish development.

I do not believe that this would be a fruitful approach. As I have suggested above, the key reason for abandonment of Porter, is not that it doesn't fit particular sectors at a particular time, but that it fails to capture the dynamics of the Irish economy. While other models may have somewhat more relevance to Ireland, they confront a similar problem. That dynamic suggests a new model or pattern of development – involving limited agglomeration, limited scale, a high degree of labour mobility, intense internationalisation, a new kind of social partnership and a plurality of organisational forms. Having been excessively insular for much of this century, we have corrected this with a period of intense search for models in the wider world. That experience suggests that we should now concentrate on understanding the particular pattern of development in Ireland. This does not imply that we need not undertake studies of developments elsewhere. We must, but these will be more in the nature of benchmarking exercises, rather than search for a *model of development*, in the sense of a picture of what economic structures and supporting policies we hope to achieve.

Reasons to Describe and Clarify Existing Policy Approaches

The central argument of this note is that to answer these questions, we now need to undertake some detailed studies of how Irish industrial policy works in its relations with enterprises and sectors. This might seem a strange suggestion, since the normal procedure is to advise *on* policy. Three arguments, implicit in my comments so far, can be advanced to support this suggestion. First, if we are truly to stop shopping for models from abroad, we must explore the Irish pattern of development in greater depth. Second, there seems to be something of a disjuncture between official statements of policy and the real work of the agencies.⁴ Third, the complexity and diversity of business development, and the changing nature of the policy process, means that the agencies (and the firms they work with) are now the key researchers.

In seeking to assess whether the abandonment of Porter matters for policy, I noted the view that Porter's ideas can inform policy, while not being taken too seriously. This begs the question of how those ideas are used in practice. While it was argued that rejection of Porter does not mean that only policies for the general economic environment are relevant, it was conceded that we face a difficulty in describing what the guiding principles of more activist industrial policy is, or should be. In resisting the conclusion that policy can focus only on identifying *firms* with potential, it was difficult to say more about the sectoral element without taking detailed account of how the agencies actually conduct policy. The possibility was raised that they may combine their various instruments and programmes in a way which, somehow, achieves a sophisticated combination of a firm-led and sector-based approach.

The inability of government to significantly shape competitive success, the futility of interventionist policies, the impossibility of 'picking winners', and the primacy of the general business environment, are notable themes in official policy in recent years. Yet alongside that emphasis in policy statements, there seem to be striking developments in industrial policy and business performance. The developments in policy would seem to take two forms. The first is the evolution and adaptation of programmes – such as the Company Development Programme, the National Linkage Programme, the programme for World Class Manufacturing and the recent Networking pilot initiative – within an overall industrial policy which, viewed from any distance, displays

4. The ideas on the need for detailed study of existing Irish policy, outlined in this section, were developed in collaboration with Sean O'Riain, of the University of California at Berkeley.

remarkable *continuity*, over decades not years. The second is institutional innovation, such as the development of the National Software Directorate, Bio-Technology Ireland and, I suspect, re-organisation of the service delivery units of Forbairt, the IDA and the Trade Board. These developments, combined with the success of many enterprises, suggest that policy is playing an important role in the transformation of the Irish economy.

The argument of this note, is that it is difficult to comment on policy implications of NESC's cluster study, without a detailed account of how the agencies use their evolving programmes and how the new institutions work. It is quite impossible to derive relevant policy advice from Porter's theory of clusters, or even from foreign models of 'localised' development which are somewhat closer to the Irish experience. One reason is the pace of change and the sector-specificity which characterises business. This means that the agencies are called upon to provide a complex range of services, which can only be designed in close collaboration with the enterprises. In this context, it is not possible to derive, from Porter or elsewhere, general principles concerning the balance of firm and sectoral focus in industrial policy. Indeed, some would say that it is even impossible to derive, from the industrial districts and other models of 'localisation', a picture of the desirable pattern of firm and inter-firm organisation (Sabel, 1995).

It might well be asked why it is necessary to study the way in which existing policy works in the provision of a range of business services. If it is not broken, don't fix it. But, over the long term, Ireland will have to rely less on explicit state aids in its industrial policy. As competition for inward investment intensifies, and the EU moves towards a more level playing field, business services seem likely to assume a larger role in industrial policy. Consequently, we need to know what works and what does not work in the design and delivery of such services. In addition, we need to study that activity in order to decide who can best provide business services. One of the findings of Cooke's study of dynamic regions for NESC, was that Irish development is relatively 'state-led', in the sense that the Irish state provides many goods and services which are delivered by voluntary associations in other countries. In the wider discussion of Irish social partnership, attention is now turning to the role of social partners, on their own or in collaboration with each other, solving problems by provision of services, rather than merely articulating problems to government.

Institutional Innovation

The central idea is further revealed if we consider the second development in policy noted above: the creation of new institutions, such as the National Software Directorate, Bio-Technology Ireland and the Programmes for Advanced Technology (PATs). We need to establish the role of these experimental institutions in the development of their sectors, in order to judge their worth and derive lessons for general systems of business support. It seems possible that these are, in fact, innovative solutions to the problem of innovation.

In the case of bio-technology, the state faces a typical problem of technology policy. There are three kinds of actor: universities, firms and the state. In engaging with each other they each face a set of risks. The firms and the state face the risk that the universities are really only interested in scientific publications, and will take public or private money, but deliver little of use to the economy. The state could avoid this problem by undertaking research within state-controlled institutions. But such institutions are unlikely to remain at the forefront of science. The firms could avoid the problem by doing their own research. But they judge the risks too high, and the reward hard to internalise. The policy must be near enough to the firms to be commercially relevant, near enough to the universities to be scientifically strong, and near enough to the state to yield a public return on the outlay of public money. Building on work her work on the Irish bio-technology sector, Sally Hayward and I are exploring the idea that Bio-Technology Ireland (BTI) is a institutional innovation which goes some way to address the risks and uncertainties which can prevent activity in high-technology sectors. BTI has evolved complex relational contracts, defining the obligations of each party and the division of rewards of any successful inventions. However, we are not assuming that it is a contractual or institutional 'solution', in the conventional sense. It seems unlikely that institutional or contractual design can define responsibilities and rewards once and for all. A more intriguing possibility is that BTI facilitates an ongoing review and re-definition of roles and obligations, akin to the 'learning by monitoring', described by Sabel (1994).

It seems that in other parts of industrial policy a similar process is taking place. The state or public agencies must work very close to enterprises in order to be of any use to them, but must retain some difference from them, in order to promote the wider sectoral and, indeed, national interest. This combination of closeness and distance has been described as 'embedded autonomy' (Evans, 1995). In advocating that we now study existing policy and institutions in some detail, is not suggested that the agencies are 'called to account', but that they are 'invited to reveal'.

(iii) Exploring the Internationalisation of Irish Enterprises

One of the striking patterns in the three sectors studied by Clancy *et al.* is the extent to which indigenous companies are internationalised. This is true not only in newly-strong sectors, such as software and the financial services, but also in what might have been expected to be the classic indigenous cluster, food. While the study drew on this to demonstrate the limits of Porter's theory, it could not explore it in depth. In the light of that study, one of the authors of the report on the dairy sector, Larry O'Connell, and I have begun research on the internationalisation of Irish businesses.

We can now identify an important evolution in the internationalisation of the Irish economy. In the early years, international investment was confined to inward investment in greenfield, relatively low-technology, mature, products. Over time, inward investment moved to high technology sectors, but still involved relatively low value-added activities. In recent years, Ireland has attracted inward investment in fairly high technology, high value-added, activities within some of the world's most dynamic sectors. But, the overall process of internationalisation is also moving beyond inward investment in greenfield projects by TNCs. It encompasses significant outward investment by Irish firms and international interest in strong or emerging Irish enterprises. Successful Irish enterprises have, in recent years, been acquired by foreign firms. Indeed, such acquisitions, and the launch of emerging Irish enterprises on the New York or London stock exchanges, have become routine. While this broadening and deepening of the internationalisation process is relatively recent, it differs significantly from the pattern of internationalisation discussed in Irish research and policy debate since the 1960s.

While opposition to inward investment was very limited, the country's heavy reliance on it was seen as a weakness in overall economic strategy and performance. This was underlined in numerous studies which highlighted the large differences between foreign owned and the indigenous sectors (see NESC reports numbers 56, 64, 66, 67, 83, 89, 93, 94 and 96). It has long been argued that inward investment on its own would be insufficient to sustain the Irish economy. While this is undoubtedly true, the longer perspective which is now available suggests two observations.

First, it is now clear that the Irish economy became accustomed, relatively early, to attracting and using inward investment. This is a factor which many other peripheral and regional economies (in the UK and elsewhere) are only now struggling to accommodate. To some extent, Ireland's earlier weakness has now become something of a strength.

Second, while formal linkages between the TNCs and indigenous enterprises - such as sub-contracting - were certainly slow to develop, it seems likely that other processes of linkage or diffusion were occurring. One of these is the impact of the TNCs on Irish organisation and management. It seems possible that while we were looking for commercial linkages, and not finding as many as we wanted, an organisational revolution was taking place behind our backs. It seems to us that the internationalisation of the Irish economy has coincided with a profound transformation of the organisational capability and consciousness of Irish business, Irish policy and, indeed, Irish society. In this regard, the role of emigration and return migration in facilitating technical and organisational change should also be considered.

Consequently, I believe that having confirmed the significance of foreign demand, foreign factors, foreign rivalry and extra-national linkages, it is now necessary that we explore in depth the nature of this internationalisation, using conceptual frameworks other than Porter's. The work could begin by mapping the pattern and extent of internationalisation. In undertaking this work, Larry O'Connell and I are beginning with an eclectic approach, rather than adopting the existing models of 'internationalisation' and 'market entry' in the business literature. We have several reasons for this approach. One is that we do not accept that internationalisation should be the dependent variable, as it is in most studies. Although internationalisation is the focus of research, we are interested in it as a route to development. A second, and related, reason is that we want to explore the relationship between internationalisation and organisational change, a relationship that I hinted at when discussing 'home base', above.

Moreover, it should not be assumed that the extent of internationalisation revealed in the cluster study, involves *dependence* on foreign factors etc. in the sense in which that term has traditionally been used. That idea had a certain relevance when Ireland's development was confined to the limited opportunities not taken up by more advanced countries, and to activities located here by them. There is at least a chance that new patterns of organisation and co-ordination are emerging which can be adopted as readily in the periphery as in the core (Sabel, 1995). This can never be seen with a conceptual framework which emphasises economies of scale, rather than economies of scope, and industrial structures, rather than patterns of organisation and coordination. Internationalisation may have been one key route to adoption of the new organisation in Ireland; but that does not mean that internationalisation is the essence of the new pattern, where 'internationalisation' has its conventional post-war meaning. In other words, it is not the emergence of Irish 'multinationals' that seems of most interest, though it is of some interest.

(iv) Does Strategy Matter?

In judging the implications of studies which cast grave doubt on the relevance of Porter to Ireland, we are forced to ask what we used his theory for and what we expected of it. If we took it as a scientific theory, which was in close correspondence with the true nature of the economy, we are certain to be disillusioned now. But there is a growing recognition that the 'truth' of economic and social research is to be judged by its persuasive force, and whether it is good to steer our practice by. This is the implication of the *instrumentalist* or *experimentalist* view expressed in my quote from William James at the head of this note.⁵ This perspective also affords a reinterpretation of business studies, where it may have a particular relevance to the problem in hand. Strategy can be seen as a largely rhetorical activity, in the best sense of the word rhetoric. Eccles and Nohria argue that 'The rhetoric of strategy provides a common language used by people at all levels of an organisation in order to determine, justify, and give meaning to the constant stream of action that the organisation comprises' (Eccles and Nohria, 1992, p. 88). What matters is not whether the strategy is true or false, but whether people find it useful in action. Effective strategies tend to have a number of features. One is that they claim to be a break with the past. Another is that they contain core concepts that are chosen for their ability to provide fresh and useful insights. But another important feature of these core concepts, and of effective strategies, is that they are ambiguous enough to be flexible. This view of strategy recognises 'an ongoing process of establishing shared sets of assumptions that are treated as real until experience show that they are not' (Eccles and Nohria, 1992, p. 101). Without these shared assumptions, or 'shared understanding' as we have come to call it in Irish social partnership, common purpose is difficult to establish and collective action becomes difficult.⁶ At the same time, if the assumptions are simply treated as reality, collective action can end up moving in the wrong direction' (*ibid*). This suggests maintaining a 'gentle scepticism', so that the stated strategy can give meaning to actions and events as they unfold. 'What is most important is not predictive power, but an ability to make ongoing sense of what has happened' (*ibid*).

Porter's ideas on national competitive advantage fit this description. Indeed, the view that Porter provided the agencies with no more than a checklist of influences on competitive advantage, and a reminder of the

benefits of geographic concentration, might be seen as an example of 'gentle scepticism'. In the light of the study of clusters, the question then is: does that view imply a more muted rejection of Porter than has been suggested by Clancy *et al* and in this note?

While that view may have advantages, I believe there are benefits to be had from more explicitly abandoning Porter as our guiding analytical framework. In the context of social partnership and the Culliton group, Porter's ideas are somewhat more than a checklist, *internal to the agencies*. The idea of building clusters of Irish competitive advantage is connected to a number of other ideas, such as 'high road' development and the 'social market economy'. These ideas played an important role in facilitating the difficult decisions taken in the Programme for National Recovery, by assuring everybody that the sharp fiscal correction was not the first step in a low-cost, low-skill, low-social provision strategy for the Irish economy and Irish society. The success of the economic recovery, then led to calls for a fuller implementation of the high road strategy, in industrial policy (by more vigorous building of clusters), in training (by adoption of a German-style system of technical training and apprenticeships) and in industrial relations (by national adoption of German-style works councils). These ideas were fine when they were aspirations, and assurance against the 'low road'. But now that there is space for real choices in industrial policy, training and enterprise-level partnership, the quality of these ideas matters. The problem is that, one by one, they have proven to be of limited relevance to the Irish context. Craft-based competitiveness might once have been the 'high road', but would be a 'slow road' for Ireland and, indeed, no longer guarantees competitiveness in Germany. On investigation, works councils proved not to be an adequate or feasible model of enterprise-level partnership in Ireland's fragmented industrial relations and enterprise system (NESC, 1996). And now the idea of a cluster-based industrial policy seems not to chime with the dynamic of the Irish economy.

While Porter's ideas can still provide a useful checklist, there would seem to be advantages in dropping his theory as the reference point for assessment and discussion of industrial policy. In this respect, rejection of Porter's theory may be of more relevance to the critics of industrial policy, than to the day-to-day work of the agencies. But these critics are not just academic observers. In a system of social partnership, they are important actors whose perspectives and leadership are critical to the continuation of Ireland's coherent economic strategy. They are already re-assessing the training and industrial relations components of the conventional 'high road' model, in order to make real choices which fit Ireland's remarkable economy. Having begun that, they have little to fear, and potentially much to gain, from a realistic look at the industrial policy component, the Porter-inspired strategy of building clusters.

5. For application of a similar view to Irish economic research and policy see O'Donnell (1992).

6. The characteristics of Irish social partnership are described in the most recent NESC Strategy report (NESC, 1996, Chapter 12).

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CHAPTER 4

ENTERPRISE SUPPORT POLICIES IN DYNAMIC EUROPEAN REGIONS: POLICY IMPLICATIONS FOR IRELAND

by
*Philip Cooke, Centre for Advanced Studies,
 University of Wales, Cardiff.*

ABSTRACT

Today, the number one priority for competitive advantage is innovation. A new approach to regional business development has been pioneered in Europe. This involves building a regional innovation infrastructure. Learning through "networking" has proven to be a successful approach in some of Europe's more dynamic regional economies such as Baden-Württemberg and Emilia-Romagna. This involves maximising the complete range of regional innovation assets. The paper assesses knowledge-transfer at the regional level and outlines the key elements for successful regional innovation networking practices. The major findings(s) are that business networking is an effective way of increasing company turnover; that not-for-profit organizations are excellent for setting up networks because they are trusted, and that innovation networks are perhaps the most difficult, thought-requiring but important of the types of business network conceivable.

1. INTRODUCTION

Regional authorities throughout Europe have fashioned a new approach to regional development. This change was triggered by the growing recognition that regions can no longer compete simply by offering a crude combination of semi-skilled labour, on the one hand, and financial incentives for inward investment on the other. This kind of regional policy made little or no impact on the main regional development problem, namely, low innovation potential, a problem which afflicts both the indigenous small and medium enterprise (SME) sector and the branch-plant sector.

Today, all the most dynamic regions in Europe are of the view that their local firms need much more than a liberal macro-economic climate if they are to remain on an innovative footing. Strong regions like Baden-Württemberg and Emilia-Romagna as well as smaller national

economies like Denmark are examples of regions that are trying to create a competitive edge for themselves by building a network infrastructure through which local firms have easy and affordable access to a wide array of technical services.

There are two important questions to be asked of these regional innovation infrastructures. First, how do they provide advantages for firms in the region? Second, what lessons can be learned from the more successful regional innovation networks?

2. NETWORKS AS THE KEY TO REGIONAL ECONOMIC DEVELOPMENT

In the past, it was thought that decisions about innovation had to be made by the central government. The "technopole" idea, once the leading innovation concept, was a good example of this, but this is no longer leading the field. In its place is an emergent set of developmental practices which are commonly described as "networking" or "the network paradigm" (Cooke and Morgan, 1991). The key elements of networking are as follows:

- Reciprocity – a willingness to exchange information, know-how, proprietary knowledge and goods (Powell, 1990).
- Trust – a willingness to risk placing faith in the reliability of others (Sabel, 1992).
- Learning – a recognition that knowledge develops and best-practice should be learnt (Lundvall, 1988).
- Partnership – a preparedness to solidify reciprocal relationships preferentially (Sako, 1989).
- Decentralism – a realisation that centralised information and decision-processing is inefficient (Aoki, 1986).

In looking at achieving excellence for regional economies it is wise to focus on what is achievable within practical limits. Thus, regional and small-nation economic comparisons are more appropriate than, say, modelling on the Japanese economy with its scale and cultural, financial and governmental assets. For reasons of mix, we have chosen Denmark (small economy, innovative firms, few large indigenous corporations).

Emilia-Romagna (weak regional institutions, many SMEs, few large firms), and Baden-Württemberg (strong *Land* Government, innovative SMEs, large indigenous corporations) to illustrate excellence in a relevant context at an appropriate scale.

(i) Baden-Württemberg

This is one of Germany's strongest regional economies with, at its heart, the Mittlere Neckar industrial region centred on Stuttgart, where Gross Domestic Product (GDP) per capita is 34 per cent above the EC average of 100. Key employers are Automotive (237,000), Electronic (266,000) and Mechanical (281,000) Engineering. Leading firms include Daimler-Benz, Porsche and Robert Bosch, all headquartered in the region, Audi, Alcatel-SEL, Sony, IBM and Hewlett-Packard. World-leader machine tool firms like Heidelberg, Trumpf and Traub are also based there.

The large and small firms (SMEs) of the region interact fruitfully. Many Mercedes, Audi and IBM supplier firms are present in Baden-Württemberg (BW). Helping the SME or *Mittelstand* sector keep innovative and the large firms to acquire basic research findings are a host of universities (9), polytechnics (39), basic and applied research institutes (44) and Steinbeis technology transfer centres (120). These, along with the thirteen Chambers of Industry and Commerce, and the trade and industry promotion and financing activities of the Business Associations and the Ministry of Economic Affairs and Technology, are the basis of BW's regional innovation system. To this should be added BW's much vaunted "dual system" of vocational training. In this, apprentices spend one third of their three-year's study in college, two-thirds at the workbench.

A good example of the way this network operates concerns the impact of "lean production" upon *Mittelstand* SMEs (see Morgan, Cooke and Price, 1992). Lean production is the key to the competitiveness of Japanese industry.

Japanese competition causes large firms to demand greater innovation from SMEs who supply them with components and services. However, in BW the business associations know that SMEs cannot afford R&D. In response the *Land* or regional Ministry of Economics approaches and appoints international consultants to investigate. The consultants' report recommends SME co-operation, but they fear loss of know-how. So the BW cabinet recommends an Applied Research Institute as third party R&D broker.

In exchange for accepting this solution, with an independent intermediary protecting the innovation knowledge of the SMEs, firms will receive government incentives towards the costs of establishing R&D functions. Not all supplier firms - even in the machinery industry where the pressure is severe - will join the initiative. Many of the non-joiners will become second or third tier suppliers, go under or become Japanese acquisitions.

(ii) Denmark

With a population of 5.1 million, approximately half that of Baden-Württemberg, it is not surprising that Denmark has a relative lack of both large, research-based firms and a government technology policy. Research by the European Commission shows that Denmark was slow to introduce microelectronics equipment and that when efforts were made to catch up in the 1980s there were organizational inadequacies and skills shortages. However, Denmark is the EU's second most prosperous country in terms of GDP per head. Because of Denmark's small stature it can generate communication and interaction economies, especially in its system of SMEs.

Of key importance to this system are the support infrastructures for small business. The most important of these are: the Chambers of Commerce and Industry; Local and regional Technical and Special Technical Schools; Local and Regional banks providing long-term loans for local SMEs; and the Danish Technological Institute with its 15 Technology Centres.

The Danish Technological Institute (DTI) is a privatised branch of the Ministry of Industry. It employs 1,200 technologists and others in developing, identifying and transferring generic technologies, largely to SMEs. Some 55 per cent of DTI's contract income is from firms employing less than 50 people.

Recognizing that isolation from information and know-how was a handicap to SMEs, DTI in 1989 established a "Network Programme" which channelled government support to firms willing to co-operate in certain business activities. In one small town in Jutland, the following case-history is instructive.

Seven small furniture makers found local markets shrinking. With the aid of a DTI broker they took advantage of the Network Programme. Their discussions led to them agreeing to create a trading company. Through the trading company, they divided up key tasks, so that, for example, design for all firms is done by two designers. Each firm specialises in a particular production phase and the company now exports high-quality furniture to the EU and beyond.

By 1992, 175 networks had been created, in which 42 per cent of the firms had increased turnover per year by 4 per cent or more, and one in five showed increases of 10 per cent or more. Of key importance to the success of this programme was the appointment by DTI of "Network Brokers." These are local professionals, lawyers, consultants or engineers whose job it is to create networks of firms, colleges, local authorities, enterprise agencies and so on. These networks then bid for grants from technology programmes aimed at product and process innovation, quality improvement, product differentiation, and, very importantly, design, which is seen as a key selling point. These networks maintain the philosophy that "The Competitive Advantage of Regions is Achieved through the Competitive Advantage of Firms."

(iii) Emilia-Romagna

This northern region of Italy, centred on Bologna, is home to numerous examples of "industrial districts." Bologna itself is a major centre of machinery-production, Carpi specialises in clothing, Sassuolo in ceramics and Modena in motorcycles (Ducati) and luxury cars (Ferrari, Maserati, Lamborghini). Apart from these famous names, Emilia-Romagna (ER) has few large firms but a large number of SMEs (245,000, 90,000 in manufacturing, employing less than 50 in 1988).

The industrial SMEs tend to cluster in districts which, because of the polycentric urban system of the region, are spread out at the foot of the Apennine mountains. As in other dynamic SME-based economies ER is rich in business support infrastructure. The main institutions and their functions are:

- Artisans Associations: accounting, payroll and income tax returns, training, financial advice, technology and premises;
- Local and Regional Banks: small loans, long-term loans, community-based referral etc;
- Chambers of Commerce: information, exports, trade fairs, technological and financial advice, marketing;
- Regional Government: regional development agency (ERVET) and local Innovation Centres.

The regional government, the Chambers of Commerce, banks and business associations have shares in the regional development agency ERVET (Ente Regionale per la Valorizzazione Economia del Territorio) which in turn runs nine dedicated Innovation Centres. These provide "real services" (not financial grants or loans) to SMEs in specific

industries. Services include; research, promotion, certification, technological consultancy and training.

As an example of the innovative capacity of CITER (Centro Informazione Tessile Emilia Romagna), the clothing innovation centre, the following is illustrative. Third World firms are increasingly copying Carpi clothing designs, taking market share. The Artisans Association tells ERVET of loss of Carpi firms' competitive design advantage. ERVET asks the Italian energy research institute (ENEA) to work with CITER. ENEA and CITER develop a new CAD-CAM design system for SMEs. The SMEs access CAD-CAM; time-to-market is reduced tenfold and market share is recovered. The time taken to solve this problem was under one year. Let us now look at the approach being taken in less accomplished regional systems.

3. RELEVANCE OF THIS ANALYSIS FOR IRELAND

It is now recognised that the Irish economy has gone through a dramatic structural adjustment in the past 25 years. While this has been a painful experience, it has created an economy with considerable strengths, as well as weaknesses. It has meant that the Irish economy consists primarily of SMEs. It has meant that the Irish economy is significantly reliant on inward direct investment and sub-supply to multinational enterprises (MNEs). While Ireland has a weak indigenous sector, it is one which has been severely tested by competition. All the firms in manufacturing, and many in services, are now living in a highly competitive environment. Nevertheless, as noted above, it remains difficult fully to assess the renaissance of the indigenous Irish economy.

(i) From Selectivity to Networks and Clusters

There has, indeed, been a change in Irish industrial policy in recent years. O'Malley (1992) notes the increased recognition of the importance of nurturing Irish-owned industry by selective incentives. Technological capability, export marketing and skills (including management) were increasingly supported, at the expense of fixed asset investment. In addition, more targeting, selectivity and less wasteful automatic grant giving have been major themes. This selectivity or exclusivity focused on supporting firms with good growth potential, using performance indicators as conditions for grant payment, and exchanging state funds for equity shares with a view to yielding a return on the state's investment. The belief that the State had the capability both to support leading firms and anticipate a return on its investment is testimony to a distinctive policy-culture in which the State is seen, necessarily, to have a key

leadership role in the economic development process. As O'Malley notes;

The idea was that larger amounts of money, going primarily to build up a relatively limited number of selected indigenous companies, would enable these companies to grow very substantially (O'Malley, 1992).

Thus, policy has recently concentrated on devoting incentives to companies with high growth potential.

Examples of this are the Company Development Programme and the National Linkage Programme. This development meant that fixed asset investment declined in the period 1985-91, from 61 per cent to 43 per cent of the industry budget, while technology support rose from 11 per cent to 20 per cent, and marketing support rose from 11 to 14 per cent. Despite this, the overall level of expenditure on indigenous industry only rose from 51 per cent to 54 per cent of the industry budget, between 1985 and 1989. However, the more stringent selectivity criteria being applied meant that more resources were going to fewer firms in this period. Hence by the late 1980s to early 1990s, the Irish government was seen, more or less successfully, to be sustaining a policy, if not of 'picking winners', then of 'backing winners'. Superior economic performance of the heavily grant-aided indigenous enterprises should not be seen as necessarily supporting the existing policy approach. Its assistance is selectively awarded according to growth potential. The result is that firms which received assistance were those which were already in a strong position to develop. O'Malley's suggestion - that if the industry budget were to be cut, this would have a negative effect upon the performance of these firms - is worrying. There is an underlying sense in which they should be weaned off this life support system, with the emphasis on weaned rather than deprived. The timing too seems propitious for a mixed approach in which state assistance is provided to enable firms to help themselves, perhaps by helping each other. Ireland may be poised at the stage in its economic history where state management of enterprise support may begin to transmute into state support for self management of business support, through something which has elsewhere been referred to as 'economies of association' (Gerocki and Knight, 1991; O'Donnell, 1994).

Greater selectivity, as evidenced in recent years, is not the same thing as a cluster strategy. If Ireland's current challenge is to develop clusters of horizontally and vertically linked sub-sectors, it is important to ask how this should be pursued. The central policy recommendation of this paper is that a networking policy constitutes an important first step towards the development of deeper clusters in the Irish economy.

O'Sullivan (1995) notes Irish industrial policy seems, as yet, to have proven unsuccessful in inculcating learning processes sufficiently within the indigenous manufacturing sector. As emphasised earlier in this paper, learning and innovation are two of the key attributes of successful firms in more dynamic economies in Europe. Marketing and technological applications are identifiable as weaknesses amongst indigenous firms (with noteworthy exceptions) particularly in respect of international markets and networks. O'Sullivan (1995) continues, in line with the thesis developed here:

The basis for continuous innovation has not been established on a widespread basis either in individual indigenous companies *nor on the basis of linkages between them* (O'Sullivan, 1995, p.385; emphasis added).

She concludes that companies have concentrated on low-skilled, low value-added activities, instead of seeking to take "the high road." Part of the reason for this is that:

... there has historically been hardly any long-term co-operation between Irish small firms in the provision of purchasing, marketing, financial services or through supply linkages" (O'Sullivan, 1995, p.386).

This is perhaps too strong, since, on linkages at least, some success has been noted for the National Linkage Programme. Nevertheless, it correctly highlights the relationship between weaknesses in marketing, technology, training and innovation, on the one hand, and weak inter-firm relations and co-operation, on the other.

4. FROM STATE SUPPORT TO NETWORKING AND CLUSTERS

A central conclusion is that Ireland's state economic development apparatus - which has been the mainstay of the economic development process in Ireland - needs to adjust its focus and change its objectives to encompass the new requirements for economic and business development. Amongst these are the need for:

- (i) Integration of the foreign and domestic sectors;
- (ii) Upgrading and refocusing of the domestic sector;
- (iii) Encouragement of a co-operative ethic among firms;
- (iv) Promotion of the idea that self-help through networking can improve enterprise performance;
- (v) Stimulation of an interactive learning culture among firms and intermediate institutions;

- (vi) Advancement of the innovation capability of Irish science and technology by closer interaction with firms;
- (vii) Development of a National Innovation System capable of linking “top-down” and “bottom-up” capabilities in an interactive innovation system;
- (viii) Focusing these developments around key sectors;
- (ix) Seeking to build strong industrial clusters around the system architecture of interactive innovation.

Key elements of these recommendations are elaborated below.

It was recommended above that there is a perceived need to integrate the foreign and domestic sectors by, in part, re-focusing the indigenous manufacturing SMEs to entering vertical supply chains. For firms not so suited to such integration, encouragement of a co-operative ethic by means of networking and learning were advocated. Beyond that, the institutionalisation of an interactive innovation culture in which clusters linking complementary, sectorally diverse but industrially-related, companies was required. This examination of the performance of the indigenous manufacturing sector reinforces this argument. The question is how to proceed.

There is a role for policy but it is one in which the State can usefully help firms to help themselves. The above recommendations boil down to the need to take measures in support of building competitive advantage for Irish firms along three dimensions. The three concern:

- Networking of Firms;
- Clustering of Firms;
- The National System of Innovation.

The aim should be to achieve systems integration by taking practical steps in support of encouraging both inter-firm collaboration and firm-agency collaboration. However, before that it is necessary to make a key distinction in definitional terms between networking and clustering. These will be distinguished and their distinctiveness clarified next.

(i) Networking

Confusion can easily arise in the definition of these two enterprise support concepts. According to Rosenfeld (1995) the term *network* generally refers to a group of firms with restricted membership and specific, even contractual business objectives likely to result in mutual gains. The members of a network choose each other; they agree explicitly to co-operate in some way and to depend on each other to some extent. Networks may more readily develop within clusters, especially where a

wide range of business transactions conducted over a substantial period of time has developed the reputation of partners and helped build up trust in their reliability and willingness to exchange as well as deliver products or process knowledge.

(ii) Clustering

A business cluster, suggests Rosenfeld (1995) is a “geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue, that share specialised infrastructure, common opportunities and threats” (p.5). Clusters have no formal membership requirements, can encourage specialised services to locate in a region, are based on high-trust transactional relationships between firms, in the vertical and lateral dimensions, and foster implicit co-operation around a collective vision rather than common goals. Clusters should be statistically demonstrable and, ideally, geographically distinctive in terms of higher than average location quotients, trade shares and the like. They should be important to their economy and they may embody a range of products or services. At one extreme they may be a single product, such as knitwear, at the other they may be united across a product range such as electronics where, to some extent, skills and technologies rather than products link cluster members. Vertical linkages may be more prominent in clusters than in networks and they will rely on a collective training, technology transfer, business services and innovation infrastructure, particularly for SMEs, as a consequence.

TABLE 4.1
Networks and Clusters Summary Table

Networks to give access to specialised services at lower costs
<i>Clusters attract specialised services to a region</i>
Networks have restricted membership
<i>Clusters have open membership</i>
Networks rely on informal or formal-contractual agreements
<i>Clusters are based on shared norms of reciprocity</i>
Networks facilitate more sophisticated business practices
<i>Clusters facilitate firm-acquisition of wider competences</i>
Networks have common business goals
<i>Clusters have shared vision</i>

Source: after Rosenfeld (1995).

Both approaches to policy are relevant in the Irish case and clustering has been commended to the Irish government in the Culliton report. However, here while advocating clustering as an appropriate medium-term objective, it is *recommended* that attention is first devoted to *networking* as a policy measure aimed at the indigenous Irish manufacturing sector. This can apply primarily in the horizontal inter-firm dimension but its rationale can also be justified, where appropriate, in the vertical dimension. For instance, as in Denmark, attention could be devoted to the furniture industry, the contract mould industry or the publishing industry with a view to encouraging shared actions to improve technological marketing, management and employee skills in the industry as a whole, or at least that part of it persuaded of the efficacy of and willing to participate in a Network Co-operation Programme of the kind pioneered in Denmark.

The requirements would be the same; a broker service, intensive broker-training, an incentive system for brokers to form and firms to join networks. Thereafter, network members should design joint action plans, again with a degree of incentive provided to cover costs of specialist technical, financial or business advice. Finally, the stage of implementation of the project - say, in publishing, a move into electronic publishing for a pilot product - should also be subsidised to a level that makes it feasible but demands joint-funding from network partners. The full range of implementation requirements from technology through skills development to marketing should be embodied in the network support measures.

In the vertical dimension, the partnership might be focused on a single or small number of, perhaps sophisticated, final customer-firms. In this case, the trained broker's function would involve interaction with and integration of the customers as well as the supplier firms or would-be supplier firms involved as network members. Through this process a clear set of objectives would be defined in terms, let us say, of technological, managerial, logistics, quality, reliability, pricing and deliverability criteria and a joint action plan would be prepared to seek to achieve those objectives. Meetings in an associational or "club"-like atmosphere would be an essential element of this kind of networking, as with that in the lateral dimension, and an implementation programme, also funded on a joint-cost basis would be expected to result in the anticipated actions being realised. Experience in operating the National Linkage Programme (NLP) would usefully be incorporated into the design of such networking, but it could be expected that a rather larger

number of firms would become network members than may have been the case with NLP.

Clearly, the wisest step would be to run some pilot projects¹, preferably in already reasonably robust sub-sectors such as; furniture, printing and publishing, metals engineering and automotive, knitting and meat-processing, to which might be added electronics components given the known presence of an exacting and globally competitive high technology sector in Ireland. The overarching aim should be to encourage the indigenous Irish sector away from "the low road" route towards "the high road" of higher skill, higher value-added and higher incomes. In the process of learning from each other, from brokers, experts and customers, Irish firms will be engaging in the upgrading, innovation-seeking activity that seems at the moment to be the province of so few.

Later, as the Network Co-operation Programme is extended, the population of *receptive* firms will have grown. On that basis, say two-to-three years after the start of the pilot programme, serious attention could be given to promoting, amongst those cross-sectoral, complementary firms that are receptive to networking, the concept of broader, looser cluster building. Here, awareness of the differences between networking and clustering will have been made clear but, again, State agencies could take on the *animateur* or *facilitator* function to stimulate a broader dialogue between, say, "networks of networks", as appropriate. Rather than dictating which kinds of industry should be given support towards becoming clusters, and which not, a dialogue and demand-driven approach should be sought.

(iv) The National System of Innovation

As the processes described, supported by the policy action-lines recommended, gain momentum, it is likely that technological and other innovation-related demands will arise. Here, there is a case for encouraging adjustment both to the culture of interaction between the scientific and technological organizations, the State agencies and business, and the priorities of public and industry innovation spending within Ireland. Smaller, successful economies such as those of Denmark and Norway tend, first, to scour other countries' science and technology output findings from databases, contacts and the like to identify what is of interest and relevance to their innovation system and its firms, and second, not to try to cover all areas in their science support portfolios. Rather, prioritisation of applied science expenditure towards research

1. The next chapter in this collection by Dermot O'Doherty describes the recent experience of a pilot network programme in Ireland.

areas in which there is comparative competitive advantage, or new areas which may be expected to yield it, is the route chosen. Interaction between the science base, research institutes, development agencies and firms is common and regular.

The "Inter-Firm Co-operation Programme" proposed by the Science, Technology and Innovation Advisory Council (STIAC) seems to be very much along the lines being discussed here in general.

It states that:

The basic structural problem of Irish industry - the small size and scale of operation of most indigenous firms - must be directly tackled through a programme to bring enterprises together in co-operating groups (STIAC, 1995).

In making this recommendation STIAC notes the success of the Danish Network Co-operation Programme as the model for this approach.

While it is crucial to distinguish between the conduct of R&D and the practices of innovation, the spend by indigenous sector firms is low and narrowly based. Estimates in STIAC (1995) put R&D performing indigenous firms at 214 in number with engineering accounting for 30 per cent of expenditure, food and furniture/timber 16 per cent and textiles 6 per cent. Some 4 per cent only of Irish firms are engaged in formal R&D activities. However, as noted above, *doing* R&D may not be as important as *assessing* the results of R&D conducted elsewhere. An interactive learning and innovation approach as described for Denmark can, to some extent, compensate for a relatively low R&D spend. The level of expenditure on R&D is initially conditioned by the scale and reach of firms. On balance, the fewer the large indigenous multinationals, the lower the R&D spend since SMEs are generally unlikely to prioritise research expenditure over other possible investments.

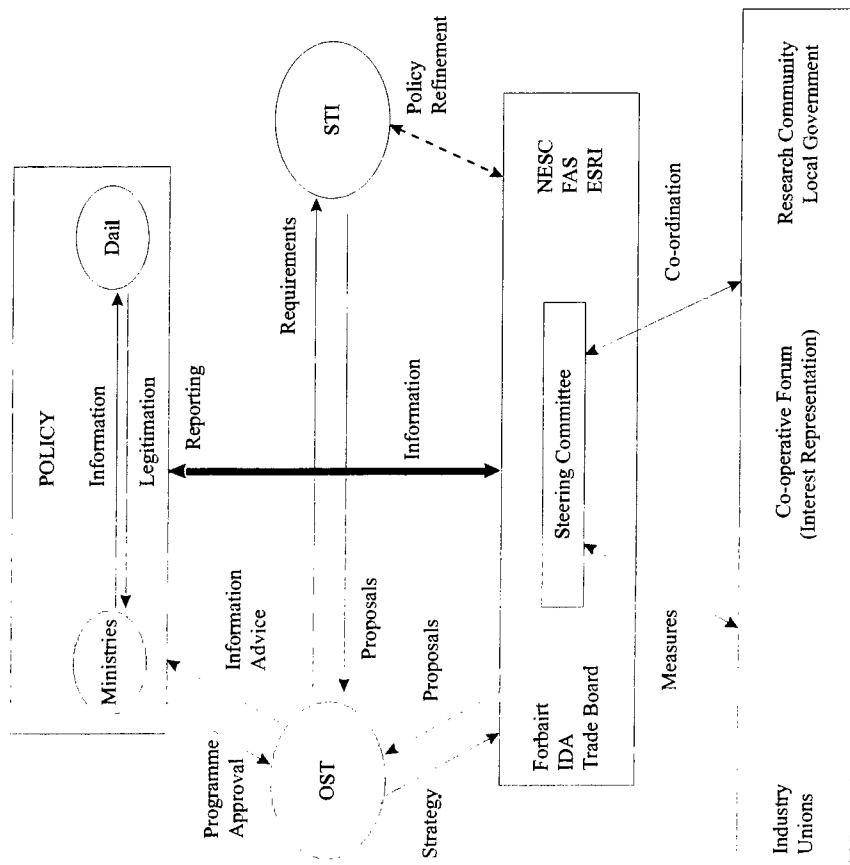
Thus, without making or demanding large increases in government or business expenditure on R&D, *innovation*, which is here defined as *the commercialisation of patented or other new knowledge*, could be increased by enhancing the capacity of Irish firms to access and use knowledge with innovation potential. This approach, which is referred to as "learning-by-searching" and "learning-by-exploring" requires a network model of enterprise support amongst and between the "innovation architecture" and the firms. The innovation architecture includes the university research community, research institutes, relevant government agencies (e.g., Office of Science and Technology (OST)), technology transfer agencies, technology consultants, innovation centres, science and technology parks, training agencies, banks, venture capitalists, business "angels" and information providers.

To make such a network architecture function it must be recognised that consensus of the kind so usefully put together in the social partnership arrangements at the macro-level, needs to be forged amongst players in the innovation and enterprise support field. A "*Technology Policy Concept*" approach such as that proposed for Steiermark could have an important role to play in this process.

Envisaged in the Technology Policy Concept model is a set of mechanisms for ensuring that the innovation architecture has the capacity to function as an integrated system with flows of information and authority clearly specified. In the stylised representation in Figure 4.1, the key elements are the Government, the Science and Technology Policy and Advisory bodies, the Agencies of economic development and the Social Partners (including local government and others). Clearly the system membership would include those bodies and interests with a remit for the Irish *innovation system* at the levels of industry and the Irish governance machinery. The diagram is illustrative rather than exhaustive. For example, in the "Co-operative Forum" the "Research Community" interest would include university, college and research institute representation. In the "Agency" box, other agencies may need to be included (e.g. Forfás).

The clear aim of the system-members would be to mould the disposition of resources for innovation to a strategic programme, agreed in all essentials through the consensus-building and management process, by all key players and interest-representatives. It should entail decisions to *privilege* certain kinds of research, scientific and technological policies in terms of government resource allocation and to pursue enhanced innovation capacity objectives for firms in line with the strategically agreed resource allocation priorities. Detailed measures involving, for example, a Network Co-operation Programme or a Cluster Support Programme should be infused with, though not necessarily limited by, the Technology Policy Concept. Establishing a mechanism such as the one described, with the understanding that it has permanence and legitimacy built into its terms of reference, with a regular cycle of action-oriented forum and other kinds of meetings to ensure the correct flows of information, proposals, strategies and measures is of crucial importance to the construction of a National Innovation System for Ireland.

FIGURE 4.1
A Technology Policy Concept Model for Ireland



Source: after Joanneum Intereg (1995).

5. THREE FORERUNNERS OF A NETWORK PROGRAMME

If there is to be a move towards the development of a both well-networked and, ultimately, interactive innovation system, underpinning and infusing the Irish economy, then it will be helpful if there are some suitable examples on which to build. In the following, three more-or-less well-known instances are chosen to illustrate policies and processes that may be of value as forerunners of the kind of thinking that may need to become pervasive.

(i) The National Linkage Programme

This programme seeks to encourage the integration of the foreign and indigenous sectors. By first identifying the prospects or indigenous supply to the multinationals, then deploying procurement officers to investigate these prospects further with customer-firms in Ireland and beyond, this programme shows awareness of the importance of understanding contemporary purchasing culture and assessment procedures. Clearly, if you do not know where your supplier firms are, in terms of quality, price, reliability and deliverability, you cannot assist them to win contracts. So, this kind of auditing and sensitising procedure is an essential first step.

On *Forbairt's* statistics, for the eight-year period, 1985-93, the increase of £492 million in Irish raw material purchases, supporting 11,000 jobs in supplier companies, looks impressive. However, as the 1993 Government Task Force noted, there was concern about lack of co-ordination between IDA and ABT over the Linkage Programme, and, it appears, criticism of the high degree of *selectivity* of supply-firm candidates which excluded the majority of indigenous suppliers. This is, to some extent, understandable, because of the need to hit performance targets. Nevertheless this contrasts rather markedly with the Danish Network Programme, albeit with its different goals, which was remarkably *inclusive* of a large share of the Danish SME sector, albeit not without criticism of its own to bear. The Regional Linkage Programme is to be welcomed but, once again, it seems to focus on the small elite or near-elite, rather than seeking systematically to broaden the appeal of the programme. Some combination of the National Linkage Programme thinking, set in the context of clustering and systemic innovation, could result in much more return for not necessarily significantly more investment. The basic approach of discourse and learning is valuably present in the Linkage Programme.

(ii) Orbitech

This is a more confined instance of lateral linkage to meet the exacting requirements of a world-class manufacturer, Apple-Macintosh. Three separate companies had been independently contracted by Apple to produce componentry for their keyboards and sub-frames. Top Tech, Rennicks and Ballymount Precision Engineering were requested by Apple to supply integrated systems, instead of discrete components. Assisted by the Electronic Linkages Team of *Forbairt*, they formed the Orbitech group as an alliance of complementary companies who were able to innovate collectively in the face of a demand-change from a key customer. Orbitech has successfully won contracts of up to £25 million as

a consequence of its new structure. This points to the capacity of firms in demanding roles vis à vis exacting customers in Ireland to meet the challenge through a co-operative strategy, working with both a key customer and a state agency. This experience would repay further investigation.

(iii) Contract Mould-Making

The foreign sector has created a growth market for plastic injection moulding (e.g. Rennicks, as discussed) capable of being filled at home - and abroad - by Irish SMEs. Moulding, and especially the upstream tooling industry which supplies the mould-making capacity, is one element of an obvious supply-chain cluster constructed around the electronics industry. As far back as 1988, when O'Malley produced his analysis of the industry's potential, the following were amongst the perceived barriers to the development of the industry:

- A need to help companies improve technology;
- A requirement for the creation of more skilled labour;
- A need for companies to specialise in market segments;
- A need for greater co-operation amongst companies;
- A need to attract new entrants to the industry.

Contract mould-making is a good example of the kind of industry in which it is possible to facilitate an emerging industrial cluster to develop the sort of regional embeddedness that helps to give it competitive advantage. Sligo is a geographical district from which an original firm gave birth to numerous spin-off companies. Dublin and Limerick/Shannon are other sub-cluster centres. In the 1988 study, managers of mould-making firms expressed the belief that advantage would come from developing greater co-operation among companies, so that specialisation, export marketing, sub-contracting and sharing of large orders could be facilitated. Realistically, they saw this as unlikely because of competition between companies, but envisaged small-scale co-operations among two to three companies as feasible, rather as has occurred with Orbitech. This is the kind of industry that can be sensibly encouraged to develop with judicious support for enterprise in the fields of quality, deliverability, reliability and marketing. Links with research bodies could yield enhanced innovation potential.

6. CONCLUSIONS AND RECOMMENDATIONS

The Technology Policy Concept, the Network Co-operation Programme and the Cluster Support Programme are all predicated on a basic insight of evolutionary economics which is that successful economic activity involves a judicious mix of co-operative and competitive practices by firms, institutions and individuals. In the Irish context, with its dualistic economic structure in which a somewhat detached, dynamic, foreign-owned sector co-exists with a slowly-improving but still fragile indigenous sector in which SMEs are more than usually predominant, the case for encouraging greater inter-firm collaboration is very strong. This is not least because the alternative of seeking to channel support to individual growth companies has not yet proved adequate to the task of re-directing Irish firms from the low to the high road of higher value-added, higher skill, more innovative thus more competitive production of goods and services.

Developing a more co-operative approach among firms, between them and agencies, and among agencies is now an imperative if Irish firms are to become more internationally competitive. Ireland's main continental European competitor economies have in place at national and in some cases regional level systems or system-effects derived from economy-culture traditions (such as the "Rhine-model" of co-operative production described in Albert, 1993) based on precisely these principles.

It is also noticeable that interest in promoting measures that encourage inter-firm and firm-agency collaboration is being expressed in official reports commissioned by the State. The Culliton report expressed the desire to see encouragement given to clustering amongst Irish firms and the Science, Technology and Innovation Advisory Council both referred approvingly to Culliton and advocated a Danish-style Network Co-operation Programme and a recent NESC (1995) paper has commented positively about the ways in which the State may now increasingly be expected to provide an institutional framework in which policy networks (i.e. where actors and representative institution members interact to develop and implement policy which was previously the province of government alone). The Irish EU Community Support Framework programme 1994-99 is also supportive. These networks may include enterprises and, we would add, could consist mainly of enterprises where a programme managed by the state in support of, say, collaborative manufacturing, was envisioned. But the aim of networks is always to bring about the necessary non-hierarchical co-ordination increasingly necessary to address problems of fragmentation, dualisation and individualistic competition that bedevil small-firm efforts to seek competitive advantage by competitive means alone.

Hence, the *recommendations* of the report to NESc on enterprise support lessons for Ireland (Cooke, 1996) are sevenfold and remain as follows:

- In general seek to develop and promote a *co-operative* ethic among firms and State agencies with a view to developing an interactive innovation culture in Ireland. This to be done in a way that clearly explains co-operation as complementary to, not in opposition against, competition.
- Seek to develop a National System of Innovation along the lines suggested, by adopting an active Technology Policy Concept which integrates presently diverse innovation players into an innovation system. With respect to substantive, action directed resources, this endorses STIAC (1995).
- Establish, first in pilot form, a *Network Co-operation Programme (NCP)* to elicit *horizontal* co-operation amongst groups of indigenous SMEs. Such a programme to involve a "brokerage" system, action plans and plan-implementation. This programme to be costed at a comparable sum to that conducted in Denmark, i.e. circa £15-20 million over 3 years.
- Develop, by broadening the target number of firms, the already proven *National Linkage Programme* to upgrade Irish firms in their *vertical* relationships to have a far better opportunity to become suppliers to global firms in Ireland and beyond. This could warrant a commitment of a further £15 million (combined with NCP a comparable overall *networking* support programme bill to that proposed by STIAC).
- Select, initially, and for the pilot networking programme (in the *horizontal* dimension) industry segments such as furniture, publishing, engineering, knitting and meat processing as programme targets if the industry representatives are willing to engage in such a programme.
- Ultimately (say two-to-three years from first implementation of the Irish Network Co-operation Programme) seek to give support to *cluster* formation via a *Cluster Support Programme* for reasonably large sectors such as food, electronics, pharmaceuticals and, perhaps, textiles by developing and enlarging the experiences of the two networking programmes (Network Co-operation and enhanced National Linkage programmes). The key element in cluster-building is the "forum" and "club" type of arrangement where firms of consequence to each other self-help but call down enterprise support as appropriate and as necessary.

• In overall terms, link together, compare and contrast, interact and learn, above all *monitor* and *evaluate* from the co-operative experiences of the two network programmes and the cluster support initiative within the context of the Technology Policy Concept as the basis for an "innovation governance mechanism" the aim of which is to become the Irish National System of Innovation.

The recommendation to establish a pilot network programme was accepted by NESc (1996). The experience of this pilot programme and other network initiatives is discussed in the following chapter in this collection by Dermot O'Doherty.

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CHAPTER 5

NETWORKING IN IRELAND: POLICY RESPONSES

by

Dermot O'Doherty¹, Science and Technology Division, Forfás

SUMMARY

This paper looks at the evolution of the phenomenon of networking and networks and why firms are entering into interorganisational relationships. It tracks the emergence of the 'National System of Innovation' approach to technological and industrial policy formulation (introduced by NESCC), with its strong emphasis on inter-firm and other linkages and its application in Ireland, particularly in the Report of the Science, Technology and Innovation Advisory Council (STIAC, 1995) and the subsequent White Paper on *Science, Technology and Innovation*. The Danish experience of networking, which was highlighted by STIAC, is reviewed. The Pilot Programme on Networks on the Danish model, introduced by the White Paper, is assessed and set in the context of the overall Irish experience of networking. Finally, some policy principles are adduced with regard to the nature and focus of any future Networks Initiative.

1. THE NATURE AND EVOLUTION OF THE NETWORKING PHENOMENON

Human beings have been meeting, talking together and taking co-operative action based on their common interests for a very long time but it is only recently that such social interaction has been designated as 'networking.' The concept of networks has emerged as a way of doing business, which lies between hierarchical modes of behaviour and management on the one hand, and the market on the other.

(i) Networks and Clusters

In a business context, networks and clusters are inter-related phenomena characterised by strategies and practices of co-operation between firms. Well-developed business networks may also include collaboration

1. The views expressed in this paper do not necessarily represent those of Forfás.

between firms and other organisations such as universities and research institutes. There has been some confusion as to the distinction between clusters and networks, particularly since the publication of Michael Porter's book, *The Competitive Advantage of Nations*, which inspired considerable discussion of clusters. Some crucial differences are that networks usually have a somewhat restricted membership and a specific set of objectives to which the members subscribe while clusters are open in terms of both membership and goals. Networks can often involve formal contractual agreements between the members of the group, while clusters have no such arrangements. Clusters, of their nature, are geographically focused while networks do not necessarily have to be located in the same region or locality. The two phenomena do overlap however in that a great deal of networking usually takes place in the context of clusters.

(ii) Why do firms Network?

The nature of competition is changing. New competitive conditions are demanding new strategies. Global niche markets are replacing mass markets and customers are searching for increasingly specialised products as well as technological and organisational flexibility. Individual firms cannot be good at everything. They must specialise and learn to combine their capabilities with those of other firms and organisations. Inter-firm co-operation/collaboration is the new response to competition - a way for firms to develop joint solutions to common problems. It allows firms to combine resources to gain knowledge, achieve economies of scale, acquire technologies and resources, and enter markets that would otherwise be beyond their reach. For small firms it can be a response to a sense of isolation in increasingly globalised markets.

(iii) What form does Networking/Inter-firm Co-Operation Take?

Co-operation can be grouped in many different ways, with different costs and benefits and varying levels of dependence on outside organisations. Four categories of networks may be identified as follows:

Informal and unorganised networking: This is the most basic form, consisting simply of firms helping other firms. By definition, this does not require any form of conscious facilitating or brokering; even though there may be room for some type of third party assistance for awareness-raising to nurture habits of mutual help.

Membership-Based Networks: This includes traditional industry associations where members pay dues and commit themselves to a

certain level of joint problem-solving, but where their business success does not depend significantly on the actions of other members. While getting firms to commit to this level of interaction is not easy by any means, the relative lack of interdependence required makes this type of co-operation easier to organise and facilitate than more closely knit networks.

Customer-Supplier Networks: This involves a number of supplier firms co-operating with each other in meeting the needs of a mutual 'vertical' customer, who often sets up and facilitates the collaboration.

Interdependent Networks of Firms: These are small, formal groups of sometimes competing firms who carefully select each other and agree to co-operate significantly with each other (often involving a high level of trust) in 'horizontal' networks, in order to achieve some benefit not available to them independently. Examples include:

- co-production networks where firms co-operate in manufacturing components, assemblies or finished goods;
- co-marketing networks where firms jointly market their products;
- learning networks in which firms seek to learn collectively about some of the complex changes essential to improving their competitiveness;
- research networks in which firms pool resources to develop a new product or process.

The benefits of networking and co-operation include:

- *Material Benefits:* Firms can increase sales and lower production costs by working together.
- *Psychological Benefits:* As firms eliminate their isolation they learn that their problems are shared by others.
- *Developmental Benefits:* By promoting interaction with other firms, networking increases learning and the ability to adapt to the changing economic environment.

Companies participating in networks look to other participants to help them:

- Strengthen their competitive position in the marketplace;
- Enhance relationships with existing customers;
- Generate additional revenue from non-traditional sources;
- Open new markets.

Potential network members should have:

- Strong market presence and reputation;
- Robust products;
- Financial stability;
- Demonstrated commitment to R&D;
- Complete support infrastructure.

A Strategic Alliance can be considered to be a "hybrid" of partnership and network. It is based on the perceived benefits each ally has from his own perspective. The first question a firm must ask before considering a network or alliance is 'what do I need?' This determines who is a good prospect to become a partner. Of equal importance, is "what can I do for them?"

International experience shows that networks should not be set up for quick, short-term rewards. Networking is a long-term approach. Strength comes from sharing expertise and experience over an extended period of time. As with any meaningful relationship firms must consider what they are giving as well as what they can get. Networking does not mean sharing everything but only the areas and activities necessary to complement strengths. Overall, networks must allow firms to provide more for their clients and customers than they could do by themselves.

2. POLICY CONTEXT – THE INCREASING IMPORTANCE OF INNOVATION

(i) Networking and the National System of Innovation

Innovation is now a key dimension of technological and industrial policies, both nationally and internationally. It is clearly seen to be an interactive process:

- between different elements of the individual firm, e.g. R&D and marketing;
- amongst firms, in alliances and networks and
- between firms, higher education colleges, state research organisations and the financial community.

The concept of the 'National System of Innovation' (NSI) originated in the Nordic States as a useful way for small countries, in particular, to ensure an integrated approach to industrial and economic development

and has been adopted by many of the smaller advanced European economies and by the OECD.

The question of an Irish National System of Innovation was introduced as an analytical and policy tool in NESC Report No.93, *The Irish Economy in a Comparative Institutional Perspective*, which compared Irish industrial and economic performance with that of a number of other small European economies. The Irish NSI was further elaborated in the Report of the Science, Technology and Innovation Advisory Council (STIAC, 1995) and adopted in the White Paper on *Science, Technology and Innovation* (1996) as the policy framework within which longer-term, structural interactions between technologies and firms should be analysed and discussed.

Such a systems approach implies that, while technological and industrial innovation remains largely an activity within a particular firm, interactive networks among firms, third level colleges and state research institutions are of increasing importance. This 'systems' framework was defined in the STIAC Report as:

the collection of all institutions and mechanisms (public and private) that interact to stimulate and support innovations in products and systems within the national economy (STIAC, 1995, p.52).

(ii) The STIAC Report

The members of STIAC were convinced that the systems approach offered new rationales and approaches for the formulation of technological and industrial policies. Most government intervention in the technology area had been directed at correcting market failures, or the tendency of the private sector to under-invest in technology development due to the inability of firms to capture all of the benefits from such investments. The concept of national innovation systems was seen to direct the attention of policy makers to possible systemic failures which might impede the innovative performance of industry. The lack of interaction between the actors in the system, mismatches between basic research in the public sector and more applied research in industry, malfunctioning of technology transfer institutions, and information and absorptive deficiencies on the part of enterprises were all seen to contribute to poor innovative performance.

The NSI approach suggested that innovation performance depended upon networks, on the strengths and weaknesses of relationships between firms and other actors. Enhancing the innovative capacity of small indigenous firms in particular was seen as a policy priority and coming

together in networks was seen to be at least a partial solution to the problems of size and scale. This led STIAC to recommend

- *the establishment of an Irish Inter-firm Co-operation Programme modelled on the Danish Networks Programme. Existing programmes and schemes should be used to encourage such co-operation, for example, a 5 per cent premium on grants as a reward for co-operating with network partners;*
- *a minimum target of 5 per cent of Measure 1 of the R&D sub-programme should be earmarked for R&D co-operation linked to the Network Co-Operation Programme;*
- *a special effort should be made to ensure participation by natural resources and services-type enterprises in networking and co-operation. The software sector, characterised by small, high technology R&D performing firms would be a candidate for priority treatment, particularly for co-operation in R&D;*
- *a new programme should be introduced for enterprises which are not R&D performers. This would be modelled on the EU CRAFT programme, and would bring together groups of firms with similar interests and have a third party carry out research on their behalf.*

It was estimated that the cost of implementing all of these recommendations would be £3m in the first year of operation.

3. PILOT INTER-FIRM CO-OPERATION INITIATIVE (KNOWN AS NETWORKS PROGRAMME)

The thrust of the main STIAC recommendation was endorsed in the White Paper on *Science, Technology and Innovation*, published in early 1996. Based on this a Pilot Inter-firm Co-Operation or 'Networks' Programme to encourage firms to co-operate in activities which they could not undertake individually due to the small scale of their operations was initiated in November 1996. In the meantime NESR Report No.100, *Networking for Competitive Advantage* had been published and its call for a similar Pilot Programme had been endorsed by the social partners in Partnership 2000. Although it only had a budget of £200,000 and a proposed duration of about 6 months, it was agreed that the Pilot Programme should become the vehicle for testing the relevance of the networking phenomenon in an Irish context.

(i) The Danish Networks Programme – Origins and Experience

The Danish Networks Programme, on which the Pilot Programme was modelled, was a response to the perceived problem in Denmark that, when the programme started in the late 1980s, co-operation was not a part of the industrial culture and that there were few indications that small companies themselves would adopt such cooperative patterns at a sufficiently fast pace. Time was seen to be short in the face of the upcoming challenges of the Single European Market, international competition and the need for companies to specialise and become more flexible.

Those arguing for a formal programme put forward three primary reasons why networks and networking were a significant response to these industrial challenges and why encouraging inter-firm co-operation should become at least a 'temporary' goal of national industrial policy:

1. The first reason was that in global markets, companies can only gain a competitive edge by focusing on their core business and core competences. That in turn was seen to be possible only through developing more committed links to companies with complementary business foci and skills.
2. The second reason was that vast majority of Danish industrial companies had invested in new production/process technology without really achieving higher productivity or increased competitiveness. The majority of small companies were not seen to have the necessary management capabilities to fully exploit and benefit from the new technologies. It was found to be feasible and profitable from a national economic perspective to adopt a number of collective approaches, i.e. instead of working to up-grade each individual company, it was more effective to deal with networks consisting of 5-10 companies.
3. The third reason was that while small companies were seen in some respects to be favoured by the structural changes in the economy – being closer to markets, more flexible and responsive to change – in other respects they were strongly handicapped, due to the inherent limitations in being small. They did not have the professional management capacity and strategic resources which often give the competitive edge to larger firms. But what one small company cannot afford, 5 or 10 companies might easily be able to establish jointly. The more international the market, the more important some of these strategic resources would be. In this respect, networks allow small firms to compensate for the weaknesses of being small, while allowing them to capitalise on their strengths.

When the original networks programme was introduced as a key element in the Danish Government's Strategy in relation to the European Single Market, there was consensus among all the major political parties about the goals of the strategy. On the doorstep of the European Single Market, it was seen as essential to accelerate the development of a competitive Danish industrial sector to meet global competition.

The initial programme and what turned out to be four following programmes were designed to stimulate Danish companies in large numbers, with greater scope and at an accelerated pace to overcome their constraints against co-operation.

According to evaluations carried out by the Danes themselves the results are impressive and the success is undisputed. The programmes directly resulted in almost 5,000 small companies becoming involved in forming networks, which is an unheard-of level penetration for any industrial development programme aiming at a target group of 10-12,000 companies.

By reaching this number of managers and firms, they are seen to have fundamentally changed attitudes and behaviour, making networking a real strategic possibility in the search for competitiveness.

The last Danish network programme finished in 1993 and no further programmes have been initiated or planned. The reasons put forward for this by the Danish Technological Institute is that almost all SMEs in Denmark know what the basic principles of networking are and what can be gained through networks and in this situation there is seen no real need for government to continue to try to catalyze the process. It is seen to have been a correct decision in all circumstances to make the network programmes temporary, because it becomes superfluous to go on trying to change attitudes that have already been changed. The results of the programmes, are estimated as still being extremely important for the performance of Danish industry and the Danish policy-makers believe the positive attitudes towards networking will continue to influence attitudes and behaviour for many years.

(ii) Key Features of the Danish Programme

The 'Danish model' is a more formal approach than other types of networks or co-operative arrangements between companies. Its main features are:

- the use of trained Network Facilitators or Brokers;
- a partnership of three or more SMEs;

- the exploitation of a new business opportunity in a formal way;
- a duration of three or more years for the network;
- the pooling of resources in identified areas;
- a grant support package for a Network Manager and for the legal formation of a Network Company.

The Danish process involved the owner or chief decision-maker of each participating company. It also involved other specialists in the technical, production, marketing and financial areas.

The process put strong emphasis on the commitment of potential participants to the network through:

- a diagnostic interview with each owner;
- a preparatory workshop to help build bonds and generate trust between the potential partners;
- workshops to develop the business plan;
- ensuring formal commitment to the network.

In order to achieve competitiveness and the full benefits of new business opportunities, networks were focused on developing three different aspects of co-operation.

Joint Solutions to Common Problems

A whole range of problems were seen to be common to the majority of SMEs. Critical resources beyond their reach could be accessed when companies joined forces, for instance, in marketing, product development, production facilities, skills and know-how, personnel development and training, quality assurance, joint financing and shared costs.

Developing and Exploiting Complementary Skills

Many successful networks were formed on the basis that individual companies had been able to develop their mutually complementary skills and competences in terms of markets, products and equipment etc. Successful networks could both emphasise and develop the flexibility and quick reaction levels associated with small companies, achieving a unique sensitivity to market needs – often superior to that of much larger companies.

There were numerous examples of groups of companies qualifying as main contractors or subcontractors on terms on which they would not be able to compete individually. As a group they were able to attract far better purchasing terms for their own product lines. Using these methods SMEs were in a position to emulate the behaviour of companies that were larger and more competitive.

A crucial element of the networking process was the network facilitator or broker. Network brokers acted as initiators, mediators and field executives in the identification and formation of networks between companies. In establishing networks, the broker often had the role of trainer as the process is an action learning programme for company managers. Brokers were carefully chosen. They were mature, experienced executives highly trained to take companies through the various stages of networking. They were licensed and their training was continuous and their license dependent on regular assessment, in order to ensure total quality of the developing network.

Working from a Network Centre, the broker's task was to recognise opportunities evident in individual firms or groups of companies or to seek out partners on behalf of a single, interested enterprise with a sound business idea.

The brokers were able to recognise hidden business opportunities and work alongside groups of companies in seeking common ground to establish the basis for network operation. Typically the broker was instrumental in working through three interactive phases of networking with company executives.

Three Phases of Networking:

Phase 1: Assessment on Feasibility

Following the first meeting with the companies the broker considered the feasibility of the idea/project before preparing an outline strategy. This included an assessment of the participants, and the market potential for the network along with the roles of the individual participants and an assessment of the work necessary to exploit the viability of the shared business idea.

Phase 2: Planning, Budgeting and Agreements

Following the acceptance of the strategy study and a decision to proceed with the exploitation of the networking possibilities, the broker typically was instrumental in preparing a business plan in an interactive process

with the company managers. The network organisation and the roles of the partners were also re-assessed. Agreements between the companies were also drafted. This phase normally lasted between 3-12 months.

Phase 3: Implementation

In this phase the network went into operation and a future manager was found. The broker was intended to fade out and in this phase was normally confined to participating in meetings to ensure that strategic objectives, agreement and intentions were not forgotten.

Although highly trained the brokers did not necessarily have to be qualified in all aspects of business planning as they were able through the network centre to call on experts within other disciplines. The broker's function was to coordinate contributions from all the companies involved, together with external assistance and applications for relevant support programmes, if needed.

(iii) The Irish Pilot Programme

The objective of the Irish pilot phase was to put in place some of the resources needed to facilitate and establish formal networks of the 'Danish' type, to help the networks to devise joint solutions to common problems and to evaluate the results.

The general principles set down to guide the operation of the pilot phase were as follows:

1. There should be no overlap or duplication of existing or previous measures. The programme should help participants to avail of existing measures, when appropriate. In the pilot phase, financial support would not be payable if it is more appropriate to other sources of funding.
2. Networks should consist of at least three firms (SMEs) and not more than eight. Where necessary a network could include one multinational or large scale Irish firm, or one foreign firm or one third level college if they contribute to the objective of the network.
3. Networks could be developed on a sectoral basis, in customer/supplier chains, or in a technology or market sector.
4. The objective of each network should be to create new business or to increase the competitiveness of the firms involved.
5. Once established, the activities to be undertaken by the network would be a matter for agreement among participating firms.

Costs and Funding

The following costs were funded in the pilot phase.

- The training of three brokers, whose function it is to promote and facilitate the formation of networks;
- Participation of Danish experts in the detailed negotiations on the formation of a network;
- Purchase/modification of diagnostic software to identify firms/activities suitable for networking;
- Cost of setting up networks (e.g. facilitation session, formation/legal costs);
- Promotion/awareness seminars etc.;
- Travel/information gathering etc. to develop and share experience with established networks;
- Management of the programme.

Network Activities

The following are examples of activities which networks could undertake under the Pilot Programme:

- collaborative research;
- technology transfer/acquisition;
- technology management;
- technical training;
- collaborative product design;
- development of standards;
- technology scan and market developments;
- innovation assessment and planning;
- participation in European networks;
- project management;
- purchase of equipment;
- quality assurance;
- joint financing of innovation.

Management Evaluation

The pilot phase has been overseen by a Steering Group, chaired by the Office of Science and Technology in the Department of Enterprise, Trade and Employment and including representatives of Forbairt, Forfas and a number of individual firms, as well as IBEC. The Group has met regularly since the initiation of the pilot programme in November 1996. A manager and three brokers were appointed within Forbairt to run the programme.

Targets

Each broker was given a target of at least one network and by the end of the pilot phase there were to be at least three in operation

The terms of reference specified that at the end of the pilot phase the programme should be reviewed.

4. NETWORKS – THE IRISH EXPERIENCE

Very soon after the launch of the Pilot Programme, which lasted from November 1996 to July 1997, a number of key issues for both policy and implementation came to the fore. It became clear that:

- the Danish model tended to focus on the setting up of very formal networks with a separate network company. This was something often attempted almost from scratch, where firms had no previous experience of working together and no element of trust had been developed between them. While Forbairt was asked to set up a team to test the Danish approach it was felt by the Steering Group that this was going to be a difficult process, especially in the time-frame available. Any effort to broker such arrangements would only be likely to show results in a medium to long-term time-frame and only a start could be made in the 9 months available;
- a range of networks and brokers already existed in Ireland, whose experience should be taken into account in any assessment of the significance and potential of networking in an Irish context.

The Group felt it was important to see the Pilot Programme as not just a test of the Danish approach but as an opportunity to look at the overall experience of and potential for networking in Ireland. Tom Martin and Associates, in conjunction with the Science Policy Research Centre in UCD, was commissioned to carry out a study on the experiences of nine existing networks on behalf of the Pilot Networks Programme Steering Group. The study was commissioned to ensure that the Steering Group

would be fully informed on the current status of networking 'on the ground' so as to be a position to make the best possible recommendations on the future of the programme at the end of the pilot phase.

The networks/organisations examined were as follows:

- Cork RTC Clean Technology Centre;
- Medisa Group;
- Plato Ireland;
- Technology West;
- Brite Euram;
- Irish Software Association;
- The Contract Moulders Group;
- Orbitech; and
- Sheelin.

These included actual formal horizontal and vertical networks, some less formal groupings and a number of organisations that essentially acted as generators or facilitators of inter-firm networks.

The stated terms of reference for the study were as follows:

(a) Undertake a survey of certain categories of existing networks in order to ascertain:

- the reasons the networks were formed and who initiated/drove the project;
- the type of network structures/activities/role;
- the perceived benefits arising to the participating companies;
- what blockages/difficulties were encountered and how these were overcome;
- the sources of funding for the network activities;
- the duration of the network;
- whether the eventual activities/benefits of the network were identical to those envisaged at the time the networking proposal was formed;
- the drop-out rate of companies from the network and the reasons therefor; and
- the extent to which the networks could grow to a higher level.

(b) Furnish a report of the findings of the survey, to include broad conclusions on the role/effectiveness of networking.

The experiences of the firms participating in the networks surveyed were largely positive. Networking was seen as a way of overcoming the disadvantages of small scale and also allowing companies to focus on areas of core competence.

Being a member of an inter-firm co-operative network also allowed companies to provide integrated solutions to major customers.

The experiences of networks such as Orbitech, Sheelin and Medisa showed that networking can bring benefits to the participating companies. In the case of the best known of these, Orbitech, three companies with complementary skills came together in a hybrid horizontal/vertical network to offer an integrated service to Apple Computers. Orbitech has since gone on to supply other electronic Original Equipment Manufacturers (OEMs) in Ireland and the UK.

If the coming together of two or more companies to form a new company to undertake activities which individually the partners could not do on their own (as in the Danish concept of inter-firm co-operation) represents the apex of networking, then three of the networks studied, Orbitech, Sheelin and Medisa, had reached that level. The only difference from the Danish approach is that none of these networks had set up a separate company to undertake group activities (Orbitech has in fact been incorporated as a limited company but it does not trade).

The findings of the research indicate, however, that the majority of the networks studied were involved in relatively low level networking activities such as exchanging market information and experiences. Such networks were often characterised by low levels of interaction between the member firms. The research suggests that networks in Ireland face considerable barriers in developing beyond these low-level activities.

One such difficulty is that successful network formation takes time, firstly, for the participants to get to know and trust each other and, secondly, for the member organisations to agree a common programme of activities. It was found that most successful networks took over two years to mature.

Where the programme of events is not carefully managed or where unrealistic goals are set, the member firms can quickly get disillusioned and drop out of the network. It is important that networks - particularly in the initial stages - set achievable objectives in order that the partner firms can gain confidence in their ability to work successfully together.

Proximity of network members and the extent of interaction between the members of the network are important and interrelated factors which can contribute to the formation of successful networks. One of the problems faced by the Contract Moulders Group was that its membership is widely dispersed throughout the country, making it difficult to arrange meetings of the group. Orbitech, Sheelin and, to a lesser extent, Medisa all had members who were geographically close to each other.

The findings of the survey highlighted the important role that the network facilitator or broker plays in network formation. State agencies played a key role in the development of the Orbitech and Medisa groups. As independent organisations they can be instrumental in persuading companies to network together and then in working with the network partners to develop a common programme of activities.

The study found inter-firm networking could play an important role in helping SMEs to overcome the disadvantages of small scale. The research findings indicate that the concept of inter-firm co-operation needs to be widely promoted because SMEs often have only a hazy understanding of the term - even where they themselves are actually members of one or more network arrangements.

The Report made the following recommendations to the Steering Group regarding its own review of the Pilot Programme and the significance and potential of networking:

Recommendation 1: Information/Publicity Campaign

While the general experience of the companies participating in the networks was positive, a typical reaction on the part of some respondents was to deny that they were in fact members of a network. This reaction was to a large extent due to the fact that they perceived networking as a meaningless term that did not apply to any activity they were involved in. Only when inter-firm co-operation was explained to them did they realise that they were in fact part of a network and very often they would then go on to describe another network in which they were involved.

Our research would indicate that an information campaign is necessary to raise the awareness of inter-firm co-operation networks among SMEs and in particular to demonstrate the advantages that can accrue to member firms through participating in a network.

Firms need to be educated on the benefits of scale that small firms can obtain through co-operation with each other. The case histories of this study show that significant advantages flow from networking

where partner firms can concentrate on their core activities where they have a competitive advantage (as illustrated in the case in the Sheelin network where Farrell Brothers focus on manufacturing and Stanley and Ferguson on marketing).

This publicity campaign needs to be directed at all companies and at all sectors. Inter-firm networking is as applicable to service companies as to manufacturing firms.

The promotional material should also be directed at trade associations so that it can be inserted in newsletters, etc., circulated to member firms.

The publicity campaign should also indicate the resources and expertise that is available in both the public and private sectors to assist companies to form inter-firm co-operation networks.

Recommendation 2: Establishment of Specialist Broker Units

The state development agencies can play a key role in the identification and development of inter-firm networks. However, the development of networks is a specialist activity and one that is usually beyond the competence of the agency executive in regular contact with SMEs.

We recommend that consideration be given to the formation of specialist broker units in agencies such as Forbairt and the Irish Trade Board. The executives of such units would work closely with their colleagues in the regions. It is important to stress that it should not be the function of the broker unit alone to form networks; the local client development executive in the case of Forbairt and the regional manager/executive in the case of the Irish Trade Board need to be actively involved.

The partnership approach involving the broker specialist and the local executive is important because, though the latter will not have the relevant expertise in network formation, he or she has credibility with local firms. The input of the broker specialist is equally important not only because of their skill in forming networks, but because he or she may see other potential linkages of which their local colleague may not be aware.

The specialist broker units would also play a key role in the continued development of existing inter-firm networks. For example, a number of the networks surveyed such as Medisa focused on upstream group activities such as joint marketing to customers whereas there could also be networking possibilities in

downstream activities such as in group purchasing and in shared R&D activities. Networks which had not progressed beyond the sharing of information and other low level activities could be encouraged and coached to attempt more ambitious networking activities.

It is important that staff in the specialist broker units receive adequate training and resources in order that the networks supported can maximise their potential.

The specialist broker units could also play a role in identifying suitable personnel to undertake the role of network administrator/manager. Where relevant, the units would also have an input in providing training for the administrator/manager to increase their effectiveness within the network.

The units would also provide advice and assistance to other SME development agencies such as the Shannon Development, the County Enterprise Boards and private sector organisations such as trade associations and Chambers of Commerce.

The development of specialist broker units in both Forbairt and the Irish Trade Board may seem a duplication of resources. Our research indicates that firms see a distinct role for both in that Forbairt would assist networks aimed at making their member firms more competitive and the Irish Trade Board would assist companies which have joined together to more effectively market their products.

Recommendation 3: Network Partner Database

While firms may be interested in forming networks, a difficulty is that they might not be aware of the existence of potential partners, particularly those outside their region. The difficulties can be compounded if, as is the case with the small size of most Irish commercial sectors, there is a lack of suitable candidates and the firm has to seek overseas partners.

The problem of lack of information on potential network partners could be overcome through the development of a database which would provide information on the expertise, skills and resources of manufacturing and internationally traded service companies. Responsibility for the development and regular up-dating of company details on the database would be the responsibility of the specialist broker units in Forbairt and the Irish Trade Board.

It is suggested that the database be provided on-line so that companies can have direct access from their computer.

While this database would provide information on potential network partners in Ireland, the specialist broker units would also have access to international databases, which would provide information on overseas companies. Both Forbairt and the Irish Trade Board have overseas offices which the specialist broker units can tap for additional information.

Recommendation 4: Funding for Inter-firm Networks

It is recommended that the Steering Group give consideration to the financial assistance the state could provide to inter-firm co-operation networks.

It is suggested that the following grant aid schemes be considered:

- A feasibility grant to enable prospective members to determine the feasibility and potential of forming an inter-firm co-operation network;
- A project-related grant to enable an established network to undertake market research or to avail of external consultancy input; and
- A grant which would contribute to the cost of employing a network administrator/manager.

The provision of such financial support - particularly the latter - could be beneficial in assisting networks to move from lower level activities to more strategic business activities. (Tom Martin and Associates/Science Policy Research Centre, UCD, 1997).

5. FORBAIRT REVIEW OF PILOT PROGRAMME

In addition to commissioning a study on networking in general in Ireland the Steering Group of the Pilot Programme on Networks asked Forbairt to prepare a report on the experience of attempting to facilitate and broker the establishment of a number of formal networks. The study was undertaken by Kevin Halloran (1997), who had been Manager of the Pilot Programme in Forbairt.

(i) Key Results of the Programme

The report stated that the pilot programme in Inter-Firm Co-Operation Networks had succeeded in all of the objectives set at its commencement,

in that both a formal networking methodology had been successfully tested and 17 new networks have formally come together or are at some stage of development. The main benefit for SMEs was seen to be that the networks formed enabled the companies involved to work together as a team in strategic development for the exploitation of new business opportunities.

The view was strongly expressed that a longer-term national programme with a similar methodology, based on the use of trained network facilitators, would act as a catalyst for the development of Irish SMEs. Apart from the more direct benefits to indigenous firms in particular, the upgrading of the work done under the pilot exercise into a longer-term programme would nurture a strong networking culture in Ireland, leading to a more internationally competitive and innovative SME base.

The Forbairt experience indicated that, while the history of inter-firm co-operation is not strong in Ireland, the Pilot Programme had demonstrated that it could be advanced by following the "Danish" model.

The use of trained Network Facilitators was found to be the most important feature of this method.

Other findings from the experience of the Pilot Programme included:

- feedback from the companies targeted in the pilot phase (particularly given their broad sectoral spread etc.) would suggest that a high proportion of SMEs would be interested in participating in a Networks Programme of longer duration;
- a greater depth of sharing occurs in a network where the partners are from different industrial sectors and have different technological backgrounds. This leads to a better strategic plan, and normally involves an integration of marketing and research and development (R&D) which would otherwise be extremely difficult to achieve;
- companies from the same industrial sector frequently have difficulty in co-operating because of competitive rivalry between them. When they work together in the development of a network, it is primarily to target new markets. However, in some instances it may include a limited degree of co-operation in technical development.

(ii) Operation of the Pilot Programme

Forbairt assigned a team of four specialists from the Technology Services Division to act as Network Facilitators.

The Pilot Programme started with the training of network facilitators in November/December 1996. This involved a former Network Consultant who had worked closely with the Danish Technological Institute (DTI) in which the Danish Networks Programme originated. He now manages a Danish network in the furniture sector. He had also developed a best practice method for network facilitation on behalf of EURONET, the European Network of Network Facilitators.

SMEs were identified for potential participation in the programme using a number of sources including:

- the Steering Group;
- colleagues in Forbairt, including staff in the regions;
- staff on the Programme for Advanced Technology (PATs);

This approach provided a range of SMEs from different industrial sectors and covering the different regions of the country. Although some of them had been involved previously in formal or informal co-operation arrangements they were not selected on that basis.

Seventeen networks involving thirty-nine SMEs were developed or are in the process of development (see Table 5.1). In most of the networks the partners come from different industrial sectors and utilise different technologies.

Networks 8, 9, 11 and 12 were included in the Pilot Programme to test the interest and benefits of networking for some non-mainstream sectors/activities.

TABLE 5.1
Networks Facilitated by Forbairt Under Pilot Programme

	Participants	Purpose of Network	Stage of Development
1.	- Biocycle Ltd., Dublin. - Shay Murtagh Precast, Rahamney.	Development and manufacture of water effluent tanks, grease traps and oil interceptors	Facilitation completed, network in operation
2.	- Athlone Optical Ltd, Athlone. - Studio Eyewear Ltd., Ennis.	Development of a range of safety glasses plus sight testing services	Facilitation completed
3.	- IDS Ltd, Portlaoise. - two other partners.	Development and manufacture of an agricultural effluent treatment system	Facilitation at an early stage
4.	- Biocycle Ltd., Dublin. - Telecommunications company. - An electronics manufacturer.	Development and operation of a national effluent monitoring station	Ready for facilitation At an early stage

Participants	Purpose of Network	Stage of Development
5. - O'Donnell Design Ltd., Skibbereen. - Caulfield D.F. Ltd., Dublin. - Castlebrook Crafts, Newtownmountkennedy. - Joe Manning, Co. Carlow. - Galway Homeopathics Ltd, Tuam. - J.F. McKenna Ltd, Drogheda/Armagh.	Design and manufacture of a range of hotel bedroom furniture (3-5 star hotels)	Facilitation near completion
6. - Galway Homeopathics Ltd, Tuam. - J.F. McKenna Ltd, Drogheda/Armagh.	Development, manufacture and distribution of mushroom fertilisers	Facilitation under way awaiting technical evaluation
7. - Fenelon Ltd, Longford. - Russian & other partners.	Development and manufacture of security glass	At an early stage
8. - Designer Focus Dublin. - The Crafts Council of Ireland.	R&D and marketing of arts and crafts products	At an early stage
9. - Designyard, Dublin. - A group of independent design & craft manufacturers.	Development of corporate giftware with specialist themes	At feasibility evaluation stage
10. - BMS Ltd., Limerick. - Radiac Abrasives Ltd., Castleisland.	Development of abrasive products	At proposal stage
11. - UCG Quality Assurance Research Unit. - Industrial manufacturing companies.	R&D for best practice improvement in quality management systems	At proposal stage
12. - Hyperion Ltd., Cork. - Industrial companies. - 3rd level institutions.	Creation of a regional network for innovation and technical development	At concept/proposal stage
13. - Studio Eyewear Ltd., Ennis. - Bausch & Lomb Ltd., Waterford.	Design and development of an exclusive range of sunglasses	At an advanced stage No facilitation required
14. - Killeshal Precast Concrete Ltd., Daingean. - Southern Chemicals Ltd., Askeaton. - Maurice O'Brien - Consulting Eng.	Design and manufacture of an Insulated Concrete Flooring system	Network developed No facilitation required
15. - Care Products Ltd., Swords. - Mattress manufacturer.	Development of a special hospital bed	At concept stage
16. - Western Automation Ltd, Ballinasloe - Solar Enterprises Ltd., Belmullet. - 2 other manufacturers.	Representation for standardisation advisory committees	At proposal stage
17. - BioResearch Ireland, Dublin. - International Spawn Ltd., Navan.	R&D on biological pest control	At proposal stage

Source: Halloran (1997), Forbairt Report on Networks Pilot Programme, September.

Following from what it regarded as a successful Pilot Programme, the Forbairt report recommended that a full Operational Programme should be put in place and that it should be based on the Danish model. The report concluded that the success of the Pilot Programme suggested that few if any changes in the approaches adopted for the pilot phase were needed for such a full Operational Programme.

The Forbairt report echoed the view expressed by Tom Martin and Associates that funding for overseas marketing for some networks is essential. Both reports expressed the view that any subsequent Networks Programme should involve an Bord Trachtála (ABT), e.g. for specialist marketing advice and grants for overseas marketing by networks.

6. FUTURE POLICY FOR IRISH NETWORKS

The Steering Group for the Pilot Networks Programme is currently considering its own agreed final report and its recommendations regarding future policies and actions to encourage the networking process. While this report will largely be based on the commissioned studies just reviewed, it will also be informed by experiences of networking which have not featured directly in those studies and by a number of policy principles which the Group itself has been developing, based on all the information and proposals at its disposal. The following are some of additional factors the Steering Group will be taking into account:

(i) FÁSNET

One additional area is that of **training networks** - in which FÁS has played an important facilitating role. FÁSNET is the name given to a consortium of small, owner-managed, companies in the Dublin West and Kildare region who are committed to adopting the concept of the Learning Organisation. This initiative came about as the result of a training workshop organised by FÁS in conjunction with EUROTECNET (European Action Programme) in November 1994. This was intended to enable owner managers in SMEs to understand the need for human resource development, help the development of technical and commercial expertise and harness the commitment and dedication of employees to fulfil customer needs. Arising from this workshop twenty companies were invited to an exploratory meeting to discuss the creation of a Learning Organisation network. Ten companies formed a consortium and undertook to participate in the process from February 1995. Eight companies are still involved, drawn from the engineering, clothing, footwear and chemical and allied products sectors. The group is a

self-managed network having developed the skills of self-analysis and continuous learning and have deepened their understanding of their company as a Learning Organisation. It is important that this kind of activity is closely linked to any future Networks Programme.

(ii) Existing Irish Programmes with a Networking Dimension

There is also a range of existing programmes that directly and indirectly promote or facilitate the setting up and subsequent development of networks, although this may not be their primary aim. Orbitech, one of the main operating networks included in the Tom Martin study, resulted directly from the brokerage activities of the **National Linkage Programme**. This activity is managed by Forbairt but, since it was established in 1985, it has had significant inputs from other agencies. In addition to its primary objective of increasing linkages (and thus business) between indigenous and overseas companies, the National Linkage Programme has also studied the nature of industrial linkage with a view to making the entire process better understood. In recent years that has included identifying the need for sub-suppliers to come together to design and deliver to the changing needs of multinational companies. This information is passed on to carefully selected groups of indigenous supply companies by members of the Linkage Programme. The setting up of the Orbitech network was one outcome of the process. From an initial focus on the Electronics sector, the programme gradually moved into Healthcare, Consumer Products, Chemicals and Pharmaceuticals and Engineering.

The **Technology Transfer and Partnership Programme**, also operated by Forbairt, is another existing programme with strong elements of networking. The main focus is on brokering one-to-one licensing and other technology transfer and market-sharing agreements with overseas partners from Europe and the US. But national deals are not ruled out and the learning processes involved are significant for all kinds of networking. The Technology Transfer programme also puts a major focus on professional facilitation.

Forbairt also operates a number of programmes on behalf of the Office of Science and Technology to which a networking component has recently been added. These include the new Measure 1 grants for R&D in firms, within which the emphasis on inter-firm co-operation has been greatly increased. Forbairt has also recently initiated three Strategic Networks among the Technology Centres it funds in the Colleges of Technology/ITCs.

(iii) European Programmes

At European level, the **Research Framework Programmes** (currently the Fourth FP) have all had a major collaborative dimension, with all projects having to involve links between firms, colleges and research organisations within and across the member-states. Around 100 Irish firms have participated in Framework 4 to date, as have most of the Higher Education colleges. The colleges often play a catalytic role in putting these research networks together.

At another level, **Euronet** is an initiative to encourage Inter-firm Co-Operation Networks regionally and between member-states through the use of trained facilitators. This scheme was used in the training of facilitators for the Irish Pilot Programme.

(iv) Private Sector Initiatives

Private sector organisations ranging from **industry associations** within IBEC to **Chambers of Commerce** to a whole range of **local enterprise and community-based initiatives such as PLATO² and The Enterprise Trust³** are now involved in facilitating and assisting directly in the establishment and development of networks. These kinds of organisations are particularly suited to initiating a process of relatively loose, informal co-operation between small firms.

(v) Policy Issues and Principles for a Full Networks Initiative

A whole range of networking experiences, including existing public and private initiatives in Ireland and elsewhere, has to be taken into account in coming to any conclusions regarding the general thrust of future policies for inter-firm co-operation. The following issues/conclusions are among those exercising the minds of the Pilot Programme Steering Group as it formulates its strategic recommendations and proposals for action:

- (1) The Steering Group recognises that a certain level of networking had been taking place prior to the establishment of the Pilot Programme - stimulated by changing competitive conditions and facilitated by a variety of public and private organisations and intermediaries. It also believes that the level of activity and the contributions to encouraging it to date have been sub-optimal and that **it is timely to take a more systemic or holistic view of the networking process in**

2. PLATO is a business training network in which local owner/managers are encouraged to learn from one another and from the advice of local large enterprises.
3. The Enterprise Trust was established by employer organisations to co-ordinate employer input in support of local development.

Ireland. It therefore recognises the need for a fully-fledged **Networks Initiative** on similar lines to the pilot programme and with a particular emphasis on facilitation and brokerage.

- (2) However, **this must be more than another scheme or programme to be added to the many existing measures for technological, market and human resource development.** These, on the evidence of a number of reviews and evaluations carried out by Forfas, (including a recent analysis of Regional Innovation and Technology Transfer Strategies – RITTS – undertaken in co-operation with DG 13 of the European Commission) are already leading to a level of confusion among users.

The following considerations must apply to a Networks Initiative or 'new-style' Programme:

- **A major characteristic of networking is that it is a culture or philosophy** as well as a means of doing business. This is why a significant information and awareness-raising element is so important, as underlined in the report from Tom Martin and Associates.
 - **As in Danish case, the duration of any Initiative should depend on the propensity of firms to organise in networks,** when appropriate. Once firms are thinking about the option of co-operation themselves there should not need to be a specific initiative. **The first Danish programme had a duration of 3 years.** This would seem a good 'rule of thumb' for the Irish situation.
 - **The many existing schemes and programmes with a networking dimension at regional, national and European level should be used in a more integrated way** to both heighten awareness in the short-term and to continue to facilitate actual network formation in the longer-term, even after a specific 'Networks Initiative' may have ended.
- (3) **There is need for an explicit public-private partnership in stimulating networking.** This is not just a political or administrative issue. Private sector/community organisations have a comparative advantage in encouraging informal networks, while, as expressed at a number of RITTS workshops organised to discuss this issue, firms themselves expressed a preference for public sector facilitation of more formal business arrangements such as joint marketing, R&D and product development.
- (4) From both the Danish experience and the Irish Pilot Programme it would appear logical to pursue, where possible, an evolutionary

process of **going from informal contact and co-operation to more formal arrangements,** rather than trying to get firms that have had no previous relationship to work very closely together.

- (5) **Both the Steering Committee and the staff assigned to the Networks Initiative will have to be representative** of the disparate elements that contribute to the networking process.

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THE APPLICATION OF NETWORKING IN AN IRISH SME CONTEXT

by
Brian Nangle, Chief Executive Director, Munekata Ireland Ltd.

1. INTRODUCTION

Networking exists at the very foundation of the business development process. I am very conscious of its role in each step of the development of our company. I am therefore very pleased to have this opportunity to share with you my experience of this development, in the hope that the understanding of this process can contribute in some way to assisting others or indeed helping to create a working template for business innovation in the increasingly competitive environment which surrounds us today.

To introduce myself - I am Chief Executive Director and General Manager of Munekata Ireland. I have been involved with the company since its initiation as a business idea in 1981 when I worked as Investment Manager of Killeen Investments - better known as Toyota Ireland. As Investment Manager, I was required to identify, negotiate and develop new business opportunities and the development of alternate employment in order to secure the satisfactory withdrawal of Toyota Ireland from car assembly in Ireland. This clear objective and motivation provided me with the first critical element for business innovation.

At this stage, in reflecting on the business development process involved, I recall the specific comment of our Chairman, Dr. T.P. Mahony, at the formal opening ceremony in 1984: "*From little acorns big oaks grow*". In enunciating this simile Dr. Mahony was setting out clearly a long-range goal - and in today's terms, underlining an expected organic development of networking, leading to the establishment of roots and a strong management and process structure which would form the company.

Before moving on to talk specifically about my experience in networking, as an underlying part of developing Munekata Ireland, the following is a summary of our company as it now exists:

Business description	Plastic injection moulded TV cabinets/computer cases and related tool-making
Industry supplied	Electronics (industrial and consumer)
Start-up	1984
Issue share capital	£7m
Total capital investment	£22m
Number employed	260

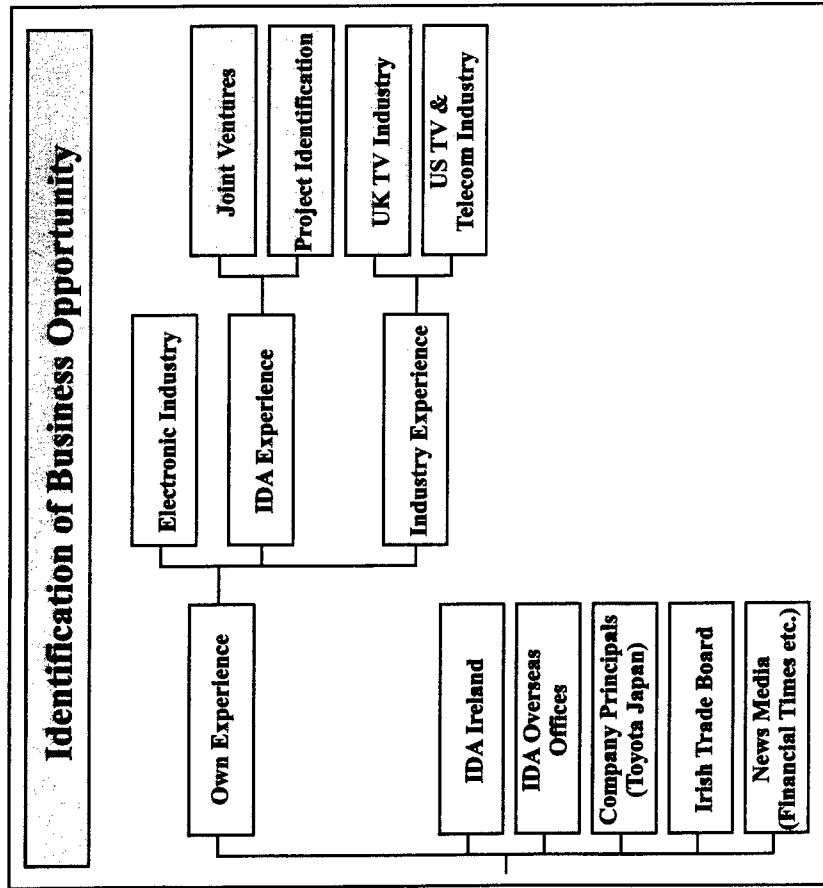
Main Customers (85%)	Panasonic, Sony, Toshiba, Epson, Dell, Apple
Markets	UK - 70% Ireland - 20% Other - 10%
Turnover	Approximately £20m

2. GETTING THE BUSINESS STARTED

(i) Identification of Business Opportunity

Figure 6.1 summarises some of the review process undertaken to identify a business opportunity. Contacts and data were derived from a very wide range of sources, and the sensitivity, accuracy and timely nature of the information was critical to allow sequential progress to be made. By assimilating data from this network of sources and contacts, it was possible to identify both the trend in demand within the electronics industry in Europe for electronic product enclosures and also identify key technology players in the industry in Europe, US and Japan.

FIGURE 6.1



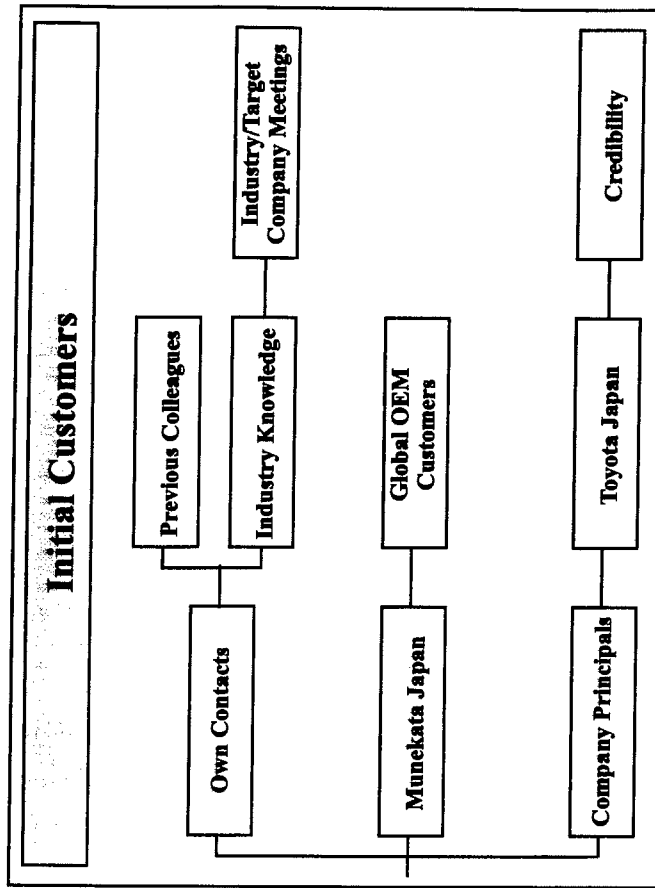
Having identified these key industry players, I approached a number of them to propose a joint venture with our company to set-up a new operation in Ireland to service the Irish and the European markets. A key point in this promotion was the **forecast of growth in market demand** and the **ability of our Irish company to make a substantial contribution to any new business start-up**. Progress in project development at this stage was very dependent on networking, cross correlation of data and ensuring effective interaction between a wide range of persons involved in this chain of activity. In my experience, this tends to be a very busy time in project development and demands a very high energy commitment from all the key people involved.

Having identified Munkata Japan as a leader in the relevant field, the IDA and Toyota Motor Company Japan (our principals), played the next vital role in promoting the business proposal with Munkata and effectively networking the relationship development between Munkata Japan and Toyota Ireland.

(ii) Initial Customers

Having identified and crystallised the business target, we needed to get some customers. Our initial customers were in fact Panasonic and Toshiba. We achieved this by following a process which I would outline in summary as follows:

FIGURE 6.2

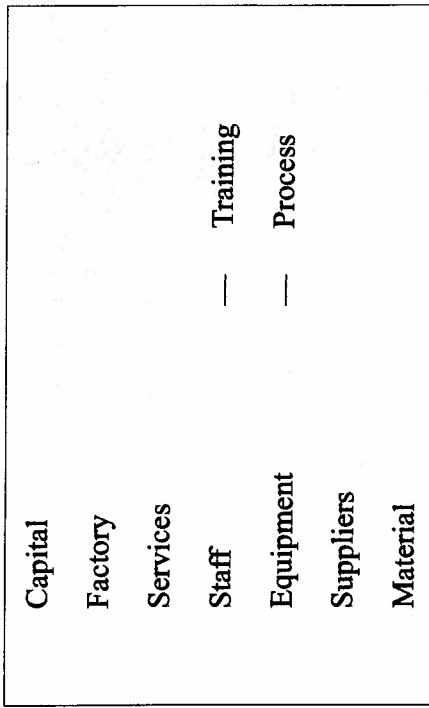


From my previous experience with a US company based in Shannon, I had both some specific knowledge of the electronics industry in the UK and maintained friendship with colleagues with whom I had worked. This foundation, knowledge and contacts provided me with an important line of access to the industry. It was then possible to activate further contacts through Munkata Japan's business dealings with the head office of Japanese subsidiaries located in the UK. We also enlisted the very important strategic backing of our principals - Toyota Motor Company - to support our promotions for business with our target customers. And by diligently progressing this network of contacts, we succeeded in confirming orders with two start-up customers, Panasonic and Toshiba. This was a particularly difficult step, because at this time we had no factory and no experience in the business of plastic injection moulding. We were selling a concept and a commitment to deliver a product to the highest quality standards in a global business - we needed a lot of people

to believe in us. The bottom line was that we needed a support network which fully believed we could deliver on our promises.

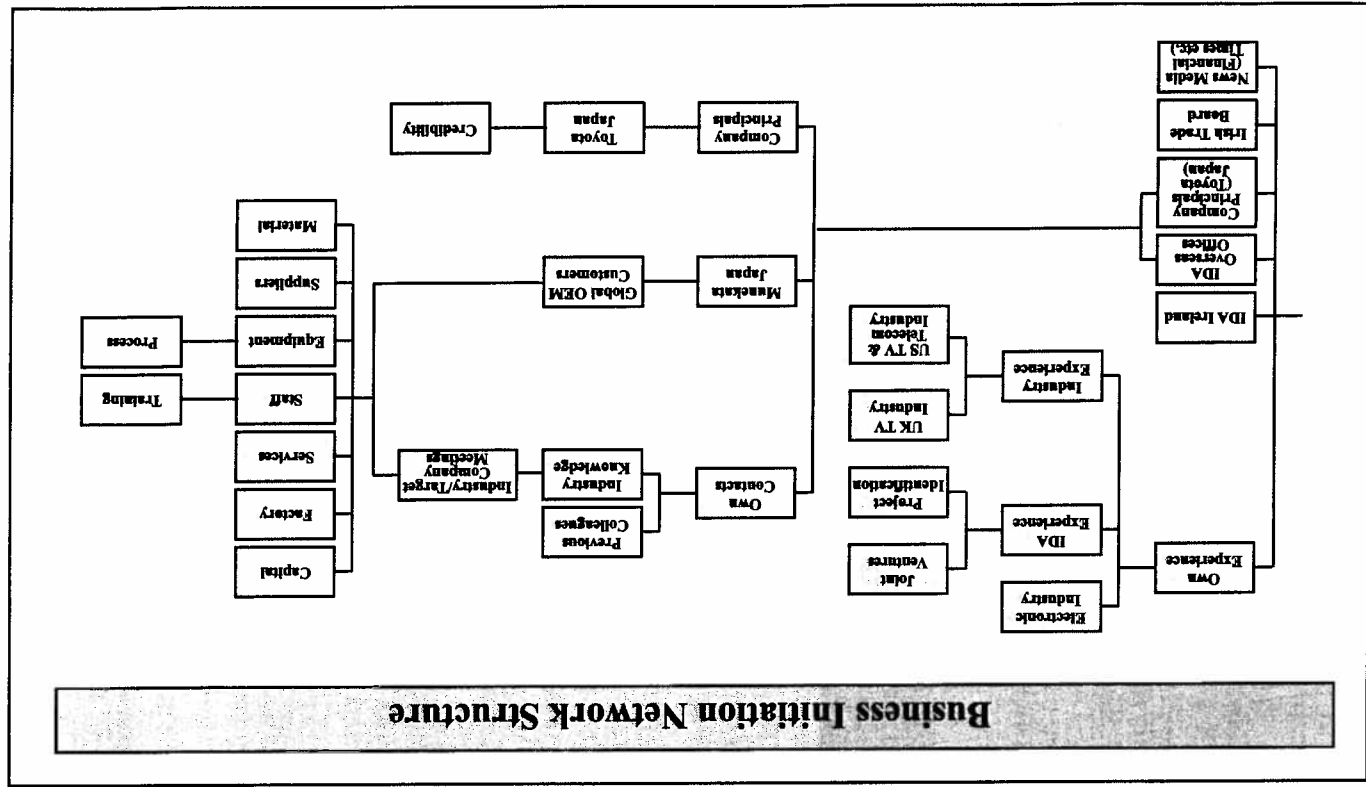
3. ESTABLISHING THE MANUFACTURING OPERATION

Having established and agreed a business plan and confirmed orders for two customers, we then moved forward to setting up the full business operation. This required the establishment of a new range of contacts which then led in time to the provision of the following summary elements of the business:



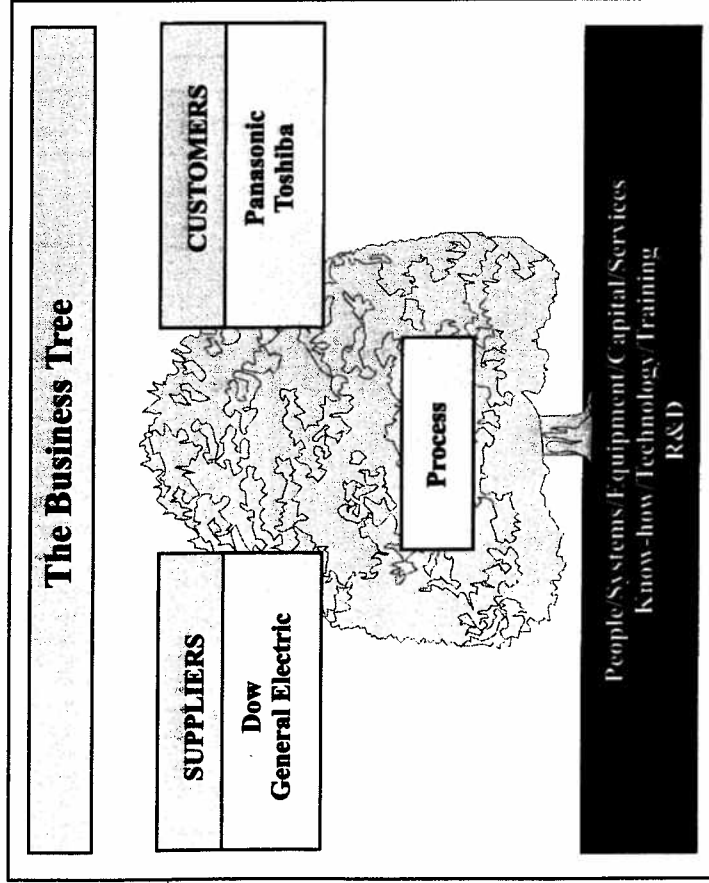
Now if we look back on the story so far, we see the representation of the company's development in Figure 6.3.

FIGURE 6.3



In terms of the simile - from little acorns big oaks grow - which I used at the beginning of this presentation, this network of contacts and interactions is very similar to the organic development of a tree, with the identifiable business being represented by what we can see of the tree above the ground, and the indirect services and support systems that feed the business represented by the root structure beneath the soil surface.

FIGURE 6.4



As our company is continuing to grow and progress, the networking business system is becoming more complex, with an increasing number of customers, suppliers, staff and products.

The challenges which now face us for the future in maintaining and developing competitive advantage can be visualised principally by reference to the effects of change above the ground, the impact from the winds of economic change which blow across our business tree; and below the ground, the strength and durability of our root system as reflected in the skill, strength and stability of our staff.

In order to protect our future with our customers, we now are focused on intensifying the network of interactions with each customers in order to provide a more complete and supportive business relationship. This relationship is also now expanding outside the single point of contact

between our company and direct customers in the UK and Ireland, and is evolving in the context of a global supply chain strategic plan with these customers.

This intensification and sophistication of the relationship between us and our customers is considerably enhancing our business competence and value, but on the other hand it also carries with it, a demand to achieve true World Class Manufacturing competence with little tolerance of second tier performance.

At the foundation level of our company, we are extending our root system, as it were, further into the soil, with plans to develop a network of interactions with two 3rd level colleges in order to begin the development of innovation in our Irish company, which we believe will emanate from an involvement in structured R&D activities. We believe this is an essential part of maturing our operation in Ireland and providing it with its own inner capability to meet the challenges of changing technology in the market place. I believe however, that the effectiveness of this plan will be largely dependent on our ability to set up, maintain and progress a dynamic network of interactions between ourselves, the colleges, customer demands and competitive technologies. I am optimistic we can develop this interactive network which will be new to us.

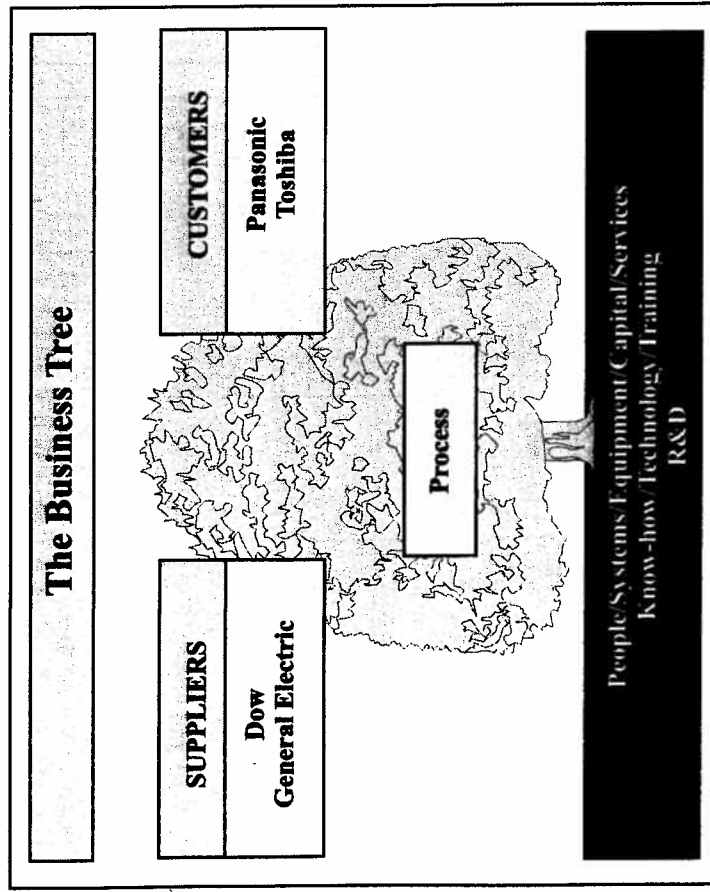
The growth of our company since its inception has been founded on networking with individual persons, principals, semi-state bodies, customers and suppliers. We have been greatly assisted in the development of our business by the international networks of IDA, Forbairt and the Irish Trade Board. In developing potential for growth these contacts are of invaluable assistance to us.

I believe the semi-state agencies may often not be receiving their due credit for the indirect and very valuable support they are providing to many Irish industrial SMEs like ourselves. A cost benefit analysis is very difficult to carry out on this activity, but I firmly believe the benefits far outweigh the costs even though the returns for specific activities may not be seen in the short-term.

At a local community level, we have now extended our networking into the local branch of the Chamber of Commerce and the School Industry Links Scheme. We have been delighted with our school links involvement as the local school which we have sponsored has won the national competition in 1996 and 1997 for mini companies developed by the transition year students and in the current year, this school's team came 3rd in the European finals held in Copenhagen. Strategically we plan to continue and further develop this local community linkage involvement, strengthening our social integration in North County

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Dublin for the long term. This forms a very significant part of our human resource planning and indeed our corporate social responsibility.

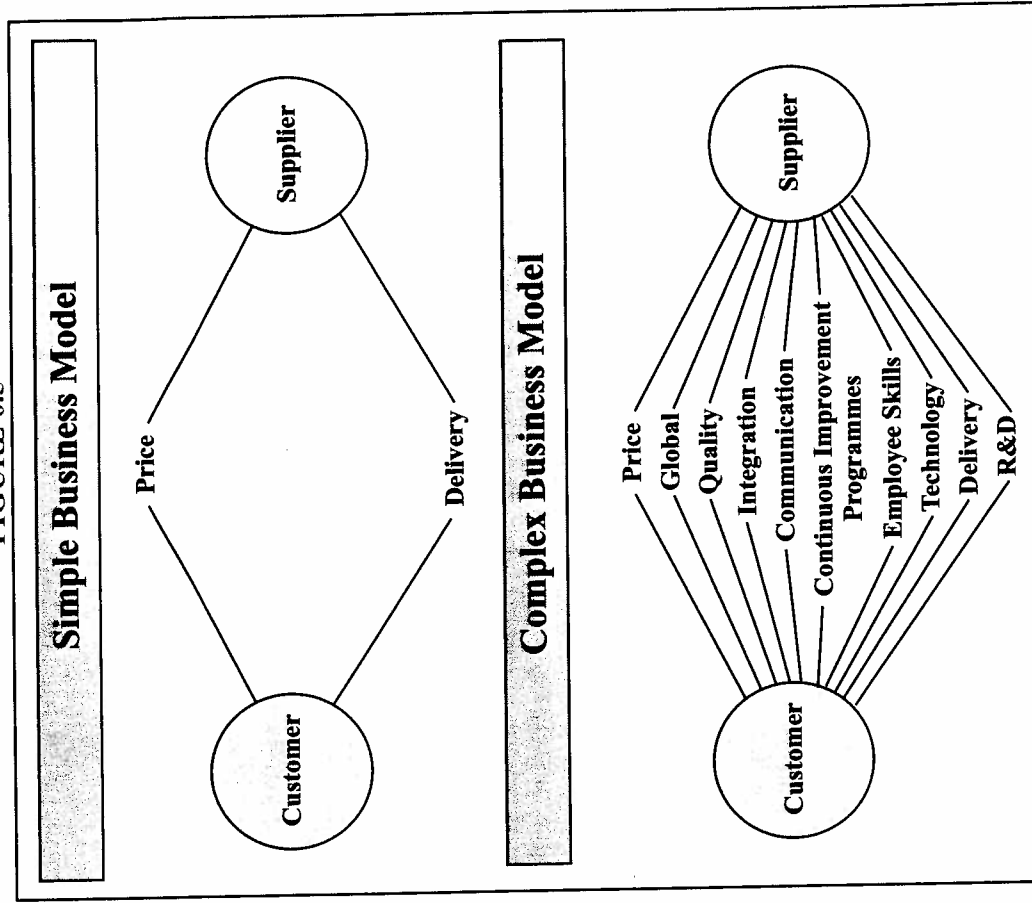
As our business continues to develop the network upon which it is founded will progressively become more and more complex. Additionally because the Irish economy has now been developed as a very open one, I believe we are forced to appraise the sophistication of business and people networking on more than a local level - indeed on a global level, if we are truly to prepare ourselves fully for the future.

We must fully recognise the global nature of our economy and specifically take action at that level and not only a regional level.

4. NETWORKING FOR COMPETITIVE ADVANTAGE

Finally I would like to reflect briefly on the more complex issue specifically of networking for competitive advantage. When we start up a new company, we will usually have a very simple model or business network. (See Figure 6.5)

FIGURE 6.5



Because no business can stand still, it must necessarily develop from a simple business model to a complex one in order to stay in existence, fend off the competitors and grow. Most often the customer - after a period of time being satisfied with the price and delivery - wants more. This stimulates the development of a Complex Business Model which entails taking the following factors into account:

CHAPTER 7

INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY AND THE IMPLICATIONS FOR SUSTAINING COMPETITIVE ADVANTAGE

by

Alan W. Gray, *Managing Director,*
Indecon International Economic Consultants

1. INTRODUCTION

This paper considers some of the challenges facing the Irish economy and what can be learned from an international perspective. It considers aspects of three fundamental questions of relevance to Irish policy makers as follows:

- What are the reasons or explanations for the remarkable turnaround in Ireland's economic performance?
- What risks are there to sustaining growth and competitive advantage?
- What policies should be pursued by the Irish Government?

The paper is in part based on some of the analysis included in a recent book on *International Perspectives on the Irish Economy*¹ which include contributions by some of the world's most outstanding economists. This paper does not pretend to provide an adequate summary of the various contributions and the usual disclaimer applies. The objective is to attempt to discuss aspects of the three questions outlined above and to also focus on the implications for Irish policy.

Most of the analysis which has given rise to the Celtic Tiger phenomenon has referred to the growth of the Irish economy and the maintenance of a low inflationary environment.

The growth in the economy since 1994 has indeed been very rapid by historical standards. While very fast growth rates have been recorded previously (notably in 1989 and 1990) the remarkable feature of recent Irish growth is that it has been sustained at a very high level since 1994.

1. *International Perspectives on the Irish Economy*, edited by A. W. Gray. Dublin: Indecon Economic Consultants. This book includes contributions by Kenneth Arrow, Anthony Atkinson, Michael Burda, Paul Krugman, Jeffrey Sachs, John Vickers, Xavier Vives and Angel de la Fuente.

- lower price - because someone else has offered a better price;
- improved quality - because the market target is zero defect level;
- improved technology - because what was good enough yesterday is not acceptable today;
- improved supply chain logistics - to help lower inventories and increase profitability;
- improved employee skills - to assist increasing competitiveness;
- continuous improvement programmes - reflecting higher added-value;
- improved communication - to assist efficiency.

To maintain competitive advantage the interactive matrix linking all the elements within the business network, both within the company, and between the company and the national economic infrastructure within which it exists, is continuously being forced to be more dynamic, more responsive, and more skilled. Our ability to manage the consequent increasing complexity will be a measure of our success in the future.

I believe we can only succeed in developing and maintaining competitive advantage in the long-term if we equip ourselves now as fully as possible with trained expertise in knowledge-based systems of networking in the global arena. Industry and business, by themselves, will naturally pursue the development of these networks, but a great deal can, and must, be done by government and semi-state bodies to nurture the infrastructure and facilitate the growth of business prosperity for the future. Munkata Ireland Ltd would not exist today without the benefit of the complex linkage support of IDA and Toyota Japan to assist the beginning of its development.

Of particular importance is that the average rate of growth since 1994 has been three to four times the average growth of the European Union countries and much higher than the OECD average. The fact that Irish growth rates are higher than for the EU is not particularly remarkable in a historical context. The extent to which recent growth rates have exceeded OECD and EU averages is, however, of significance and in the past couple of years Ireland's growth rate has been the fastest of any OECD country.

Perhaps even more significant than the high growth rates for the Irish economy is that this has occurred against a background of a continuing improvement in the Irish public finances and a decline in central government expenditure as a percentage of GDP. Government expenditure is still, however, at a very high level compared to some competitor countries, who have pursued a similar industrial development strategy.

Not only has the deficit on central government financial balances declined significantly compared to the position during the first eight years of the 1980s but when compared to the trend in other industrialised countries this performance is even more impressive. In 1980 Ireland had a government financial deficit amounting to 12.3 per cent of GDP which was a multiple of that evident for any of the other countries reviewed, while by 1996 the Irish position was much better than the OECD average.

A key feature of the Irish economic 'miracle' has been the fact that the rapid growth has not resulted in inflationary pressures. Inflation in Ireland has plummeted from the high of over 20 per cent in 1981 to under 2 per cent in 1996. The downward trend in Irish inflation in part reflects the international trend towards lower inflation. For example, UK inflation (which is of particular importance for Ireland), declined from 18 per cent in 1980 to 2.4 per cent in 1996. There is however now increasing concern in Ireland in relation to the prospects of inflationary pressures.

2. PERSPECTIVES ON IRELAND'S ECONOMIC PERFORMANCE

An understanding of the reasons for the remarkable turnaround in the Irish economy is important in considering the implications for sustaining competitive advantage. The historical picture shows how easily growth can falter for a small economy such as Ireland. The views of international economists on the Irish economy highlight the importance of the following:

- Labour Force Skills and Education
- Importance of Foreign Investment
- Shift in Balance of International Trade
- English Speaking Workforce
- Role of Convergence
- Impact of Fiscal Adjustment
- EU Subsidies
- Partnership Approach to Income Policies

Also of relevance to sustaining competitive advantage is the issue of social cohesion and persistent poverty. Each of these issues are discussed below.

(i) Labour Force Skills and Education

In considering recent developments in the Irish economy Arrow² provides a welcome focus on the fundamental reasons for the international successes and failures in economic growth during the past half century. It is particularly important to focus on the underlying bases for economic growth which are often factors not amenable to short term policy initiatives. This is something which is usually lost in political squabbles to gain credit or attribute blame. Arrow draws our attention to the quantity and quality of the supply of labour and the significance of factors such as the retirement age and the nature of child care on this critical resource. He also pointed to the extreme importance of the quality of secondary-school education and the role of graduate education in facilitating the acquisition of advanced technologies as well as the family environment for child development. Interestingly, analysis by Krugman³ also refers to the role of past investments in education in Ireland in leading to the rapid improvements in human capital.

(ii) Importance of Foreign Investment

Arrow emphasises the central role of capital formation in economic growth and the role of domestic savings and foreign investment. He highlights the fact that the real gains from foreign investment are

2. Professor Kenneth Arrow, Stanford University, see 'Economic Growth Policy for a Small Country' in *International Perspectives on the Irish Economy*.

3. Professor Paul Krugman, MIT; see 'Good News from Ireland: A Geographical Perspective' in *International Perspectives on the Irish Economy*.

improved competitiveness and the transfer of knowledge. The role of foreign investment is unusually important for the Irish economy. It is probably not an exaggeration to say that the growth in foreign investment is at the heart of an understanding of the Irish economic miracle. An analysis by Sachs⁴ for example, points out that Ireland has in recent years followed a kind of East Asian growth strategy basing rapid growth on manufacturing exports made possible through large inflows of direct investment. Sachs suggests that this growth in foreign investment is related to a favourable rating for Ireland in four crucial dimensions of competitiveness: labour markets, corporate taxation, exchange rate policy and technology transfer via direct investment.

The importance of foreign investment has also been highlighted by Krugman. Krugman brings us back to the fundamental reasons for Irish growth namely relatively fast productivity growth without a comparable increase in wages. He argues that the big question is why productivity has grown so rapidly and points out that the capital stock grew roughly in line with GDP (apart from education which was referred to above) and dramatic improvements in infrastructure have probably played an important role.

(iii) Shift in Balance of International Trade

Krugman notes that our success is related to becoming the premier European host to inward foreign direct investments and points out that US foreign investment in Ireland is 50 per cent higher per capita than in the UK and 6 times as high as in France or Germany. Of particular value is Krugman's analysis of why Ireland has been so successful in attracting increased foreign investment. A partial answer to this suggested by Krugman is that changes in how nations trade have tilted the balance of geographical advantage in a way that is favourable to Ireland. One part of this is that conventional transportation costs are a steadily less important factor in limiting shipments of goods compared to factors such as delivery time, communication and personal contact. This combined with the fact that market access means that for many industries really long-range, inter-continental trade is still not an option has meant that Ireland's insular location and distance from Continental markets matters much less than formerly. This is related to the growing importance of international trade in services and the increase in the importance of higher value products.

4. Professor Jeffrey Sachs, Harvard, see 'Ireland's Growth Strategy: Lessons for Economic Development' in *International Perspectives on the Irish Economy*.

Krugman also outlines some reasons why Ireland has been uniquely successful in taking advantage of what he calls "the changing shape of economic geography". These include the establishment in Ireland of a self-reinforcing industrial cluster, including the impact of classical external economies. Krugman suggests that other factors may have included the demonstration effects of early success as well as the fact that early decisions about the location of investment can produce a cascade of followers. Analysis by Fuente and Vives⁵, in stressing the role of foreign direct investment suggest that the recent growth may be related to the renewed interest by American and other multinational firms in gaining a foothold in Europe and the fact that the fiscal consolidation may have acted as a catalyst, helping to change foreign investors' perception of the country.

(iv) English Speaking Workforce

Ireland is the only country in the European Union apart from Britain which is English speaking. Given the importance of US foreign investment and the question mark which hung over the commitment of the UK to aspects of European integration, this has placed Ireland in a unique position. The views of a number of internationally based economists stress the high advantage that comes from the availability of a work force that is not only well-educated but English speaking. This advantage has long been appreciated by business but may not have been given sufficient weight in economic analysis.

(v) Role of Convergence

One of the explanations for the rate of growth in the Irish economy which may have implications for future growth rates is the issue of convergence. For example Sachs points out that to some extent Ireland's rapid growth is an example of convergence, the empirical regularity in which lower income economies grow more rapidly than the relatively richer economies. Sachs points out that lagging economies such as Ireland have opportunities for "catching up" through the importation of technology and capital and that among the OECD economies in the post-war period the tendency towards convergence has been strong. Sachs, however, notes that something else is also happening in Ireland.

5. Professor Xavier Vives and Angel de la Fuente; see 'The Sources of Irish Growth' in *International Perspectives on the Irish Economy*.

(vi) Impact of Fiscal Adjustment

One of the striking features of Irish economic development referred to previously was the fact that the growth occurred at a time of a radical improvement in Ireland's public finances. It appears that this fiscal adjustment assisted growth while in addition the growth contributed to the expansion of tax revenues. Fuente and Vives suggest that the results of their analysis are consistent with the view that fiscal adjustment was directly responsible for a sizeable increase in the growth as well as the indirect impact on foreign investment referred to previously. Sachs also points out that Ireland's rapid growth was put on course through the dramatic cutbacks in government expenditure as a per cent of GDP beginning in the late 1980s.

(vii) EU Subsidies

Ireland has benefited significantly from an inflow of EU subsidies as part of the Commission's objective to facilitate convergence. The contribution to Irish growth of the inflow of large subsidies from the European Union was referred to by Fuente and Vives. These helped finance infrastructure and educational investment without undue pressure on the public finances.

(viii) Partnership Approach to Incomes Policy

The issue of the partnership approach to income policies is a more debated factor but is likely to have underpinned a number of the other key determinants of Irish growth referred to above.

Fuente and Vives refer to the role of Ireland's relatively low labour costs which have been preserved in recent years by an incomes policy aimed at wage moderation. Krugman also notes that one of Ireland's strong points is that there was enough social cohesion to introduce an effective incomes policy. This social cohesion was also important in underpinning the reduction in the public finance deficits.

(ix) Social Cohesion and Poverty

It might at first impression be thought that the issue of poverty is not directly related to the task of sustaining competitive advantage. This would however be a mistake. The growth in GNP is but one crude measure of economic performance and the purpose of economic success is to improve the economic living standards of the population. This is sometimes overlooked as economists focus on statistical measures of economic growth. Poverty and the widening wage dispersion may also

have a direct link with economic performance as without social cohesion some of the strategies pursued may not be effective. It is also relevant to the extent to which economic growth requires countries to engage in fiscal competition which in turn will have implications for funds available for social programmes. Public expenditure on social schemes will also have implications for the functioning of the Irish labour market.

Despite the growth in the economy, economic poverty remains a significant problem. A detailed analysis undertaken by Atkinson⁶ suggests that poverty touches at least 1 in 10 of Irish households. Poverty in Ireland may be less than in some Member States of the European Union, but it is above that in Northern Europe. Available evidence suggests also that wage dispersion has been widening in Ireland. Earnings of the lowest decile have strengthened while those on top incomes have been rising. The ratio of earnings of the top decile to the bottom decile has grown from 4.2 to 4.9 over recent years.

3. RISKS

It is clear that despite the success of the Irish economy there are a number of risks to sustaining competitive advantage and growth in the Irish economy. The rapid growth in the economy has only existed since 1994 and the recent history of the economy over the past couple of decades shows how fast Irish growth can falter.

One of the risks which exist is potential labour and skill shortages in the economy. Krugman highlights the possibility that at some point Ireland will begin to run up against the constraints of limited labour supply. The number of individuals participating in apprenticeships has increased dramatically in Ireland, but this in itself does not indicate that problems will not emerge. Indeed, there is some evidence that skill shortages are already emerging and action is being taken by the development agencies to prevent this factor acting as a constraint.

Ireland is vulnerable also to a shift in technology. Krugman for example, suggests that changes in technology might vitiate the advantages of a European location which has been a critical factor in determining the growth in foreign investment. Perhaps of even more importance is the risk pointed out by Krugman that some of the Eastern European countries which have large numbers of technically trained people, available at very low wage rates, could mean that other European locations may begin to

6. Professor Anthony Atkinson, Nuffield College, Oxford; see 'Poverty in Ireland and Anti-Poverty Strategy: A European Perspective' in *International Perspectives on the Irish Economy*.

compete more effectively for foreign investment. Krugman refers also to the issue of Ireland's role within Europe and notes the possibility that EU policies on wages or taxation could damage Ireland's role as an export platform for non-European firms serving the European market.

Sachs refers to risks involving foreign direct investment and points out that countries competing for export oriented investment are in a tough market in which footloose industries searching for cost advantages can choose among many alternative locations. Sachs points out that Ireland's high growth is far from secure in the long term and risks identified by Sachs include a failure to reduce gradually the burden of Government expenditure and taxation. The indirect impact of this on the attractiveness of Ireland for foreign investment could be important.

Another critical risk concerns the maintenance of cost competitiveness. Sachs points out that in the past Ireland has used exchange rate devaluations to restore cost competitiveness at times when domestic costs got out of line. If Ireland joins a single currency, it will close the door on exchange rate flexibility as an instrument of policy. Sachs suggests that it is surely a big risk for a small country that is dependent on export led growth and that perhaps this is even too great a risk. In such circumstances, the need to take other measures to address our relative competitive position gain a new urgency.

4. WHAT POLICIES SHOULD BE PURSUED?

Given the recent performance of the Irish economy a key issue is what policies should be pursued by the Irish Government to increase the probability that the growth will be sustained and to alleviate the problems which remain. I would like to draw attention to four areas of policy which merit particular attention as follows:

- Labour Force Issues
- Social Cohesion
- Maintaining the Attractiveness of Ireland for Foreign Investment.
- Longer Term Development Measures

(i) Labour Force Issues

The quantity and quality of the Irish labour force is undoubtedly one of the most important factors in sustaining Ireland's competitive advantage. A number of policy changes should be considered to support this key

determinant of Ireland's economic performance. Specifically it is useful to consider the following proposals.

- Increase in retirement age
- Increase in female participation
- Increase in immigration
- Universal secondary education
- Increase in university education

The increase in the retirement age is of relevance in considering the longevity of the population and its implications for the use of productive resources and the financing of pensions. Because of an understandable desire for increased leisure time and a perhaps misplaced belief that the total number of jobs is, in a sense, a fixed quantity, 'early retirement' has become more and more frequent. In some cases this has been in response to over-manning levels in certain companies and may perhaps also reflect a mistaken 'ageism' in the workforce. The impact of the loss of experienced skills, and the potential dramatic implications for pensions of this development, has not been given sufficient attention in Irish public policy. Interestingly, Arrow expresses a strong belief that retirement age has to rise (rather than fall) in order to provide more output to sustain the increasing costs of retirement pensions.

Ireland still has a low, albeit growing, level of female participation in the Irish labour market. Facilitating an increase in female participation rates will be an important response to labour market skill shortages. A serious commitment to this will require a change in policy in a number of areas including increased employer flexibility on work sharing, enhanced child minding facilities and possibly some fiscal changes.

Enhancing the Irish labour market skill bases also suggests the merits of reviewing immigration policy from an economic development perspective. The attraction of immigrants has been a critical factor in economic development for most of the industrialised countries. Ireland needs not only to attract returning Irish emigrants but we need to explore the positive role of immigration from other nationalities as a means of sustaining competitive advantage. To this end it would be worthwhile offering Irish passports to skilled immigrants who wish to live and work in Ireland rather than providing such passports for individuals who are willing to make passive investments in Ireland.

In considering ways to sustain our competitive performance there are two aspects of education which deserve particular mention. The first is how to

ensure the maximum participation in secondary level and how to finance and encourage appropriate participation in third level education.

Arrow makes the judgement that virtually universal secondary education is a priority but after that an appropriate increase in university education with adequate emphasis on science and technology, seems to be very important in increasing national output. He points out that graduate education plays a special role in facilitating the acquisition of advanced technologies. On the thorny question of financing higher education, Arrow notes that though the amounts involved are not so great, because of income redistribution reasons the best system may be to have the costs of a university education repaid by students in subsequent years, possibly by an additional small percentage increase in the income taxes of those whose university education was paid for by the state.

(ii) Social Cohesion

How to maintain social cohesion in Ireland in a context of increasing economic expectations, and the need for reduction in government expenditure to support a fiscal climate which maintains the attractiveness of Ireland as a location for foreign investment, will be a major challenge. This will require an increasing focus on equity and fairness of policy determination.

Ensuring that the benefits of Irish economic success reach the poorest sections of our society is also a key objective in itself. The issue is how to achieve this in the most effective way and with minimum distortionary impacts.

Atkinson suggests that he does not consider means-testing the way forward. In his view, we need to combine elements of 'old' in the form of social insurance, which is the backbone of the social transfer system in all European countries, and 'new' in the form of a participation income, which is a conditional citizen's income.

Atkinson argues that it is a mistake to see basic income as an *alternative* to social insurance and it is more productive to see it as complementary. What is proposed is a radical scheme which would replace tax allowances, although retaining an earned income disregard, but would keep the existing structure of social insurance benefits. This would represent a partnership between social insurance and basic income and would be an alternative conception of the basic income.

Of particular significance is the Atkinson proposal that a basic income should be conditional on *participation*. The way in which this participation requirement would be defined requires detailed

consideration, but qualifying conditions proposed by Atkinson would include (a) work as an employee or self-employed; (b) absence from work on grounds of sickness, injury, or disability; (c) being unemployed but available for work; (d) reaching pension age; (e) engaging in approved forms of education or training and (f) caring for young, elderly or disabled dependants. The proposed condition is not confined to *paid* work; it is a wider definition of social contribution.

Atkinson proposes also that reducing poverty should become an explicit object of policy. He suggests there should be a poverty criterion, which governments accept as a commitment, and there should be an official *Poverty Report* assessing how far the target has been reached. An effective response to poverty must also consider ways of reducing Irish unemployment.

(iii) Maintaining the Attractiveness of Ireland for Foreign Investment

Maintaining the attractiveness of Ireland as a location for foreign investment will be an essential rather than an optional element of policy if growth is to continue. This will require action in the following areas:

- taxation;
- infrastructure;
- cost competitiveness.

The issue of tax reform and the overall reduction in the level of taxation will be important in maintaining the attractiveness of Ireland as a host location for foreign investment. This will require that Ireland wins the argument in any EU or OECD debate concerning the co-ordination of corporate tax rates. It will also have implications for government expenditure, and the possible adjustments required to compete with other potential locations may be much greater than currently realised. For example, it is somewhat daunting to note that as Sachs points out the top marginal income tax rate in Singapore is 30 per cent and in Hong Kong is just 20 per cent. Sachs also highlights the fact that there are no payroll taxes in Hong Kong or Singapore, and pension contributions are in the form of mandatory payments to individualised savings accounts rather than taxes for government revenue. This kind of individualised provident fund system is also in operation in Malaysia. This would suggest that the Irish Government should consider how to significantly reduce the overall taxation on income beyond what is currently planned. This examination should focus on potential savings in current government expenditure and potential increases in equitable and 'politically saleable' property and

capital taxation. There is also a need for a radical examination of how to reduce the exchequer costs of rising pension expenditures. The Government should establish a high level task force to consider the recommendation by Sachs to explore mechanisms for state-regulated private pensions, such as the state-managed systems of mandatory household savings which operate in Singapore and Malaysia.

In addition to making steady progress to reduce income and other relevant taxation, Ireland must make further improvements in its infrastructure. Sachs points out that Ireland rates poorly in international surveys on the quality of infrastructure compared to the most developed economies. While there have been dramatic improvements in Ireland's infrastructure supported by EU funds, some gaps remain and Ireland will need to adjust in the future to the requirement for on-going investment in infrastructure to be funded with reduced levels of assistance from the European Union.

A final area which will be essential if Ireland is to maintain its attractiveness for foreign investment relates to cost competitiveness. The importance of cost competitiveness has somewhat gone out of fashion in some quarters in Ireland, in part reflecting the current favourable position in relation to many areas of costs. While the importance of developing non-cost competitive advantages where possible is clear, maintaining our cost competitiveness remains an essential policy requirement and is likely to become more intensive as we face new competitors for foreign investment from Eastern European countries. This is particularly the case given that if Ireland joins the single currency, we will lose the ability to use exchange rate policy to attempt to counter a loss in competitiveness.

(iv) Development Measures

There is also a need for an ongoing analysis of socio economic development measures. These include aspects of industrial policy such as fostering clusters and networking for competitive advantage which were reviewed in this NESC seminar and publication. In addition it requires the anticipation of changes in economic geography or in other features of the international economy which could give rise to new opportunities or risks. There is also a need to ensure that regulatory and competition policies assist in the provision of high quality telecommunications, transport and other services.

The significance of competition was noted by Arrow. Arrow points out that in a small country, it can easily happen that there are too few firms in an industry to permit adequate competition. He highlighted the fact that competition is important partly to reduce mark-ups and therefore increase consumer welfare but even more importantly to create a steady pressure

for efficiency. Ensuring that regulatory policies foster competition, and where competition is not adequate provide an incentive for on-going efficiency is a policy area where significant developments in Ireland will be required. One area where it is recognised that further improvements are necessary relates to competition in services in Ireland. Barriers to entry or other obstacles to effective competition in Irish services can no longer be accepted. Ireland also needs to ensure that it remains an attractive location for individuals who work in manufacturing or services industries. This means that initiatives are required in a wide range of policy areas for example to moderate the increase in home prices by tackling supply factors and by reducing property related tax incentives. Liberalisation of barrier to entry in all services areas with appropriate compensation for those affected is also required.

(v) Conclusion

Sustaining Ireland's competitive advantage will be a difficult challenge which requires on-going policy reforms in a very wide range of areas.

This will require NESC and other key policy organisations to identify appropriate policy initiatives. It will also require the Government to vigorously tackle sectional interests and to implement an on-going programme of reforms in order to maintain our exceptional economic performance.

INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY AND THE IMPLICATIONS FOR SUSTAINING COMPETITIVE ADVANTAGE

*Response by
John Travers, Chief Executive Officer, Forfás,
to Paper by Alan Gray*

1. INTRODUCTION

At the outset it is appropriate to congratulate Alan Gray for bringing together, within the covers of a single very readable book, a range of papers by eight eminent and highly-respected economists from outside Ireland to consider the process of economic development in general, with a particular focus on Ireland's more recent comparative economic performance. The papers make a singular and highly valuable contribution to the economic debate in Ireland. They provide a range of ideas, analyses and policy proposals and suggestions which are of major interest to Irish policy makers.

It is also appropriate to congratulate Alan on the clarity and relevance of his own paper to the seminar which draws on the insights provided by the different contributions to the book, *International Perspectives on the Irish Economy*.

2. OVERVIEW OF IRISH ECONOMIC PERFORMANCE

As a backdrop to my comments it is useful to recall a number of indicators of Irish economic performance in terms of annual average growth rates over 5 year intervals from 1961 to 1997 as set out in the following table drawn from the work of the ESRI:

TABLE 8.1
Selective Indicators of Economic Performance 1961-1997

Annual Average per cent Growth	1961-65	1965-70	1970-75	1975-80	1980-85	1985-90	1990-95	1995-97
GNP	3.7	4.1	3.8	4.1	0.4	3.6	4.7	6.0
Investment	12.4	6.0	3.2	8.2	-3.2	3.8	1.1	8.7
Employment	0.4	-0.2	0.6	1.5	-1.4	1.0	1.8	3.5
Average Industrial Earnings	7.1	10.8	18.0	18.8	13.5	4.8	4.1	1.7
Consumption Deflator	4.5	5.5	13.7	14.6	11.2	3.3	2.4	2.1
Period Averages	61-65	66-70	71-75	76-80	81-85	86-90	91-95	96-97
EBR (as % of GNP)	6.4	7.7	9.7	11.4	13.2	5.7	2.0	1.4
Current A/C (as % of GNP)	-2.9	-1.9	-3.9	-7.9	-7.9	-0.6	5.7	4.4
Balance of Trade (as % of GNP)	-7.1	-6.0	-7.5	-11.0	-4.5	6.4	13.0	16.9
Unemployment Rate*	4.8	5.1	6.0	8.1	13.6	16.0	15.2	12.2
Net Migration (000s)	14.8	14.2	-11.5	-8.5	8.4	32.0	0.9	-2.8

*Measured on Labour Force basis, not ILO basis

Source: Duffy *et al* (1997), *Medium Term Review, 1997-2003*. Dublin: ESRI.

The picture that emerges is clear:

- Average growth rates in GNP and employment in the 1990s are at levels far in excess of those previously achieved;
- At the same time, growth in inflation and average industrial earnings are at historically low levels;
- The evolution of investment is 'patchy' with indications of stronger growth in recent years;
- The Exchequer Borrowing Requirement as a proportion of GNP (averaging less than 2 per cent since 1990) is a fraction of what it was in earlier years - reflecting the significant improvements of the public finances that have taken place;
- The Balance of Trade has moved into substantive surplus since 1985 in contrast with persistent deficits in earlier periods
- The level of unemployment has started to fall but remains higher than the average rate for the 1960s and 1970s.

Comparative International Performance: The performance of the Irish economy over the past 10 years in terms of output and employment growth has well exceeded that of most other OECD countries. Significant features include:

- Real growth in GDP over the 10 years to 1997, at some 60 per cent, is more than twice the average for OECD countries and almost three times the average for EU countries.
- Employment growth in Ireland (cumulative) between 1986 – 1996 was 26 per cent compared with just 15 per cent for the US and 7 per cent for the EU.
- In contrast with the EU average, manufacturing employment has been increasing in both foreign-owned and Irish-owned firms in Ireland in recent years.

The performance of the Irish economy over the last 10 years has attracted major international attention – including that of the eminent contributors to the book which Alan Gray has edited.

Not a week goes by in Forfás, or in the other development agencies, without a range of visitors from the development agencies, Government Departments, business associations, the print and television media of developed countries and developing economies. The visitors include those from the US, the UK, other EU countries, Eastern European countries, Japan and the so-called tiger economies of South-East Asia (including Singapore, Malaysia, Taiwan and Korea). Undoubtedly a similar influx of visitors is experienced by other Government Departments and agencies which are involved in the development process in Ireland.

While all of this attention is no doubt very flattering, (and probably makes some minor contribution to increased visitor numbers and the balance of trade figures!) what it really means, is that Ireland, along with other high-performance economies, is being benchmarked. The purpose of this benchmarking is not to let us know how we can further improve on recent and present economic performance in Ireland. The objective of our visitors, in many cases, is, manifestly, to identify the factors underlying Ireland's good economic performance. Their aim is to develop these factors more effectively in their own countries so that their investment promotion agencies can win a higher share of internationally mobile investment and so that their trading firms can compete more effectively in the global marketplace in which we all play nowadays.

The challenge for Ireland is, in turn, to benchmark against best international practice in the case of both firms engaged in international

trade and also in the case of public administration including those parts of the public administration system engaged in economic management and the promotion of investment. In other words, we cannot take our recent positive economic performance for granted. We need to establish a continual process of improving the process of economic management and development promotion in which we are engaged if we are to sustain and build upon the good economic performance of recent years.

3. INTERNATIONAL PERSPECTIVES ON THE IRISH ECONOMY

Turning to the book itself and Alan Gray's own paper, a number of common themes come through from the various contributions. It seems to me, that among the more important are the following:

- Educational attainment as a significant indicator of the quality, skills and knowledge of the labour force which underpins good economic performance. (Arrow, Fuente and Vives in particular);
- Foreign Direct Investment (FDI) as a major engine of the high levels of economic growth, exports and employment creation that have been achieved in recent years in Ireland. (Arrow, Krugman and Sachs in particular);
- Promoting Competition and Deregulation as an essential contribution to achieving the levels of innovation, change, flexibility and competitive advantage necessary to sustain high economic performance. (Arrow, Vickers and Sachs in particular);
- Labour Market Flexibility (Sachs and Burda in particular);
- The importance of Incomes Policy and Income Trends which accommodate and support the competitiveness of firms (Sachs in particular);
- Taxation Levels which effectively reward enterprise and work (Arrow, Sachs, Burda, Fuente and Vives in particular).

While I found the various papers extremely useful in helping to provide a 'helicopter view' of the more striking features of the Irish economic landscape as seen from a distance, and of how these features have evolved over time, I also took some comfort from the views expressed. This is because, in essence, the observations, analyses and conclusion of these eminent analysts do not differ fundamentally from the widely held views and conclusions of policy analysis here in Ireland. This is confirmed by a cursory reading of reports and papers from sources such as the ESRI, NESCC, my own organisation, Forfás, the policy statements of

Government Departments such as those from the Departments of Enterprise, Trade and Employment, Education and Science and Finance, researchers in University/Third Level Departments - and even the late-night utterances coming from the Dublin Economic Workshop in Kenmare!

While complacency is to be avoided I think that it is fair to say that the capacity for policy analysis and prescription in Ireland has also progressed to an important extent over the years and in a way that meets a particular criterion identified for achieving and sustaining good economic performance in Arrow's paper, i.e. that credible and effective political and economic institutions in a country are essential preconditions for economic growth. As Sachs points out in his paper, we have at least travelled some distance from the policies of import-substitution industrialisation based on the imposition of trade barriers and pursued so assiduously, but with disastrous results, between 1932-1957. It should not be forgotten, of course, that this was a policy approach endorsed enthusiastically by another very eminent economist, John Maynard Keynes, in his famous Finlay Lecture at University College Dublin in 1933! I sincerely hope that this precedent holds no particular consequences for the broad consensus which exists in relation to the present approach to economic policy formulation and implementation in Ireland!

Coming, as I do, from the industrial development arena, I found Jeffrey Sachs' paper of particular interest and elegance. The paper well summarises the contribution of Foreign Direct Investment (FDI) to Ireland's economic performance. In that context, he identifies three main purposes of FDI which I think are entirely valid:

- (i) It links domestic production with world-class technological leaders who provide technologies and detailed specifications for global production;
- (ii) It provides foreign savings to augment domestic savings;
- (iii) It offers marketing outlets for the domestic production through the marketing channels of multi-national firms.

Sachs emphasises that FDI-led export growth requires a taut discipline in domestic economic policy in order to maintain Ireland's ability to attract internationally mobile investment. He singles out four critical areas where Ireland has succeeded in creating competitive advantage against other EU countries:

- the level of labour market regulation;
- the area of corporate taxation;

- exchange rate policy; and
- technology transfer via foreign direct investment.

While Sachs lists other conditions necessary to attract FDI, and to which Alan Gray also refers, he cites these four areas as among the more important factors which have favoured the attraction of FDI to Ireland. It is worth noting that these conclusions are research-based rather than subjective observations and derive from studies undertaken by the Harvard Institute for International Development in conjunction with the 1997 *Global Competitiveness Report* of the World Economic Forum. Clearly, it is important that policies continue to sustain the relative competitive advantage that Ireland enjoys in these four areas. We also need to develop policies to achieve improved internationally competitive rankings in other factors important in attracting FDI. These include the provision of infrastructure, and of a highly-skilled, labour force for sectors such as the software industry, the electronics industry and telemarketing where the potential for attracting additional internationally mobile investment to Ireland is high but where, as in many other countries, particular skills shortages are being experienced at present. It is of interest to note, in view of Sachs' conclusions on the importance of a competitive exchange rate for FDI, that surveys of client firms undertaken by IDA Ireland clearly show a significant majority in favour of Ireland's participation in EMU from the outset, even where the UK exercises its option to opt out.

While, as indicated, I agree with a great many of the conclusions of the various contributors in the book, there are a number of areas on which I would place greater emphasis. Amongst these I would list:

- The social partnership arrangements in place in Ireland since 1987;
- The pervasive influence of EU membership on social, economic and institutional developments in Ireland;
- The importance of an Irish-owned or home-based enterprise sector as a foundation for economic growth; and
- The importance of investment in science and technology as an instrument of economic growth.

There may be others.

(i) The Importance of the Social Partnership Arrangements

The series of national agreements negotiated between the Social Partners from 1987 have been highly influential on Ireland's economic performance over the period since then. They were conceived and born in the context of the deep sense of pessimism and crisis that was pervasive in relation to the prospects for Ireland's economic performance in the mid-1980s. In essence, the social partnership approach has helped to provide greater certainty and stability in the whole area of pay and income evolution and determination and in industrial relations procedures. It has among other things helped to deliver:

- Modest levels of pay increases, consistent with the need to maintain and enhance the competitiveness of the traded sector of the economy;
- An improved industrial relations climate with fewer disputes and fewer working days lost due to strikes;
- The flexibility required by Government to achieve greater control of the public finances, to initiate a programme of public sector reform and to establish a macro-economic framework consistent with Ireland competitive needs and capacity to participate in EMU;
- Record levels of employment increases;
- Significant increases in living standards for those in employment;
- A central and positive role for the trade union movement and employer bodies in influencing Government policies as a *quid-pro-quo* for a more modest and conciliatory stance on pay and industrial relations negotiation issues.

The significance of the social partnerships approach for Ireland's economic performance since 1987 is best understood by those who dealt with economic development issues at the time. It is sometimes more difficult for external analysts and commentators to fully appreciate that significance.

(ii) The Pervasive Influence of EU Membership

EU Membership has had a major and pervasive influence on economic development in Ireland in a wide range of ways not always fully consciously acknowledged. The impact may be described under a number of headings:

- **Macro-Economic Stability:** The Maastricht Criteria for EMU Membership have imposed an important external impetus in achieving a more disciplined approach to the management of our public finances on a sustained basis over time. Much of the improvement that has been achieved is now taken for granted and underpins much of Ireland's good economic performance in recent years. At least some of the credit for this must be attributed to the moral and other persuasion of our EU partners.
- **EU Transfers:** Net EU financial transfers to Ireland peaked at 6.5 per cent of GDP in 1991 with over two thirds of the receipts coming from FEOGA (European Agricultural Guidance and Guarantee Fund) at that time. For 1997, net receipts from the EU will be less than 4 per cent of GDP with FEOGA receipts still accounting for over 60 per cent of the total. The significant feature of recent years, however, is the additional resources made available under the European Social Fund and the Regional Development Fund to increase and upgrade investment in human and physical infrastructural capital and to promote the development of new projects, particularly in the Irish-owned enterprise sector.
- **EU transfers under the Community Support Framework (CSF)** have also given and impetus to the modernisation and upgrading of our public finance system in the form of longer-term planning, multi-annual budgeting and the introduction of effectiveness evaluations and value-for-money audits in a more systematic way than had previously been the case.
- **EU Single Market:** The removal of barriers to the movement of goods, services, capital and people within the EU has had a pervasive impact in opening up the Irish economy to external competitive forces and helping firms to achieve the advances in competitive performance which is essential for an economy as dependent as that of Ireland's on export-led growth. It has, for example, resulted in the modernisation of our entire code of competition law and, while important progress remains to be achieved, it has given an impetus to deregulation and increased competition in areas such as the air transport, energy and telecommunications sectors at a faster pace than would otherwise have been the case.

The increased integration of the Irish economy into a highly advanced single EU market of over 360 Million people has also been a major factor in Ireland's success in attracting FDI and in upgrading the performance of Irish-owned enterprise.

(iii) The Importance of Irish-Owned Enterprise

While most of the contributors to *International Perspectives on the Irish Economy* identified the importance of FDI to Ireland's economic performance in recent years, there was less of an emphasis on the contribution of the domestic sector in both manufacturing and services. That, I think, is a significant lacuna.

It is undoubtedly the case that the progressive opening up of the Irish economy, following Ireland's accession to the EEC in 1973, led to the demise or restructuring of significant sectors of Irish-owned industry operating largely in traditional, low-technology sectors serving mainly the domestic and to some extent the UK market. The fall-out process was accelerated by the high-inflation, high-interest-rate, high-nominal-wage-increase, high-taxation, high-public-expenditure economy that operated in Ireland from the early 1970s to the mid 1980s. The restructuring that had taken place by the early 1990s has meant that a significant part of Irish-owned industry now measures up to what is required to compete successfully in a global economy. The software and electronics sectors are cases in point. Furthermore, the development of an increasingly efficient Irish-owned sector in manufacturing and services is an important factor in attracting FDI to Ireland. In other words, the FDI and Irish-owned sectors feed off each other in a way that strengthens the development of each sector in Ireland. The development of Irish-owned enterprise is also, of course, of critical importance in achieving the balance in regional development important for both overall economic and social policy reasons. For both strategic and practical enterprise promotion purposes, it would be high questionable to simply focus on the promotion of FDI as the sole engine of economic growth. There are, of course, important differences in the promotional and development needs of both the FDI and Irish-owned sectors and these are reflected in the promotional arrangements and measures put in place by the Government and operated by the development agencies.

(iv) The Importance of Investment in Science and Technology

Finally, while a number of contributors make passing reference to the importance of investment in knowledge and the important part played by technology transfer in the recent transformation of the Irish economy, there is not a full recognition of the way in which increased investment in R&D in the economy generally, and in the business sector in particular, has correlated with overall increases in output and employment. For example, total R&D expenditure in Ireland, increased from 0.85 per cent of GDP in 1989 - which was less than half the average of the position in all EU member states - to 1.4 per cent of GDP in 1995 - far closer to the

average for EU countries. Importantly, this overall increase in R&D performance was driven mainly by the business sector which recorded a dramatic increase in R&D investment over the 1989 - 1995 period from 0.5 per cent of GDP in 1989 to over 1 per cent of GDP in 1995 (see Figure 8.1). Preliminary results from research under way by Dr. Frances Ruane and Allan Kearns of Trinity College, based on output, employment and R&D investment data for manufacturing firms derived from the Forfás database, indicate a positive correlation between investment in R&D and output and employment performance at the level of firms and at the level of sectors. These findings have important policy consequences.

4. FINAL COMMENTS

In many ways Ireland is now at a pivotal point in the evolution of its economy. Much of what has been achieved in recent years is a result of wise decisions taken in a number of areas perhaps more than twenty years ago - particularly in the areas of investment in education and in the orientation of our industrial policies. The response to the crisis which affected the Irish economy in the mid-1980s, built as it was on social consensus and partnership, has also been crucial. These policies, in conjunction with an external international economic environment favourable to the policies in place in Ireland which allocate a high priority to export-led growth, have brought us to our highest over plateau in economic performance from which we can contemplate further improvements in the years ahead. The prize of achieving significantly higher average living standards and substantive reduction in unemployment levels is within our grasp. We can, however, no longer count on a sense of national economic crisis to provide a focus and sense of cohesion in moving forward. Future progress will depend on a systematic and well-researched approach to policy formulation and implementation.

In the time I have available I will simply list what I think are the critical points of policy leverage in sustaining Ireland's competitive advantage. These are dealt with in detail in a number of reports from Government Departments, ESRI, NESC, Forfás and other bodies and a number are encompassed in "Partnership 2000" The main points are :

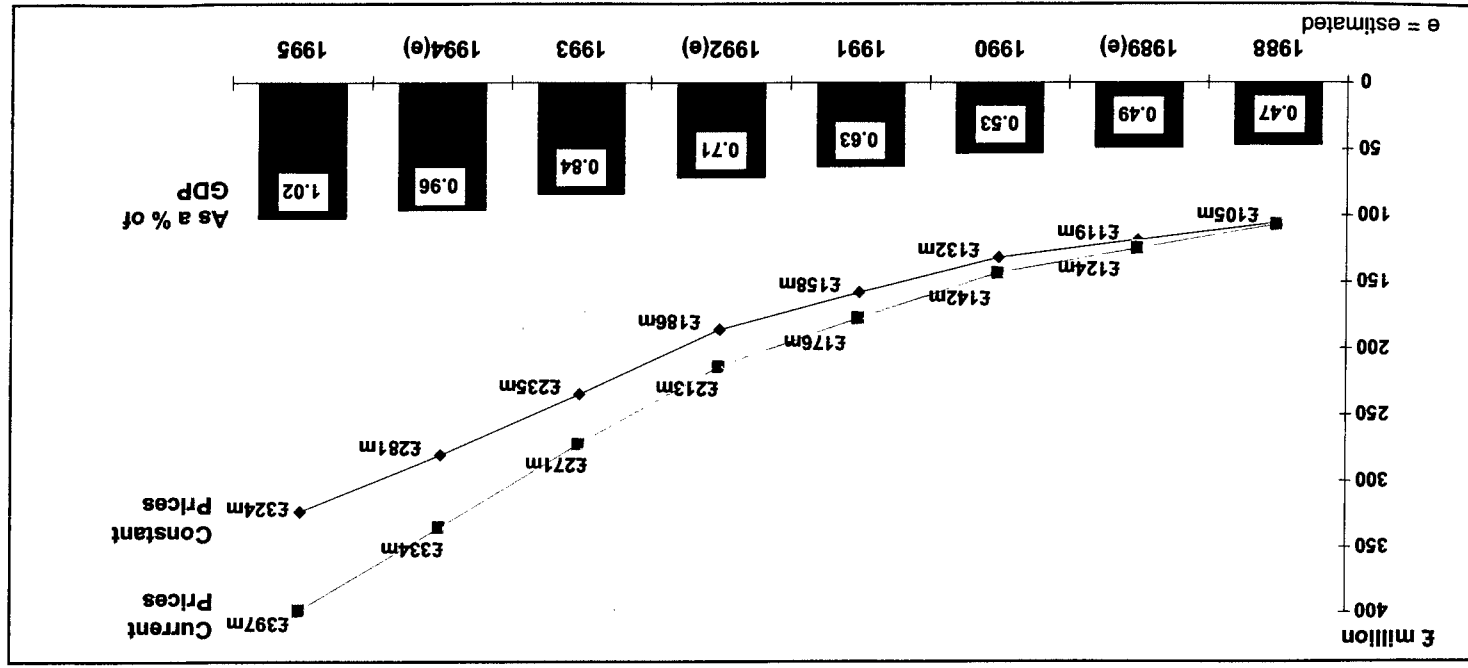
- (1) Maintaining a sense of national cohesion and partnership through the formally negotiated National Partnership arrangements of recent years or otherwise.
- (2) Giving due recognition in overall policy formulation to the fact that the enterprise sector is the main engine of economic growth that generates the output and exports that translate into jobs, personal

income and the tax revenues essential for social policies in areas such as health, education and social welfare

- (3) Establishing a sense of strategic direction for decision-making in both the public and private sectors by setting out a Government view on the medium and longer-term needs and objectives of the economy, the policies needed to achieve these objectives including the intermediate policy steps needed to ensure progress in the right direction.
- (4) Continuing the downward pressure on public expenditure, public debt and taxation as a proportion of GNP.
- (5) The concomitant emphasis on creating the regulatory and competitive environment within which the enterprise sector can flourish as the principal engine of economic growth and development;
- (6) Within the framework of these points of policy leverage as listed above, placing particular emphasis on:
 - *Investment in education and training;*
 - *Significant investment and regulatory reform in the telecommunications sector;*
 - *Significantly increased investment in infrastructure provision;*
 - *Promoting the investment and training needed to achieve wide-spread involvement of both enterprises and individual citizens in the information society;*
 - *Promoting increased investment in R&D and other investment to improve the innovation capacity of Ireland's economy;*
 - *Continued high priority to promoting FDI and repositioning Irish-owned enterprise to compete more effectively in an open global economy;*
 - *Promoting immediate preparatory action for EMU participation in both the public and private sectors;*

Recognising that Ireland's relationship with the EU is undergoing fundamental change at present and will be significantly different in future years to what it has been in the past. These changes require the development of additional competence in public administration/ Government Departments to reflect the changing relationship and to engage more fully in shaping the strategic evolution of the EU in future years.

FIGURE 8.1
Business Expenditure on In-House Performed Research and Development, 1988-1995



Source: Forfas Irish S&T Indicators - An Update, February 1997.

NOTE: The date on the front cover of the report refers to the date the report was submitted to the Government. The date listed here are the dates of publication.

Title	Date
1. Report on the Economy in 1973 and the Prospects for 1974	April 1974
2. Comments on Capital Taxation Proposals	July 1974
3. The Economy in 1974 and Outlook for 1975	Nov 1974
4. Regional Policy in Ireland A Review	Jan 1975
5. Population and Employment Projections: 1971-86	Feb 1975
6. Comments on the OECD Report on Manpower Policy in Ireland	July 1975
7. Jobs and Living Standards Projections and Implications	June 1975
8. An Approach to Social Policy	June 1975
9. Report on Inflation	June 1975
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11. Income Distribution: A Preliminary Report	Sept 1975
12. Education Expenditure in Ireland	Jan 1976
13. Economy in 1975 and Prospects for 1976	Oct 1975
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63. Population and Labour Force Projections by County and Region, 1979-1991	Oct 1982
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65. Farm Incomes	Nov 1982
66. Policies for Industrial Development: Conclusions and Recommendations	Oct 1982
67. An Analysis of Job Losses in Irish Manufacturing Industry	June 1983
68. Social Planning in Ireland: Its Purposes and Organisational Requirements	April 1983
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