

**INDUSTRIAL DISTRICTS AND INDUSTRIAL CLUSTERS  
COMPARED: APPLICATIONS TO IRELAND**

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I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of a PhD is entirely my own work and has not been taken from the work of others save to the extent that such work has been cited and acknowledge within the text of my work.

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## **Industrial districts and industrial clusters compared and their application to Ireland - Ziene Mottiar**

Much research work has been conducted on industrial districts all over the world and this thesis adds the first such study in Ireland. It is shown that the wooden furniture industry in Monaghan constitutes an industrial district. Many different regions and industries have been classified as industrial districts and the questions of whether they are all the same and if not should they be classified as such is addressed. A taxonomy of industrial districts is developed, which serves to distinguish between different types of industrial district and therefore contributes to the theoretical development of this research area, as well as allowing future case study analysis to be more precise.

The term industrial district is often used inter-changeably with that of industrial cluster. The issue of whether this is appropriate is addressed by comparing the differences between these types of agglomeration and studying examples of each in Ireland. It is concluded that while there are similarities between both the differences are enough to warrant distinction. Industrial districts and industrial clusters are different categories of agglomeration which are similar by virtue of the fact that they expound the importance of local factors in national and international industrial success respectively.

## **CHAPTER 1: INTRODUCTION AND THEORETICAL FRAMEWORK**

This chapter will outline what hypotheses this thesis addresses, what in it represents new additions to the research area and where it fits into research on industrial agglomerations in general. In addition the relevance and importance of this type of work in the economics discipline will be outlined and finally a brief outline of the structure of the thesis will be provided.

### **1.1 The hypotheses**

This thesis addresses five hypotheses

1. Industrial districts are not just a 'third Italy' phenomenon;
2. All industrial districts are not the same;
3. It is possible to categorize industrial districts;
4. The wooden furniture industry in Monaghan is an example of an industrial district;  
and
5. Industrial districts and industrial clusters are different types of industrial agglomeration.

The primary concern in this thesis is the development of the literature on industrial districts and its application to Ireland. However, during the research process a certain extent of overlap between the ideas of industrial districts and industrial clusters was identified. Furthermore it was recognized that some authors (eg. Schmitz 1995; Cawthorne, 1995; Rabellotti, 1994; and Wilson, 1992) were using the terms



interchangeably<sup>1</sup>. This led to the list of hypotheses extending to include number 5: industrial districts and industrial clusters are different types of industrial agglomeration.

This inclusion has strengthened the thesis which now as well as addressing and adding to the literature on industrial districts has also developed the beginnings of a comparison between different types of industrial agglomerations.

## **1.2 What is new in this thesis?**

This thesis is set within a literature which dates back to the late 19th century. What is new includes theoretical development and empirical application of the ideas of industrial districts and industrial clusters:

1. Taxonomy of industrial districts (chapter 5)
2. Modifications to Porter's cluster model (chapter 7)
3. The study of the wooden furniture industry in Monaghan as an example of an industrial district (chapter 6)
4. The study of the dairy manufacturing industry in Ireland as an example of an industrial cluster (chapter 8)<sup>2</sup>
5. Comparison of concepts of industrial districts and industrial clusters (chapter 9)

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<sup>1</sup> In the case of Schmitz (1995) this is in spite of the fact that he refers to Porter (1990).

<sup>2</sup> When this research commenced this was new but subsequently O'Connell et al (1997) have done similar work

Each of these points relates to contributions made to the literature on industrial districts and clusters. In addition this thesis has developed studies of industries and regions which will become part of the industrial literature in Ireland. The depth and detail of information attained in the study of the wooden furniture industry in Monaghan is unmatched in this literature to date.

### **1.3 The important role for economists in industrial districts research**

Research on industrial agglomerations is spread throughout many different disciplines including sociology, geography, management and economics. This has in some ways added strength to the research as the subject has been studied from a variety of different approaches, but it has also diluted the force of the results by spreading the work across disciplines. The argument here is that economists have an important contribution to make to the industrial district literature, and the evidence from this literature has an important role in many of the most important economic issues of this century. Traditional approaches within neo-classical economics cannot explain the existence and functioning of industrial districts - Krugman (1991, p.4) says 'essentially in order to say anything useful or interesting about the location of economic activity in space, it is necessary to get away from the constant-returns, perfect competition approach that still dominates most economic analysis'. However newer theories of the firm facilitate the theoretical explanation of many of the features which are most important in an industrial district. Furthermore the empirical evidence from industrial districts contributes to a fuller understanding of issues such as globalisation and localisation, the importance of small firms, methods of production and industrial development.

This argument does not undermine the important contributions made by researchers in all disciplines. Instead, like sociologists who have studied the issues which are of primary interest to them - social milieux and trust in industrial districts - economists should study the issues which pertain to their discipline. For example, why is it that firms exist and how do they grow, how can we explain inter-firm relations and the size of firms in industrial districts and how important is the concentration of firms. The tool box economists need to do this includes new theories of the firm.

Neo-classical economics is the cornerstone of economic theory and basic assumptions are that individuals are rational, there is perfect information, and the primary objective of firms is to maximize profits. To maximize profits firms will produce where marginal costs are equal to marginal revenue. There is little lee-way in the decision making of firms, the environment is determined exogenously, and firms are 'black boxes'.

Clearly this does not facilitate the analysis of industrial agglomerations where inter-firm relations are of prime importance in explaining the firm's actions and development, and the reason firms pursue particular strategies is not necessarily just to maximize profits. It is perhaps this lack of congruence between the most important features of industrial districts and of neo-classical economics which has ensured that most discussions on industrial agglomerations have taken place in disciplines other than economics.

While neo-classical economics remains the dominant school of thought in the discipline, there have long been others who have questioned or opposed the fundamentals of this theory. Among the first were Hall and Hitch (1939) who reported on the results of a survey which showed that rather than firms aiming at profit maximisation by equating MR and MC, they used the 'full-cost' principle - the price charged was 'based on full average cost including a conventional allowance for profit' (p.19). Jacobson and Andréosso-O'Callaghan (1996) outline two other impediments to profit maximisation: the fact that information is imperfect and firms are organizationally complex. It should be noted that those who continue to support the idea that the objective of the firm is to profit maximize argue that even though the firm may not deliberately pursue this objective it must maximize profits in order to stay in business in the long-run.

In addition new theories of the firm have been developed - managerial, principal-agent theory, transaction cost and evolutionary theories. What these theories have in common is that they look beyond the idea that the firm is a black box which pursues profit maximisation relentlessly. The managerial and principal-agent theories show how the objectives of owners and managers, and employers and employees respectively can differ, resulting in the firm behaving other than as profit maximisers. The transaction cost theory developed by Coase (1937) argues that rather than profit maximisation, the minimisation of transaction costs is the reason firms exist.

The operation of a market costs something and by forming an organization and allowing some authority (an "entrepreneur") to direct the resources certain marketing costs are saved. The entrepreneur has to carry out his function at

less cost, taking into account the fact that they may get factors of production at a lower price than the market transactions which he supersedes, because it is always possible to revert to the market if he fails to do this (p.22).

In the case of evolutionary theory Chandler (1992) shows how this theory 'emphasizing the continuous learning that makes a firm's assets dynamic' provides an understanding of how and why certain firms have succeeded' (Chandler, 1992, p.98).

Game theory, developed in the late 1970s is a mathematical modelling technique in which the players' moves (or decisions) are influenced by their expectations of the responses of the other player(s) (Jacobson and Andreosso-O'Callaghan, 1996, p.15).

This is based on the idea that firms make strategic decisions which are influenced by the actions of other firms. This technique allows firms to be interdependent and explains why they may not always pursue profit maximisation.

Research on industrial districts primarily consists of case studies of regions; if a region exhibits characteristics similar to those in areas which have been classified as an industrial district then it can be categorized in the same way. As discussed in chapter 3, there has been a severe lack of theoretical development of this concept. The theoretical underpinnings that are lacking in the literature to date can be found in the economics literature. This argument will be developed under the following headings:

### 1.3.1 The increased socialization of economics

### 1.3.2 Game theory

### 1.3.3 New methods of production

1.3.4 The increasing importance of small firms

1.3.5 Globalisation versus localisation

1.3.6 Market versus hierarchy

1.3.7 The learning firm

1.3.8 Networks

1.3.9 Competition and co-operation

### **1.3.1 The socialization of economics**

Granovetter (1985) states that

Classical and neoclassical economics operates... with an atomized, *undersocialized* conception of human action, continuing in the utilitarian tradition. The theoretical arguments disallow by hypothesis any impact of social structure and social relations on production, distribution, or consumption (p.55).

Hirschman (1982) noted that markets involve

large numbers of price-taking anonymous buyers and sellers supplied with perfect information... [which] function without any prolonged human or social contact between the parties. Under perfect competition there is no room for bargaining, negotiation, remonstrance or mutual adjustment and the various operators that contract to others need not enter into recurrent or continuing relationships as a result of which they would get to know each other well (1982, p.1473).

At the other extreme Granovetter (1985) observes:

more recent comments by economists on “social influence” construe these as processes in which actors acquire customs, habits, or norms that are followed mechanically and automatically, irrespective of their bearing on rational choice. [This he calls the oversocialized approach]. These oversocialized conceptions of how society influences individual behavior are rather mechanical, once we know the individual’s social class or labor market sector, everything else in behavior is automatic, since they are so well socialized.... Even when economists do take social relationships seriously,... they invariably abstract away from the history of relations and their position with respect to other relations (pp.56-57).

He concludes:

a fruitful analysis of human action requires us to avoid the atomization implicit in the theoretical extreme of under- and oversocialized conceptions. Actors do not behave or decide as atoms outside a social context, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that they happen to occupy. Their attempts at purposive action are instead embedded in concrete, ongoing systems of social relations (p.58).

As discussed throughout this thesis, informal relations between firms and the existence of a social milieu are important features of industrial districts. Clearly the undersocialized nature of neo-classical economics cannot encompass the importance of such relations. Economics can go some of the way towards encompassing the role

of society and the embeddedness of the actions of individuals through game theory. And through each of the new theories of the firm which incorporate the idea that many factors can explain the actions of individuals and firms, we can go beyond profit maximisation to a less undersocialized conception of economics.

### **1.3.2 Game theory**

In game theory the actions of one firm are dependent upon the actions of another. This is representative of the firms in an industrial district in which they are interdependent (as discussed in chapter 3). The decision of one firm to bid for a contract may depend upon whether the owner believes another firm will do sub-contracting work for him. An example of this (as discussed in chapter 3) is in West Jutland, Denmark where all of the firms bid for a contract but the one who wins must sub-contract work to its competitors in order to meet the deadline. Similarly a decision to co-operate between firms is based on the fact that each trusts the other not to break the agreement. If they did not trust the other they would not pursue this strategy.

In most neo-classical economics, relations between firms are competitive. They compete for customers in the market, their strategies, actions or organization are unaffected by what their competitor does or the environment in which they operate. In industrial districts firms co-operate with each other in certain circumstances. This does not inhibit competition, but occurs in conjunction with it. Co-operation can often be vertical along a chain of sub-contractors, manufacturers and customers or horizontal among direct competitors. This co-operation can be explained by the fact that the existence of a social milieu encourages trust between owners of firms and the



fact that co-operating today can have long-term gains. A game-theoretic matrix can be used to represent the situation in which co-operating is best because of trust. Let us assume  $d < e < f < c$ . Normally this will lead to a saddle point, arising from both firms adopting maximin strategies, of (f,f). This is the Nash equilibrium in a prisoners' dilemma game in which the Pareto optimal position is (c,c). Even without collusion, if each firm trusts the other to behave in a way that is best for both, then both will co-operate. In this case trust shifts the result from the usual prisoners' dilemma equilibrium to the Pareto optimal cell.

Chart 1.1: Game theory matrix

		Firm B	
		Co-operate	Not co-operate
Firm A	Co-operate	(c, c)	(d,e)
	Not co-operate	(e,d)	(f,f)

The highest pay-off for both firms is achieved by co-operation. However if the arrangement is a short-term one which will not be repeated either firm could gain more by breaking the agreement and acting alone (if the other continues to co-operate). The forces encouraging co-operation must be strong enough to prevent non-co-operative behavior on the part of either firm.

The institutions for enforcing co-operation can be divided into contractual and non-contractual ones. The contractual solution to the problem of co-operation is based on construction of a formal enforcement agency.... Non-contractual enforcement of co-operation includes self-enforcement and social norms... One non-contractual enforcement mechanism is self-enforcement in the context of

repeated games among the same individuals. The key to self-enforcement of co-operation is the importance of the future - the prospects of trading off long-term against short-term gains... Even if the games are not repeated among the same individuals, the threat of future retaliation can still be used as a deterrent to defection if one's move in a particular game is known to all potential counterparts. In this situation, individuals can respond to the history of actions taken by their counterparts, punishing those with a history of non-cooperative behaviour and co-operating with those with a history of co-operative behavior. Then, the reputation of the individuals becomes a disciplinary mechanism (You, 1994, pp.271-274).

This describes the importance of the flow of information, reputation and trust as well as the proximity of firms and the long-term outlook which exists in industrial districts and is described in chapters 3 and 4. Repeated game theory can be used to explain the co-operation between firms in an industrial district. Importantly this explanation does not rest on an oversocialized view that individuals will co-operate because this is the norm or what all firms do, but because the rational decision to do so not only creates advantages in the short-term but also assures future co-operation and thus opportunities for the firm.

### **1.3.3 The increasing importance of small firms**

'Just a decade ago the idea that small enterprises might be seen as the key to economic regeneration, and a road to renewed growth of employment and the fight against mass unemployment, may have seemed eccentric or even absurd. Today, this view seems

much less far-fetched. On the contrary, many observers from different traditions and political orientations embrace the idea' (Loveman and Sengenberger, 1991, p.1). Others have warned against over enthusiasm (eg. Harisson, 1994) noting that larger firms still dominate production and employment.

The success of industrial districts can be used as an indicator that small firms located within close proximity can be as successful in some industries as large firms. However the importance of large firms in some of these districts, either presently or in the past must be acknowledged. In addition chapter 3 argues that rather than the size of the firm being important, what are more important are the relations between firms - if one firm exercises power over the others then co-operation, trust and the flow of information will be adversely affected.

There is a role for the literature on industrial districts within the broader discussions of the role and success of small firms. However it must be recognized that while the size of the firms may be a characteristic of most industrial districts, it is not this alone which differentiates them from other organisational forms, or explains their success.

#### **1.3.4 New methods of production**

Piore and Sabel (1984) outline flexible specialisation as a path to industrial modernization which is an alternative to mass production. This path comprises a:

strategy of permanent innovation: accommodation to ceaseless change, rather than an effort to control it. This strategy is based on flexible multi-use -

equipment; skilled workers; and the creation, throughout politics, of an industrial community that restricts the forms of competition to those favoring innovation (p.17)

'The industrial districts of modern Europe provide the institutional context for Piore and Sabel' (Best, 1990, p.8). Best (1990) believes that by 'narrowing... production organization to one of only two possible types and a historical perspective of recurring industrial divides between one and the other, Piore and Sabel risk replacing one immanent logic with another and losing the contingent dimension to economics and economic policy institutions' (p.8). Best presents the New Competition where

flexible specialization is not the single alternative to mass production. Instead it is a dynamic version of Alfred Marshall's industrial district: a particular strategy for competitive success that is open to groups of small firms. But success will depend upon being able to distinguish between the Japanese corporation and dynamic industrial districts as competitive models and to allow for comparative assessment of the strengths and weaknesses of each' (Best, 1990, p.9)

With the decline of mass production new concepts to describe the paths to industrial modernization have to be developed and the theories of flexible specialisation and New Competition are efforts to do this. Some have argued that the emergence of flexible specialisation and the identification of industrial districts are proof of the imminent decline of the capitalist economy (Piore and Sabel, 1984, Tolliday and Zeitlin, 1986). It is more likely that there are a number of different paths which can be pursued. Clearly industrial districts represent a type of organisation which differs

considerably from mass production but the importance of features such as a social milieu and the sectoral concentration of firms make it applicable only to certain regions. Industrial districts do not represent the only alternative to mass production but they do constitute part of an alternative path of development. How industrial districts and clusters compare with the New Competition is discussed in chapter 9.

### **1.3.5 Globalisation versus localisation**

Firms are becoming increasingly aware of the global market and this has resulted in a considerable amount of work on the issue of globalisation. This relates very often to global networks of firms and/or large firms with operations in many different locations. In contrast regional economists have been concerned with the concentration of successful firms or industries in some areas. Often globalisation and localisation are posed as alternatives along a continuum of routes to success for firms. Research on industrial districts and industrial clusters transcends this separation. Both show how local factors and conditions can enhance global success. Neither are supporting ideas of localisation at the exclusion of global forces, actors or markets, rather they are seeking to explain the global success of some industries or firms. As outlined in chapter 3, Scott and Storper (1992, p.16) state 'on the one hand, the global economy may be seen as a mosaic of specialised regional production systems.... On the other hand, this same mosaic is caught up within a world-wide web of inter-industrial linkages, investment flows and population migrations'. Research on both types of agglomeration can contribute to debates on globalisation and localisation. This is discussed in more detail in chapter 9.

### **1.3.6 Market versus hierarchy**

As outlined above Coase believes that firms exist to minimize transactions costs - internalizing activities avoids the costs of market-based activities. Working from this premise Williamson (1985) uses different combinations of bounded rationality, opportunism and asset specificity to outline different contractual models. He describes bounded rationality as the imperfect ability to solve complex problems and/or information being imperfect. People behave opportunistically if they act in their self-interest by for example exploiting a loop hole in the contract. If there is unbounded rationality, potential opportunistic behaviour would be known and avoided. Finally asset specificity refers to assets which are specific to a particular transaction. The more specific an asset, the more essential continuity is and thus the more likely that internal rather than market governance will dominate.

If there is no opportunism or if there is opportunism with unbounded rationality there is no need to internalize - 'there is no occasion to supplant market exchange by other modes of economic organization if promises to behave in a joint profit-maximising way are self-enforcing and if sharing rules are agreed to at the outset' (Williamson, 1985, p.51). However if there is opportunism and bounded rationality there will be internalization. Granovetter (1985, p.72) argues that 'a high level of order can be found in the "market" - that is, across firm boundaries - and a correspondingly high level of disorder within the firm. Whether these occur, instead of what Williamson expects, depends on the nature of personal relations and networks of relations between and within firms'.

As discussed in chapters 3,4 and 5, in an industrial district opportunism is limited or constrained by the knowledge that exchanges will be repeated and by tacit rules or socially acceptable behaviour. Also there is information symmetry which, together with the constraint on opportunism, tends to offset bounded rationality. This contributes to our understanding of why in most industrial districts firms have remained small<sup>3</sup> - there has been no need for firms to internalize. Limited opportunism and unbounded rationality allow firms to gain external economies (among other externalities) from associating with each other, rather than internal economies of scale by internalizing their activities.

Hamilton and Feenstra (1995) address the problem of boundaries in the market/hierarchy distinction and state,

if the ability to make authoritative decisions regarding economic resources is a defining feature of hierarchy, then theory requires that the boundaries of economic organization be defined empirically, in terms of the structures in which authoritative actions take place, rather than arbitrarily assigning those boundaries to that of the firm (p.58).

This argument is particularly important in terms of an industrial district. Rather than the firm being the focus of study it is the group of firms that make up the district. Authoritative decisions are often taken by industry associations or a number of firms together so rather than hierarchy within firms being of interest, it is the relationship

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<sup>3</sup> Further research may show that in regions such as Baden Württemberg and Sinos Valley, the growth of firms was a consequence of increased opportunism as the importance of a social milieu declined or "rationality" became more "bounded".

(hierarchical or otherwise) between firms which is paramount. In this regard Langlois and Robertson (1995, p.144)

emphasized ownership and coordination as the two dimensions of control that best illustrate the effects of different distributions of capabilities in the economy on firm-market relations. Ownership control allows a firm to appropriate the benefits arising from a particular set of capabilities, but this may not require the exercise of coordination control. Similarly, coordination of assets, and of capabilities, must be based on cooperation, but this does not imply common ownership.

Williamson argues that asset specificity encourages internal rather than market governance. This is based upon the fact that to develop or purchase a specific asset the purchaser or provider will seek continuity. In an industrial district the number of firms engaged in each activity, the specialization of production by each firm and the trust and long-term nature of relations between firms means that continuity is assured even if the asset is governed by the market rather than within the firm.

In the case of industrial clusters there are fewer limits to opportunism and there is less information symmetry than in industrial districts, therefore making hierarchical governance structures more likely.

Concepts provided by Coase and Williamson help to explain the size and functioning of firms in industrial districts in a way that neoclassical theory of the firm could not. They facilitate an examination of why these firms are not vertically integrated, of the



impact of relative transparency of information and of the determination and results of low levels of opportunism.

### **1.3.7 The learning firm**

Chandler and others writing on evolutionary theory are concerned with the firm itself and 'its specific physical and human assets' (1992, p.98 as cited in Jacobson and Andréosso-O'Callaghan, 1996) rather than transactions between or within firms. The primary interest is in the organizational capabilities of the firm, its strategy and structure, as these factors assist 'the continuous learning that makes a firm's assets dynamic'. It is the skills and expertise developed from this continual learning that provides a competitive advantage. It is the basis of Schumpeterian competition - firms compete on design, quality, new products and new types of organizations rather than just price. The type of innovation in such firms is similar to that in industrial districts. Most of the firms in industrial districts are small and do not have large research and development budgets. innovations are small, incremental and frequent or continual and are usually developed by employees and owners themselves. In this way the firms are continuously learning and developing. Innovation is aided by the structure of the firms, their relatively flat organizational form and strategies to compete on quality rather than price alone.

### **1.3.8 Networks**

At its most basic, networks of firms are firms which are linked to each other. Both industrial districts and industrial clusters consist of firms which are so related. The reasons for the links (exchange of products or ideas), how they operate (formal versus

informal) and their direction (horizontal versus vertical) differ between firms and between types of industrial agglomeration. Firms in industrial districts usually have informal relations between both vertically and horizontally related firms. In industrial clusters relations are also vertical and horizontal and are primarily formal. Chapter 9, using more specific definitions of a network, discusses the issue of whether industrial districts and industrial clusters can be classified as networks, markets or hierarchies.

### **1.3.9 Competition versus co-operation**

Industrial organisation theories usually concentrate... on the conduct and performance of individual firms within the framework of more or less competitive structures. We insist on the fact that the performance of enterprises, and particularly the dynamic ones is the result of their competitive behaviour, but also of the characteristics of the sub-system within which they function. Among these, two dimensions or characteristics are central. Beside the competitive dimension, which is of course very important (as traditional theories rightly indicate) equally important is the cooperative dimension (de Bandt, 1987, p.52).

As discussed throughout this thesis 'the central feature of the "industrial district" is the balance between competition and co-operation among firms' (You, 1994, p.259). Co-operation is no longer associated just with small firms, neither is it necessarily anti-competitive behaviour and it can be clearly argued that to co-operate is a rational decision. However the type of co-operation, its sustainability and the issue of power relations differ between types of industrial organization.

This thesis concentrates on the issue of competition and co-operation in industrial districts, what it involves, how the two seemingly conflicting activities work in tandem and what the implications are for product and process development, long-term growth and competitiveness. This fits into a broader literature on inter-firm relations and sources of competitiveness in different types of industrial organizations. As outlined in chapter 7 and more particularly chapter 9 Porter does not discuss the issue of co-operation between firms and instead concentrates on the importance of domestic rivalry in industrial clusters.

### **1.3.10 Conclusion**

This chapter has provided the theoretical foundations for what is to follow. The ideas, concepts and evidence which are presented regarding industrial districts and industrial clusters in the following chapters can be viewed against the backdrop of the theories and issues outlined and described here. It has been shown clearly that research on industrial districts has an important place in the economics discipline - the new theories of the firm provide a theoretical basis for the empirical evidence which will be presented on industrial districts. Also, industrial district research has an important role in economic discussions on issues such as the role of small firms, the importance of new methods of production, industrial organization and types of networks of firms.

### **1.4 Where does this thesis fit in research on industrial agglomerations?**

Research on industrial districts and industrial clusters has been conducted almost in exclusion with few references to the other (for example in Porter's more than 750 page book the phrase 'industrial district' appears nowhere). In some ways this thesis

breaks down these barriers but this represents only the beginning of a broader theoretical and empirical development of a theory of industrial agglomerations.

According to Jacobson and Andréosso-O'Callaghan (1996), there are three main types of agglomeration - industrial districts, cluster and filières. They share different features with each other, but the main commonality is that each shows the importance of localisation (although exactly how local differs between each type). This thesis has compared industrial districts and industrial clusters and also added to the industrial district literature by developing a taxonomy of types of industrial districts. Further research introducing filières would complete this comparison and development. As filières and industrial clusters appeared more alike at the outset - Porter (1990, p.119) states that filières as a concept 'was a valuable precursor to clusters' - this thesis concentrated on the relationship between industrial districts and clusters.

### **1.5 Structure of the thesis**

Chapter 2 outlines the methodology pursued in the thesis. Chapter 3 presents a literature review of industrial districts, including a critique. Building upon this information chapter 4 tests the hypotheses that industrial districts are not confined to the 'third Italy' and that industrial districts are not all the same. This leads to chapter 5 which develops a taxonomy of different types of industrial district. Empirical work on the wooden furniture industry in Monaghan is reported in chapter 6, and this includes an application of the taxonomy developed in chapter 5.

Chapter 7 is concerned with industrial clusters and outlines Porter's theory as well as presenting an amended version which it is believed is more appropriate for internationalised economies. Chapter 8 tests whether the dairy industry in Ireland can be classified as an industrial cluster. Finally chapter 9 compares industrial districts and clusters both theoretically and using the empirical evidence from Ireland discussed in chapters 6 and 8. Chapter 10 presents some concluding comments.

### **1.6 Conclusion**

This chapter puts the remainder of the thesis in context. It has outlined why an economist should research in this area, what new contributions are made to the literature by the thesis and how it fits into the broader spectrum of research on industrial agglomerations. There is clearly a place for this research within the literature on industrial districts, industrial clusters, Irish industry and industrial agglomerations.

## **CHAPTER 2: METHODOLOGY**

The literature on industrial districts does not include a strand on methodology and the articles and papers which present research findings in this area rarely, if ever, allude to the methodology or research process followed (with the notable exception of Nadvi and Schmitz, 1994). Thus a process must be developed from the broader literature on research methods in social science.

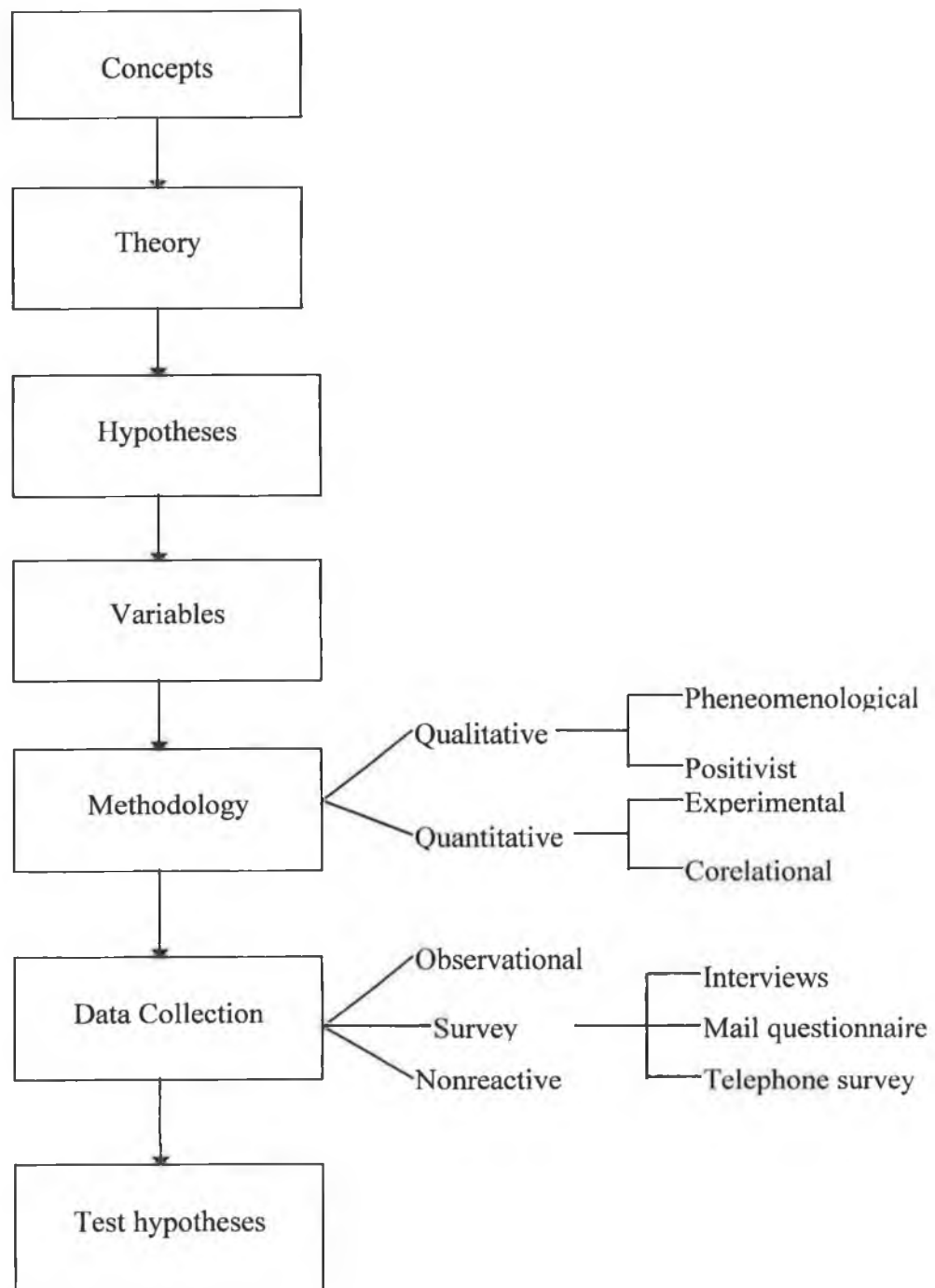
Research in economics usually relies upon quantitative (and often econometric) testing of hypotheses. While the advantages of such techniques have been well documented, such methods of analysis are not appropriate for every type of research. At the outset this seems to be the case for some of the hypotheses which are to be investigated in this thesis. In fact, a mix of quantitative and qualitative methods and a variety of research tools have been used.

The structured method of research pursued in this work has meant that a range of hypotheses which are inter-linked has developed. Answering one research question led to another. The variety of questions has necessitated a range of different methods of research, from inductive case studies and literature reviews, to deductive empirical research within a prescribed methodological framework, and empirical research in Monaghan which required the development of a research methodology.

### **2.1 The research process**

The research methodology involves a number of different stages that must be completed. As chart 2.1 shows, each step leads to the next. A brief discussion of each of these steps is presented below.

**Chart 2.1: The Research Process**



### **2.1.1 Identification of concepts**

Concepts are 'abstract aspects of reality [which] name possible or imagined properties of things, people or events' (Dooley, 1995, p.61). The concepts of primary concern in this thesis

are the characteristics of an industrial district: geographical and sectoral concentration, the size of firms, inter-firm relations involving competition and co-operation, the existence of a social or professional milieu and continual innovation.

### **2.1.2 Development of a theory**

A theory is a result of the combination of the concepts which have been identified. It is a 'tentative explanation of observations' (Dooley, 1995, p.8). Revitalised interest in industrial districts began with the observation that some areas in the north central area of Italy seemed to be growing faster than the rest of the country and surviving recessions more successfully (as described in chapter 4). The tentative explanation for this success lay in the localisation of industry and the way in which these districts functioned. The phrase industrial district was borrowed from Marshall to describe this type of industrial agglomeration. Researchers investigated these local economies and from their observations began to develop a theory, first of all classifying the districts as industrial districts and secondly detailing what exactly constitutes an industrial district. The broad theory that developed was that industrial districts are a particular type of industrial agglomeration which seem to grow faster and survive recessions relatively more successfully than elsewhere in the respective country. These districts can be identified by specified characteristics.

As the literature on industrial districts expanded researchers new to the field worked within this theoretical framework. Their work concentrated on testing the established theory and numerous case studies were carried out in a bid to prove that industrial districts exist. This approach has been relatively deductive in its nature; the researchers have had pre-defined ideas, and even more than that a structured approach, whereby they are looking for a pre-



determined list of characteristics. In this way an industrial district model has been developed - most of the research in this area is aimed at matching a potential industrial district with the prototype which has been developed in earlier studies in the third Italy<sup>4</sup>. As such there has been little development of the theory itself; even the more recent work of Scott (1988a and b), Storper and Scott (1988), Park and Markusen (1995), Park (1996), Markusen (1996) and Langlois and Robertson (1995) studies aspects of the characteristics associated with industrial districts, thus altering the specific features which identify an industrial district but not challenging or amending the body of the theory itself.

This thesis will add to the industrial district literature in two ways. Firstly by conducting an investigation into the possibility of an industrial district existing in the wooden and furniture industry in Monaghan. Secondly it will add to the theory of industrial districts by:

- a) identifying differences between industrial districts and developing a taxonomy to show this clearly. This will facilitate the disaggregation of the literature and a strengthening of the theory; and
- b) more broadly looking at the relationship between industrial districts and another type of industrial agglomeration, industrial clusters.

### **2.1.3 Identification of a hypothesis**

It is at this stage that previously 'mental notions' are transformed into a more tangible form (Dooley, 1995, p.67). Hypotheses are 'tentative answers to research problems [and must be]

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<sup>4</sup> It is notable that little attention has been paid to the fact that the 'third Italy' industrial district which has become synonymous with the term industrial district differs from its namesake as documented by Marshall. The notable exception is Langlois and Robertson (1995).

clear, value-free, specific and amenable to empirical testing' (Nachmias and Nachmias, 1981, p.63). Table 2.1 shows the hypotheses that the thesis will test and the method and type of analysis which will be undertaken.

Table 2.1: Hypotheses and method of testing

<i>Hypotheses</i>	<i>Type of analysis</i>	<i>Qualitative or Quantitative</i>	<i>Tested in Chapter</i>
1. Industrial districts are not just a 'Third Italy' phenomenon	Literature analysis	Qualitative	Chapter 3
2. All industrial districts are not the same	Literature analysis	Qualitative	Chapter 4
3. It is possible to categorise industrial districts	Literature analysis	Qualitative	Chapter 5
4. The wooden furniture industry in Monaghan is an example of an industrial district	Empirical analysis	Quantitative and qualitative	Chapter 6
5. Industrial districts and industrial clusters are different types of industrial agglomeration	Literature and empirical analysis	Qualitative and Quantitative	Chapter 9

The primary empirical work contained herein consists of an investigation into the existence of an industrial district in Monaghan. The other hypotheses, with the exception of number five, involve investigating and analysing the empirical work of others in the literature. As part of testing hypothesis five the wooden furniture industry in Monaghan was used as an example of an industrial district, and the dairy industry in Ireland as an example of an industrial cluster. Chapter 8 concludes that the dairy industry in Ireland is an industrial cluster by following Porter's prescribed methodology, which is outlined in chapter 7. The remainder of this chapter will deal with the methodology developed to test if an industrial district exists in the wooden furniture industry in Monaghan. The justification for choosing this particular industry and region is presented in chapter 6.

#### **2.1.4 Selection of measurement variables**

These variables allow the hypothesis to be tested. In some cases this can be a statistical measurement and in others a more qualitative measure. In studying an industrial district, attention is directed towards the characteristics of such an industrial agglomeration. It is on the basis of the existence of these characteristics that an industrial district can be identified. The main characteristics of industrial districts, as outlined in chapter 3, are shown in the first column of table 2.2. The second column contains measurable variables which can be used to describe the characteristics, and column three lists the questions in the questionnaire that measure these variables. The questionnaire is included in Appendix A.

It is clear that it will be difficult, if not impossible, to attach a quantitative value to at least some of these variables. This leads us to the issue of how to test the existence, salience or intensity of these variables.

#### **2.1.5 Choice of method of testing hypotheses**

The choice is between quantitative and qualitative techniques.

##### 2.1.5.1 Quantitative

Quantitative research, as noted earlier, is the testing technique most often used by economists. It is defined as 'standardised procedures for representing constructs in numerical form' (Dooley, 1995, p.99). This technique 'sacrifice[s] in-depth knowledge of each individual case in order to achieve an understanding of broad patterns of covariation across many cases' (Ragin, 1994, p.132). It is particularly favoured because 'looking across many cases makes it possible to average out the peculiarities of individual cases and to construct a picture of social

life that is purified of phenomena that are specific to any case or to a small group of cases' (Ragin, 1994, p.131). This method gives an overall picture of what is being studied and is particularly suited for researching a large number of subjects.

Table 2.2: The measurement of concepts

<b>Characteristics</b>	<b>Examples of measurement variables</b>	<b>Questions which measure these variables</b>
Geographical and sectoral concentration of firms	<ul style="list-style-type: none"> <li>• Concentration data</li> <li>• Specialisation of production</li> <li>• Existence of local supplier firms</li> </ul>	Mapping & CSO data 1.6 & 1.7 7
Small firms	<ul style="list-style-type: none"> <li>• Size of firm</li> </ul>	3.1
Continual innovation	<ul style="list-style-type: none"> <li>• Investment in technology/machinery</li> <li>• Source of technical innovation</li> <li>• Organisation of production</li> <li>• Development of designs</li> <li>• Issue of quality</li> </ul>	5.6, 9.1 & 9.2 9.3 & 9.6 9.4 & 9.5 10.1 & 11.7 10.2 & 10.3
Social/professional milieu	<ul style="list-style-type: none"> <li>• Relationship between owners of firms</li> <li>• Unifying social identity/social milieu</li> </ul>	12 15
Strong inter-firm relations	<ul style="list-style-type: none"> <li>• Co-operation and competition</li> <li>• Amount of sub-contracting and relations between those involved</li> <li>• Personal relations between owners of firms</li> <li>• Sharing of tools, information, marketing, training etc.</li> </ul>	11 & 12 6 & 7 12 12.4

Quantitative research on industrial districts has been conducted by Schmitz (1993) and Nadvi (1992) in Sinos Valley, Brazil and Karachi and Gujranwala, Pakistan respectively. This involved use of an extensive questionnaire and presentation of statistical results which painted a picture of the economic structure and activities of firms in the selected regions. In this way some indicative evidence of industrial districts was presented.

### 2.1.5.2 Qualitative

Qualitative research is based on field observations analysed without statistics (Dooley, 1995, p.258). Its advantages include the fact that it involves direct observation, is relatively flexible, and the information gained tends to be more detailed (Dooley, 1995, p.258).

According to Dooley (1995) qualitative methods are used in two circumstances

- a. when quantitative methods prove impossible, and
- b. when the researcher does not subscribe to positivist assumptions and instead chooses to take a phenomenological approach.

The table below outlines the differences between the positivist and phenomenological approaches. These differences affect the focus of study, the process of investigation and the presentation of results. The phenomenological method concentrates upon the researcher's subjective point of view and does not necessarily aim to explain what is described in terms of causal relations, or to extend findings outside of the sample.

The basis upon which the qualitative research method is selected, i.e. 1 or 2 below, affects the process of research. Qualitative research within the phenomenology framework involves interviews and observation which results in a deep understanding 'with neither prior theory nor the goal of general laws that go beyond the setting studied' (Dooley, 1995, p.264). Thus the process of this type of research does not include the development of a theory or hypothesis.

Table 2.3 Two views of science

<b>1. Logical positivist/Cartesian view</b>	<b>2. Phenomenological view</b>
<i>Man's place in the world:</i> People are objects in the world	vs People are indissolubly united and interrelated with their world
<i>Knowledge acquisition:</i> Focus is on the theoretical structures from a third person view	vs Focus is on experience from a first person view
Logic is deductive and inductive reasoning (eg. calculative)	vs Logic is based on finding patterns as they emerge (eg. meditative)
Approach is through examination of the component parts of a phenomenon	vs Approach is through examination of experiences and their interrelationship to each other in the world in which they are found
Goal is to reduce a phenomenon to quantitative dimensions which adhere to laws and principles	vs Goal is to develop a theme-based description of the phenomenon.

(Source: Hegelson, 1994, p.340)

This thesis does not fall neatly into either category. The process of research includes 'interviews and observations' but it is based on the theory of industrial districts and addresses particular hypotheses. Also, while the objective is not to develop a set of general rules from the study of the wooden furniture industry in Monaghan, the taxonomy of industrial districts aims to do just that. Furthermore, in this case quantitative methods are not impossible, although limited.

Much of the research on industrial districts has been qualitative, relying on the use of description and detailed information to explain what is occurring in relatively small regions. This can be described as ethnography which is a form of the phenomenological approach. Ethnography 'has come to mean the particular technique of describing a social group from the group's point of view' (Dooley, 1995, p.263). 'The ethnographer participates, overtly or

covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, asking questions, in fact collecting whatever data are available to throw light on the issues with which he or she is concerned' (Hammersley and Atkinson, 1983, p.2). The resultant articles and books are primarily descriptive and the points made are often supported by quotes rather than statistics.

Ethnography can take many different forms, in some cases it is mainly descriptive, often compared to storytelling (as described by Dooley above), while in others it is used to develop and test a theory. 'The value of ethnography is perhaps most obvious in relation to the development of a theory' (Hammersley and Atkinson, 1983, p.23) and this perhaps explains the use of this type of method, or at least inductive methods in general, particularly in early studies of industrial districts. On the basis of these earlier research works, many researchers are now testing rather than developing a theory; they are investigating the existence of a pre-determined list of characteristics which are most often associated with industrial districts. Rather than the researcher concentrating solely upon describing the groups from the groups' point of view, they are looking for characteristics which they will explain in a way established in the industrial district literature. For example (as discussed in chapter 3 p.66) firms and individuals do not often identify co-operation as such, thus an ethnographer could not describe two competing firms working on a joint project as co-operation unless they classified it as such themselves. However many researchers would interpret such activity as co-operation regardless of how it is seen by the participants. In research on industrial districts the importance of ethnographic research within the phenomenology framework in its strict form has perhaps declined although the principle of qualitative analysis remains vital.

It is clear that this approach provides the researcher with an in-depth knowledge of the area and group which is being studied. Those who oppose such a method fear that the researcher can get too personally involved and this could threaten the reliability and validity of the study. However it should be noted that while ethnography is commonly associated with participant observation 'ethnographic field roles are much wider than the participant observer model... and can be distinguished according to whether the researcher is overt or covert and whether s/he is a spectator or a participant' (Filby, 1995, p.124).

Recently there has been much criticism of the ethnographic approach as newer generations of anthropologists have revisited sites studied earlier by other ethnographers and come to different conclusions. These problems have become more widely discussed following Freeman's attack on the validity of Mead's 1928 interpretation of Samoan adolescent sexuality, where he contends that Mead was misled by her young female informants who were simply teasing her (Freeman, 1983, pp.288-291). In particular, criticism has been concentrated on the presentation of the findings of ethnographers 'which incorporate linguistic devices that tend to obscure the uncertain and personal nature of ethnographical statements' (Aunger, 1995, p.97)<sup>5</sup>. Despite such criticisms this approach can provide useful detailed information which cannot be gained using quantitative methods.

It is evident that both quantitative and qualitative methods of research contribute significantly to research on industrial districts. It is difficult to evaluate features such as trust, co-operation and innovation without using qualitative methods and difficult to

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<sup>5</sup> It can be argued that such critics should look beyond just the issue of the presentation of results and also investigate the issue of data collection.



present an overall picture without the use of quantitative techniques. The information gleaned by both approaches is valuable and each complements the other, thus neither should be rejected. The sample size of firms, representing 81 percent of the population, facilitated quantitative research techniques, while the relatively small number of firms involved also permitted qualitative research. This facilitated the presentation of quantitative data alongside more descriptive features gleaned from qualitative questions, interviews and visits to firms and the locality.

#### 2.1.5.3 Triangulation

Triangulation is a process often employed by researchers who wish to study their subject from two different approaches. It is so-called because it resembles the surveyor's practice of finding the precise location of a point by approaching it from several different directions (Aunger, 1995, p.11). Patton (1990) describes triangulation as 'a significant method which has the ability to strengthen a study through combining methodologies'. Its main benefit lies in the fact that a theory is stronger if proved correct using two different measurement techniques, particularly if these techniques are quantitative and qualitative.

This work is not truly triangulation as these techniques are not being used separately but rather in conjunction with each other. While quantitative data is more appropriate to study the size of firms and geographical concentration, other features of an industrial district notably inter-firm relations and the existence of a social milieu are more appropriately investigated using qualitative methods. It is the combination of these results which allows the hypotheses to be tested rather than each constituting complete results in themselves.

### **2.1.6 Data collection**

This stage involves choosing the instruments which will be used to collect the required information. 'Three general forms of data collection may be distinguished: observational methods, survey research and nonreactive techniques' (Nachmias and Nachmias, 1981, p.153).

#### 2.1.6.1 Observational methods

As the name suggests observational methods are undertaken when a researcher observes the actions of individuals or firms. This is difficult in some cases as the data required are not easily observable by the researcher. In such cases researchers often collect data by asking people who have experienced certain phenomena to reconstruct these phenomena for others (Nachmias and Nachmias, 1981, p.179). This is called the survey method and has been selected as the most appropriate method of data collection for this study.

#### 2.1.6.2 Nonreactive methods

Nonreactive techniques are those which do not require the knowledge or participation of the subjects (people and firms) being studied. Primarily they consist of archival records, reports and books. This technique was used as a source of background information on Monaghan and the wooden furniture industry before survey methods were employed. It was also used in the study of the dairy industry in Ireland and the development of a taxonomy of industrial districts and comparison of industrial districts and clusters.

### 2.1.6.3 Survey Method

In the survey method there are three main ways in which the researcher attempts to gain information from respondents: personal interview, mail questionnaire and telephone survey.

It was decided that the best way to gain the information required was to use a questionnaire that would collect both quantitative and qualitative data. Those who did not respond by post were visited and interviewed resulting in additional qualitative information.

### 2.1.6.4 Stage I

#### *2.1.6.4.1 Medium of transmission of questionnaire*

The initial choice was between conducting a telephone survey or sending the questionnaire by mail. The length of the questionnaire and the requirement for managers or owners to complete it meant that to conduct it by telephone would be difficult for all concerned. In addition, the fact that some of the information required may have necessitated consultation of filed information made a telephone survey almost impossible.

Advancing technology provides the option of faxing rather than mailing questionnaires; these processes are similar in procedure but differences include the quality of the print, the cost, and average response time. A recent study (Tse et al, 1994) found that when questionnaires were sent and returned by mail there was a slightly higher response rate than if a fax machine was used.

More importantly this study found that those questionnaires which included a stamped self addressed (SSA) return envelope resulted in a considerably higher response rate; in fact more

than double the mail return when compared to questionnaires sent without SSA envelopes, and more than triple the level of return for the faxed questionnaires<sup>6</sup>. Similarly Helgeson (1994, p.346) comments 'a stamped addressed return envelope is essential in getting a mailed survey response'. Whitley (1985, p.9) does 'not think that the fact that the sender has already paid for the postage makes the recipient feel obligated to reply, but... believe[s] it does register with him the importance attached to the enquiry'.

One of the greatest difficulties with a mailed questionnaire is that responses have notoriously low return rates, typically in the 20-30 percent range for the initial mailing; repeated mailings can raise the return rate to the 60-70 percent range (Nederhof, 1985, p.60) but this involves considerable additional work and cost. However, Dillman (1978, pp.46-47) notes that 'researchers have achieved high return rates for specialised samples for whom mail survey may work best'. The owners and managers of furniture firms in Monaghan are a very specific and specialised sample thus enhancing the prospects of a reasonable rate of return.

An additional drawback is that 'mail questionnaires provide no control over substitution of respondents. For example the designated respondent may hand the questionnaire to another person' (Dooley, 1995, p.130). Each of these questionnaires was mailed to the owner of the firm. It is expected that at least some of the information required would only be known by the owner and perhaps his/her family thus reducing the possibility of substitution, although this does not discount it totally.

A commonly stated disadvantage with a mail questionnaire is that there is no opportunity for the researcher to probe beyond the written answer. This is indeed a drawback for research

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<sup>6</sup> These results are based on a relatively small sample of 620 letters/faxes.

which is relatively exploratory and unstructured by nature. In fact, because many firms were visited and their owners interviewed, the researcher could seek additional information in these cases. However, not all respondents to the questionnaire were interviewed, so this drawback was not totally obviated.

The advantages of postal studies include the fact that there is no interviewer bias, it facilitates anonymity, respondents can take their time when responding to questions and consult any documents they wish (Whitley, 1985, pp.10-12).

The problems associated with the use of a mailed questionnaire are apparent, but the fact that this is a specialised sample, within which many of the firms are unlikely to receive numerous questionnaires (due to their size), and the fact that interviews provided supplementary information, serve to justify it as a research tool in this case. In an effort to counteract a potentially low response rate a stamped addressed envelope was included with each questionnaire.

#### *2.1.6.4.2 Structure of Questionnaire*

The questionnaire used is based on that used by Nadvi and Schmitz (1994) in their work on industrial districts. Some modifications have been made to make it applicable to the wooden furniture industry. In addition some questions have been omitted to shorten the questionnaire and make it appropriate for Ireland. Due to these changes and the fact that this questionnaire was used in countries quite different from Ireland, it was piloted before being used in Monaghan.

As a consequence of the required changes, the format and layout of the questionnaire have been altered. Care has been taken to ensure that it looks 'clear and uncluttered' (Fowler, 1984, p.102). The order of questions has been maintained so that the relatively straightforward and easy questions are posed first.

#### *2.1.6.4.3 Selection of Respondents*

The questionnaire was posted to the owner/manager of every wooden furniture firm in Co. Monaghan. These names and addresses were found in The Kompass Directory (1995, 1996), The Business and Shopping Guide to Cavan/Monaghan, the local yellow pages telephone directory and through private sources. In total it was sent to 32 firms. Following reminder letters and calls the total response was 11. Stage II of the data collection process then began, whereby the researcher met with owners and gained responses to the questionnaire in the form of interviews. This elicited a further 14 completed questionnaires, bringing the total number of responses to 25 firms, or 78 percent of firms.

Collier and Mahoney (1996) warn about selection bias in qualitative research. In particular they discuss the problems associated with 'the deliberate selection of cases that have extreme values on the dependent variable' (Collier and Mahoney, p.60). The population to be studied here is wooden furniture firms in Monaghan; all of the firms were approached to take part in the study, thus avoiding the issue of deliberate selection by the researcher. There is then the issue of selection by the firms - did a particular type of firm agree to take part thus resulting in a biased sample. An investigation of how representative the firms which constitute the sample are shows a range of sizes: from two to 147 employees, and with 47.5 percent having an output of up to £100,000, 21 percent with between £100,000 and £500,000 and another 31.5

percent reported in excess of £500,000. They are also located throughout the county and among them manufacture a large range of products. Of the firms which did not take part only one employed more than 50 and the others were very small firms - each of these categories is represented in the sample. There is very little doubt that the firms in the sample are representative of the population<sup>7</sup>.

While the firms were not deliberately selected, the sample area, Monaghan, was; does this therefore mean that the research is subject to selection bias? Collier and Mahoney (1996) argue that 'even if researchers are convinced that they have no interest in generalising to a larger set of cases that encompass greater variance on their dependent variable, selection bias can still be an issue' (p.88). A way of overcoming this is to define a frame of comparison against which the sample findings can be compared.

Any researcher in pursuit of information specific to a region or locality must choose a region to study. In industrial district research a region is most often chosen for study on the basis of the fact that it compares favourably with other regions; it has a higher growth rate, lower unemployment or higher output levels. However, the research concentrates upon the region rather than how it compares with the rest of the country. Part of the reason for the interest in the region is the very fact that it appears different from the rest of the country; the objective is to explain why. The first suggestion that Collier and Mahoney make is to 'restrict the frame of comparison to domains which the investigator presumes are characterised by relatively homogeneous causal patterns' (p.88). In this case that would be other industrial districts. The

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<sup>7</sup> It is impossible to do any more detailed analysis due to a lack of information regarding the sector in general or those firms which did not supply the requested information.

method of study used in the analysis of the wooden furniture sector in Monaghan involved seeing how this region and sector matched a list of common characteristics of industrial districts in the literature. Thus this forms a method of comparison which should reduce or eliminate selection bias.

Is this appropriate? Does selection bias not refer to how the region is selected or chosen over others therefore implying that another region in Ireland should be used for comparison? The second source of comparison according to Collier and Mahoney is 'a contrast space that serves to identify the relevant negative cases that should be included in the comparison' (p.88).

Comparison in this case would show how one region differs from another. In the case of industrial districts or indeed regional research, one would expect differences between areas, each region has specific characteristics. For example if one was to engage in this type of procedure in this thesis the regions most likely to be compared would be Monaghan and Meath, as this constitutes another concentration of furniture firms in Ireland. There are however apparent differences at the outset; the firms in Meath manufacture upholstery rather than wooden furniture, while they have the benefit of being located near the large market of Dublin, the export markets of Northern Ireland and Britain are not as easily accessible, and per capita and per hectare there are more than double the number of wooden furniture firms in Monaghan than Meath. A comparison of the two areas might tell us whether some of the characteristics identified in Monaghan can be identified elsewhere in Ireland, and specifically in Meath, but it does not necessarily tell us whether one is an industrial district or not. Constituting an industrial district is not exclusive, because one is identified in Monaghan



does not mean that another cannot exist elsewhere. Similarly finding that characteristics such as co-operation between firms exists elsewhere does not detract from it existing in Monaghan; what is important in industrial district research is the existence of a number of different characteristics which interact to create a particular business and social environment.

These comments do not ignore the fact that to undertake research on the furniture industry in general in Ireland would provide a bench-mark with which to compare the Monaghan industry and may also identify other sectors with similar characteristics to Monaghan i.e. other industrial districts. Such research would also facilitate more generalisable conclusions. However in the first instance it is more beneficial to compare with other industrial districts than other regions and this is what has been undertaken in chapter 6.

#### 2.1.6.5 Stage II

##### *2.1.6.5.1 Interviews*

When conducting interviews the choice is between a structured, unstructured and semi-structured style of interview. In some cases a 'highly structured interview, with every question asked in the same order, amounts to a questionnaire' (Dooley, 1995, p.101). In each case the role of the interviewer is extremely important and can affect the amount and type of information collected; Rogers (1942 as cited in Smith, 1981, p.167) concludes that 'interviewers must have, or develop, a considerable degree of social sensitivity or "interceptiveness": a tactful sensing of the reactions of respondents and appropriate interviewer responses in the interview situation'.

While a structured questionnaire was used, the process was more semi-structured as the interviewer took the opportunity to develop on some questions, skip those known to be irrelevant, and ask for further information. This type of interviewing provides a new set of challenges for the interviewers who must now 'think on their feet' (Rogers, 1942 as cited in Smith, 1981, p.167) and ensure that they maintain control over the interview. Semi-structured interviews also allowed customisation for each interviewee. This form of interviewing also facilitated in-depth investigation of unexpected answers.

The information was analysed using the statistical computer package SPSS.

## **2.2 Evaluation of research methodology and conclusions**

This evaluation procedure usually takes the form of investigating the issues of reliability and validity or looking at internal and external validity (Hammersley, 1992, p.65).

- Reliability refers to the degree to which observed scores are 'free from errors of judgement' (American Psychological Association, 1985, p.19 as cited in Dooley, 1995, p.77).
- Validity 'refers to the appropriateness, meaningfulness, and usefulness of the specific inferences made from the measures' (American Psychological Association, 1985, p.9 as cited in Dooley, 1995, p.78).
- Internal and external validity distinguishes between the fact that some studies may be internally valid (i.e. describe the sector studied) but not externally valid as the results cannot be applied more generally outside of the specific area.

For quantitative studies the techniques most often used to assess reliability and validity involve the construction of statistical data such as reliability coefficients and random errors. This is not easily applicable to qualitative research. Hammersley (1992, pp.67-78) presents a reformulation of the criteria and includes the issue of relevance. Taking validity as a synonym for 'truth' he outlines three considerations when judging sufficiency of evidence.

- a. 'we must consider whether the claims made are sufficiently plausible, given our existing knowledge'
- b. the more central the claim to the argument the researcher is presenting, the more convincing the evidence that will be required
- c. different types of claim - definitions, descriptions, explanations and theories - require different types of evidence.

The issue of internal and external validity is particularly important when conducting ethnographic research. Often the researchers using these tools do not intend their findings to be generalised and thus are unconcerned by the fact that they may not be externally valid.

### **2.2.1 Validity**

The primary aim of studying the furniture industry in Monaghan is to make conclusions about this sector in this area - thus internal validity is of primary concern. However, in addition, it is hoped that these findings when combined with other research on industrial districts around the world may contribute to a fuller understanding of particular aspects of the idea of an industrial district. This does not necessitate external validity, as the findings will not themselves be taken as representative of other areas. Rather than concluding that any region that has the same characteristics as Monaghan will, for example, display the same types of relations between firms (which would require external validity), it is hoped that the findings

of this study will support or reaffirm the conclusions of other studies of this nature and add to the evidence by discussing new angles to the concepts explored to date. In this way descriptive analysis and the manipulation of an established theoretical framework will allow this research to be a starting point for further research which may support the Monaghan findings, rather than being a prescriptive piece of work. As such, internal validity is paramount.

### **2.2.2 Reliability**

Reliability is enhanced by the fact that a broad number of people were approached both via questionnaires and interviews. Thus views or opinions which are specific to a small minority were observed.

### **2.2.3 Relevance**

This research is relevant in a number of different ways:

- a.** it is the first investigation of the existence of a potential industrial district in Ireland.
  
- b.** it contributes to the literature on industrial districts in three respects, first by adding another case study, second by developing a taxonomy of industrial districts and third, by comparing industrial districts with industrial clusters.
  
- c.** it involves close analysis of a thriving local economy and may identify some reasons for this success.

d. it provides detailed analysis of an area with the most export oriented furniture firms in Ireland.

In these ways this research is relevant both in an Irish context and in relation to the international literature on industrial districts.

### **2.3 Conclusion**

The research process outlined in this chapter facilitates both a broad and in depth study of the area and subjects in question. This provides the researcher with a substantial amount of different types of information with which to investigate the possibility of an industrial district existing in the Monaghan wooden furniture industry. The structured nature of the research process also permits the information gained from each hypothesis tested to be used in the testing of the next.

## **CHAPTER 3: INDUSTRIAL DISTRICTS**

This chapter will study the theory of industrial districts and review the literature on this topic by:

- (a) providing an overview of how the theory of industrial districts has developed
- (b) analysing what is an industrial district
- (c) analysing the geographical spread of identified industrial districts
- (d) outlining the main characteristics of the industrial districts which have been studied
- (e) providing a critique of the theory.

The purpose of this chapter is to present a discussion on industrial districts as they are described in the literature. This provides the theoretical basis for the analysis in chapter 4 which will show how industrial districts differ, and chapter 5 which will develop a taxonomy of industrial districts. It also serves as a framework within which to analyse the existence of an industrial district in Ireland. Rather than analysis this chapter provides a description of what an industrial district is and how it functions.

### **3.1 The emergence of a theory of industrial districts**

The concept of an industrial district was first presented by Marshall in the late nineteenth century. He discussed the localisation of industry with particular emphasis on the causes and advantages of such concentration. The initial causes of localisation were outlined as physical conditions, the patronage of courts and the deliberate invitation of rulers. Physical conditions include mineral deposits and good soil which often constitute the

required raw material. In the case of Staffordshire where many kinds of pottery are made, 'all the materials... are imported from a long distance; but she has cheap coal and excellent clay for making the heavy "seggars" or boxes in which the pottery is placed while being fired' (1898, p.348). The patronage of court is a ready made market of wealthy people which 'attracts skilled workmen from a distance, and educates those on the spot ...the greater part of England's manufacturing industry before the era of cotton and steam had its course directed by settlements of Flemish and Huguenot artisans; many of which were made under the immediate direction of Plantagenet and Tudor kings' (Marshall, 1898, p.348). Today the deliberate invitation of rulers would translate into government incentives for businesses to locate in particular areas.

The advantages of localised industries were identified as hereditary skill, the growth of subsidiary trades, the use of highly specialised machinery and a local market for special skills (Marshall, 1898 pp.347-350). Hereditary skills are developed as a result of the concentration of people working in the same industry

the mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously... inventions and improvements in machinery, in process and the general organisation of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas. And presently subsidiary trades grow up in the neighbourhood, supplying it with implements and materials (p.350).

Marshall believes that there are gains for both individuals and firms concentrating in the one area. For the skilled workers there is local demand for their labour and for the firms there is a ready supply of labour. Krugman (1991) called this labour market pooling whereby, if there are two firms, when one firm is in a slump people will be employed by the other firm. He outlined three limitations to this principle. Firstly, there had to be increasing returns to scale as otherwise a firm would not choose to concentrate all of its activities in one town. Secondly flexible wages could mean that rather than the numbers employed fluctuating the wages would change with the peaks and the troughs. Finally while the fact that firms would prefer monopsony power by locating in one town must be recognised, what influences their decision to locate next to their competitors is to avoid the flight of human capital (Jacobson and Andréosso-O'Callaghan, 1996). Furthermore if there is unemployment then labour will move to wherever there are jobs reducing the benefits of localisation.

The principles and ideas developed by Marshall remain the basis of the literature on this topic almost a century later.

In the late 1970s the theory of industrial districts was applied to an area in Italy which became known as the 'third Italy', a phrase coined by the Italian Socialist Bagnasco in 1977 (Harrison, 1991). These regions seemed to be growing faster than the rest of the country and surviving recessions more successfully. For example in Emilia Romagna in 1980 the participation rate in the labour force was 6 percent higher than the national



average, the rate of unemployment was generally lower and the provinces of Modena and Reggio were the second and fourth richest provinces in Italy, whereas in 1970 they were seventeenth and twelfth respectively (Brusco, 1982, p.167-168). The book which brought the idea of industrial districts back to English speaking audiences was *The Second Industrial Divide* by Piore and Sabel in 1984. During the 1980s and early 1990s there was much written on industrial districts in the 'third Italy' (Brusco, 1982; Brusco and Sabel, 1981; Goodman, 1989; Becattini, 1990; Trigilia, 1990; Pyke, Becattini and Sengenberger, 1992; Pyke and Sengenberger, 1990). These regions were most often dominated by small firms and specialised in craft industries, for example machinery and machine tools in Bologna and Modena, knitwear in Carpi, textiles in Prato, ceramics in Sassuolo and furniture and shoes in Marche (Amin and Robins, 1990a, p.196).

By the early 1990s, the literature on industrial districts began to break the national boundaries and research began into the existence of such districts outside the 'third Italy'. To date industrial districts have been identified in regions in Europe, Asia, South America, Africa and the US (see section 3.3). The emphasis of researchers was on identifying regions that could be classified as industrial districts. This has resulted in a large number of districts which in some cases have very different characteristics, historical backgrounds and product specialisms, being grouped together under the single heading of an industrial district.

More recently attention has been paid to the differences between industrial districts and this has led to a new strain of industrial district literature. This begins to address the criticisms of Amin and Robins who 'argue against a simple and totalising theory of industrial districts' (Amin and Robins, 1990a p.207). Even within the 'third Italy' Camagni and Capello (1988), using Sforzi's case studies of 60 industrial districts, find that 'significant differences exist' (as quoted in Amin and Robins, 1990a, p.197). The main concept to emerge is that of new industrial spaces (NISs) which comes originally from Scott (1988a and b). The differences between industrial districts and NISs are that in the latter 'one or more big companies may act as centres of strategic decision-making...[and] the co-operation between firms in a new industrial space typically rests upon corporate managers and other office staff being members of a "professional community"' (Isaksen, 1994, p.34-35). This thesis aims to contribute to this phase of the literature, seeking to further develop the concept and definition of industrial districts and in so doing disaggregate case studies in the literature.

### **3.2 What is an industrial district?**

Industrial districts are 'geographically defined productive systems, characterised by a large number of firms that are involved at various stages, and in various ways, in the production of a homogeneous product' (Pyke et al 1992, p.2). A significant feature is that a very high proportion of these firms are small or very small.

It is important to emphasise however that a rigid definition of an industrial district has not been adhered to in the work on this topic and there are often clear differences between industrial districts.

Rather than there being a clear-cut definition of an industrial district which is applicable to all such districts, there are a number of features which industrial districts usually have which are analysed below in section 3.4. It is these characteristics which facilitate the identification of an industrial district.

### **3.3 Is the existence of industrial districts widespread?**

One of the main criticisms aimed at industrial district researchers is that this is a very specific theory which cannot be generally applied throughout different industrial regions. Often the concept of industrial districts is treated as being unique to the 'third Italy' and as such its theoretical basis is embedded in the social structures, history and industrial organisation of the Italian economy. While work on industrial districts since the early 1980s has been concentrated in the 'third Italy' it must be remembered that the original work on this topic was by Marshall who used various counties in England to illustrate industrial districts (Marshall, 1898):

Marshall's real significance, as Becattini has instructed us, is to have identified a district as consisting of a division of labour between firms on the one hand, and as a supportive tissue of social practices and institutions on the other. There is no reason, on the basis of a theoretical reading of Marshall, to think that such

divisions of labour or social structures can take only the form found in today's Third Italy for us to be able to say that a Marshallian industrial district exists (Storper, 1990, p.228).

By the early 1990s a whole new literature had developed which identified industrial districts in countries throughout the world; in Spain (Benton, 1990), Germany (Schmitz, 1990, Mueller & Loveridge, 1995, Herrigel, 1993), Denmark (Kristensen, 1990), Cyprus (Murray, 1990), Norway (Isaksen, 1994), US (Saxenian, 1985, 1994), Brazil (Schmitz, 1993), Mexico (Rabellotti, 1994, 1995), Kenya and Zimbabwe (Sverrisson, 1992), Ghana (Dawson, 1992), Pakistan (Nadvi, 1992), Korea (Cho, 1994), Taiwan (Lee, 1995), and India (Knorringa, 1994; Cawthorne, 1995).

Although there are many similarities between the districts identified in different parts of the world there are also clear differences. For example, although most of the districts are dominated by small firms, the industrial district of Baden Württemberg provides an example of an industrial district dominated by large firms. Similarly, unlike the industrial districts in the 'third Italy' and Baden-Württemberg, in the industrial districts in West Jutland in Denmark, 'since the 1960s, semi-finished goods and standardised components have increasingly been produced outside Denmark' (Kristensen, 1990, p.155). And in Silicon Valley neither an agricultural background nor the importance of the family, two factors which were extremely important in the development of many other industrial

districts, are apparent. Nonetheless, Baden-Württemberg, West Jutland and Silicon Valley are all still identified as industrial districts.

Industrial districts far from being specific to the 'third Italy' have been identified all over the world. However, all of these industrial districts are not exactly the same. Section 3.4 will outline the most common characteristics of industrial districts while chapter 4 will analyse their relative importance.

### **3.4 The characteristics of industrial districts**

Although most of the case studies of industrial districts have been undertaken independently of each other, much of the style of analysis is the same with researchers seeking to match the common characteristics of other industrial districts. The main characteristics of industrial districts as outlined in the literature are:

1. geographical and sectoral concentration of firms
2. mostly small firms
3. strong inter-firm relations
4. strong social ties between firms and society - milieu
5. highly innovative firms
6. the family is very significant
7. a lot of agricultural activity in the region

These characteristics are not ranked in terms of importance, this is not an exhaustive list and the points are deliberately general and all encompassing.

### **3.4.1 Geographical and sectoral concentration of firms**

#### 3.4.1.1 Geographical concentration

An industrial district, as the name implies, refers to a specific district or region. In most cases it is a clearly defined area - a town, a valley or a region. As the word district intimates the area in question is usually relatively small - in Italy's 50 or more industrial districts the population does not usually exceed 100,000 (Trigilia, 1990, p.36); the Silicon Valley in California, a relatively large industrial district, measures 40-miles by 10- miles (Castells and Hall, 1994, p.12). As with every generalisation there are exceptions: Baden-Württemberg has a population of 9.5 million and is the third largest *Land* in Germany (Schmitz, 1990, p.89).

It must be noted that the definition of an industrial district as provided by Pyke, Becattini and Sengenberger (1992, p.2) simply says that an industrial district is 'a geographically defined productive system...'. The size of the district is not mentioned, just that the borders can be identified. Use of the word district conjures up images of small areas but this is not necessarily an accurate reflection of areas classified as industrial districts.

Geographic concentration or localisation can be a result of many factors: 'local industrialisation is a process, whose birth, development and maturity are based on a

combination of causes that go from necessity... to the availability of natural resources and/or good locations' (Vazquez-Barquero, 1992, p.107). As discussed in 3.1 above, Marshall outlines the cases of localisation as physical conditions, the patronage of courts and the deliberate invitation of rulers (Marshall, 1898, p.348). Enright (1990, pp.3.20-3.27) shows that natural factors were very important in the formation of localised industries for whisky in Scotland and the marble and stone industry in Carrara. Good location and scenery attracted the movie and aerospace industries to Los Angeles and Capecchi's analysis of Emilia-Romagna (1989, p.29) states 'the majority of farming families did not earn enough to continue with agriculture as their sole activity' thus financial necessity led them to find other sources of income. It is notable that while all of these industries are geographically concentrated, they are not necessarily all industrial districts.

#### 3.4.1.2 Sectoral concentration

Within each geographically defined industrial district there is a sectoral concentration of firms. This can be measured in two ways, firstly in terms of firms producing the same good - for example there are more than 400 shoe firms in the Sinos Valley in Brazil (Schmitz, 1993). However, Schmitz says agglomerations of industrial producers would offer few benefits if they consisted merely of firms producing more or less the same thing. Economies of agglomeration arise when a network of suppliers (or what Marshall (1898) calls 'subsidiary trades') develops that provides materials, tools, new machinery, second hand machinery, spare parts, repair services and so on (1989, p.30). This is the

second way of measuring sectoral concentration, in terms of firms producing different products within the industry. 'Within a 50 km radius of Novo Hamburgo, the centre of the Valley, most inputs are produced: uppers, soles, heels, insoles, insocks, shanks, glues, nails, eyelets, dyes etc.' (Schmitz, 1993, p.5). In addition most of the machines used to turn these materials and components into shoes are made locally. In the Tiruppur cotton knitwear industry 'there are bleaching and dyeing works, fabric-making and garment workshops, screen printers, label makers, thread multinationals, suppliers, packaging materials factories and shops' (Cawthorne, 1995, p.44). Within the industrial district there can be further sectoral concentration as exhibited in the wood furniture industry in Valles Oriental. 'Within this zone, firms are grouped according to product specialisation, with a full range of speciality firms serving each product mini-region' (Benton, 1990, p.67). In Carpi 'five groups [of firms] have emerged, the largest of which has fifty members. Typically, one firm in the group will specialise in marketing, administration, and financial management, and others will specialise in men's fashion, women's fashion, children's wear, or sportswear etc. Groups thus aim to spread their markets as well as their risks' (Cooke and Morgan, 1993, p.558). It is the existence of the firms producing inputs and services for the main industry that shows the depth of the district.

This feature of all stages of the production being located in the same district is however changing in a number of industrial districts. This change has been cited by some as an indication of the degeneration of industrial districts. In West Jutland, 'since the 1960's semi-finished goods and standardised components have increasingly been produced



outside Denmark' (Kristensen, 1990, p.154). In Santa Croce 'the trend is for tanners to import semi-finished leather... if this becomes the norm, more than half the production cycle will be eliminated from the area' (Amin and Thrift, 1992, p.580). Similarly in the knitwear and clothing district in Carpi (Italy), since the 1980s 'a large part of the sub-contracting cost started to be commissioned to subcontractors who were located outside the district, some of them in distant towns'; by 1988 'for every three employees who worked in Carpi there were two employees working outside the area' (Bigarelli and Crestanello, 1994, pp.137-138). The reasons for moving production in this case included reducing costs, gaining a better quality and more reliable service and the ability of these external firms to produce in large runs.

This is the geographical expansion of an industrial district, but as the area which the district covers expands the depth of the district declines. In the case of Carpi it 'became less and less a production area. The "head" of the industrial district (i.e., the independent firms) grew, while the productive "body" (i.e., the subcontractors) diminished and today it is not able to meet the production demand of the district' (Bigarelli and Crestanello, 1994, p.137-138). The district of Carpi may retain many of the features of an industrial district, although the region spanned is larger and all stages of production do not take place within this region.

An important distinction needs to be made when discussing sectoral concentration; all industrial districts will have horizontal sectoral concentration in that the firms producing

the homogeneous good are located in the same area. Vertical sectoral concentration occurs when all stages of production are carried out by firms located in the district. There is mobility between these two categories of sectoral concentration over time and Carpi provides an example of this.

Overcrowding, inadequate infrastructure and rising land prices get sparse mention in the literature but are consequences of high levels of geographical concentration. Another negative effect, as outlined by Marshall (1898, p.352) is that 'a district which is dependent chiefly on one industry is liable to extreme depression, in case of a falling-off in the demand for its produce, or of a failure in the supply of a raw material which it uses'. An example of this is the effect of the decline of the coal industry in Sheffield<sup>8</sup> Those districts which are reliant on more than one industry are better protected as 'if one of them [industries] fails for a time, the others are likely to support it indirectly' (Marshall, 1898, p.352).

Geographical concentration is the most basic and initially important feature of an industrial district and is usually the starting point of research on the existence of a district. 'Geographical and sectoral concentration in itself brings few benefits. It is, however, a major facilitating factor, if not a necessary condition for a number of subsequent developments (which may or may not occur)' (Schmitz, 1995, p.533).

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<sup>8</sup> Over time industrial diversification can overcome such as decline. In the case of Sheffield this is examined in Leigh and Stillwell, 1992.

### **3.4.2 Firms are usually small**

Most case studies of industrial districts portray regions with small firms, in fact in many cases the firms are micro-enterprises - employing up to nine people. For example in Valles Oriental in Catalonia (Spain), two-thirds of the firms employ between one and nine people (Benton, 1990, p.67), in Emilia-Romagna in Italy, 75 percent of the firms employ less than ten workers (Amin, 1989a, p.114) and in Herring-Ikast, Denmark, 59 percent of the firms employ less than 6 people (Hallund et al, 1985, p.15 as cited in Kristensen, 1990, p.145)<sup>9</sup>.

Firms in an industrial districts gain externalities or external economies by being located close to others in the same industry. Research by Cawthorne in Tiruppur, India, reported that 'many of the owners of the larger firms told us quite explicitly that they did not see the need to worry about setting up larger factory-type premises when they could get the same things done without either the problems or the expense' by other firms (1995, p.47). Many of the firms in industrial districts are spin-offs of older firms. For example in Silicon Valley 'between 1959 and 1979 Fairchild semiconductor spawned an amazing total of fifty new companies in the county. Virtually every established semiconductor firm in the valley can trace its genealogy back at least indirectly to roots at Fairchild' (Saxenian, 1985, p.25).

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<sup>9</sup> Curran and Blackburn, (1994, pp.52-75) believe that what constitutes a small firm differs between sectors, and numbers of employees alone is not an appropriate indicator. Qualitative research in each sector involving interviews with trade association representatives, owner-managers and executives to identify what they would classify as a small firm is preferable.

The apparent successes of industrial districts provides a basis for the argument that small firms which co-operate as well as compete can be as efficient and successful as larger firms. It is implicit in much of the literature that it is their very size that allows them to produce quality goods, be innovative and react quickly to changes in the market. Does this then rule out the existence of large firms in an industrial district?

Although there is sparse mention of large firms in the literature on industrial districts in Italy, in other regions they play an important role in the regional economy. In Baden Württemberg for example only 18.5 percent of industrial workers were employed in enterprises with less than 100 workers in 1988 (Schmitz, 1990, pp. 93-94). In the case of the Sinos Valley in Brazil, Schmitz (1993, p.7) describes a situation of 'small shoemakers and Fordist giants'; as well as small firms which are typical of an industrial district, there are a number of very large firms - some factories employ 2-3,000 people.

If a local economy or region is growing, changes in the size, number and structure of firms are to be expected. Thus an industrial district may be initially made up of micro-enterprises but as they become more successful they begin to expand. In the districts of the 'third Italy' this expansion usually comes in the form of an emergence of new firms while in regions such as the Sinos Valley in Brazil existing firms grow - 'the firms which are large now were small 25 years ago' (Schmitz, 1990, p. 8). Within 'a matter of a few years, a cluster of local producers, most of them small, was plugged into a distant mass

market ...it meant that a number of local producers evolved into mass producers' (Schmitz, 1993, p.12).

Although most of the industrial districts studied are dominated by small firms there is evidence to suggest that in some cases they emerged initially as a consequence of a large firm. For example, the dismantling of a large firm in Marche at Serra de'Conti (Bronzini and Grassini, 1981 as cited in Pezzini, 1989, p.230) and in Emilia in the food-processing and mechanical-engineering industries, resulted in redundant employees setting up on their own (Pezzini, 1989, p.230). Cooke and Morgan (1994, p.104) report how Carpi began as a centre of straw-hat production. When this industry collapsed in the 1940s agricultural homeworking - the main source of production - dried up. However, artisans used their contacts with large firms to begin selling (not making) cheap clothing. Later, some began producing T-shirts using the homeworking tradition in the area. They conclude that 'whether directly or indirectly large firms influenced the course followed by SMEs in this first phase of development'.

Rather than concentrating just upon the size of firms, the more important features of firms in industrial districts are the organisation of the firm and inter-firm relationships. If a large firm has good inter-firm relations with the other firms in the district, the characteristics of the industrial district still hold. Sengenberger and Loveman (1987, p.3) doubt 'whether it is the size dimension of business organisation as such that plays the

crucial role in determining economic efficiency and vitality' and Schmitz 'extend[s] these doubts to the industrial district model' (Schmitz, 1990, p. 95).

There may however be an optimum size of firm beyond which it begins to dominate the district and inhibits the possibility of true interdependence between firms i.e. suppliers of raw materials may only have one buyer (monopsony) and so become dependent. Thus the size distribution of firms in an industrial district can affect other characteristics of the district such as inter-firm relations.

It is clear that although the more traditional and well-studied industrial district does not have any large firms this does not mean firstly that an industrial district cannot exist if there are large firms, and secondly, that large firms did not have a role in the development of the district and specifically inter-firm relations.

In conclusion while most industrial districts are based upon a community of small firms those that incorporate large firms should not be excluded from analysis, but should be studied to identify if the size of firms affects the operation of such a district.

### **3.4.3 Inter-firm relations**

Inter-firm relations in industrial districts are a complex web of interdependence, social ties, intense competition and co-operation. Rather than the relations of all firms in a district resting simply on competition, in industrial districts the relations between firms

vary from firm to firm and over time. For example a ceramics painter in Castellon in Spain may have social and familial relations with some firms which have been established by former workers or other family members, have relations based on co-operation with the retailer of the final good and the supplier of raw materials, and strongly competitive relations with the other firms in the same line of production, although this may be tempered by a co-operative relationship in terms of sharing machinery and subcontracting during busy periods. Each of the firms in the district is, to a varying degree, dependent upon the other firms. This complex web of relations is represented in Chart 3.1.





This simplified representation of the relationship between firms concentrates on the ceramic producer but applies, with appropriate adjustments, to the production of any product in an industrial district. In each stage of production a similar multitude of relations between firms occur.

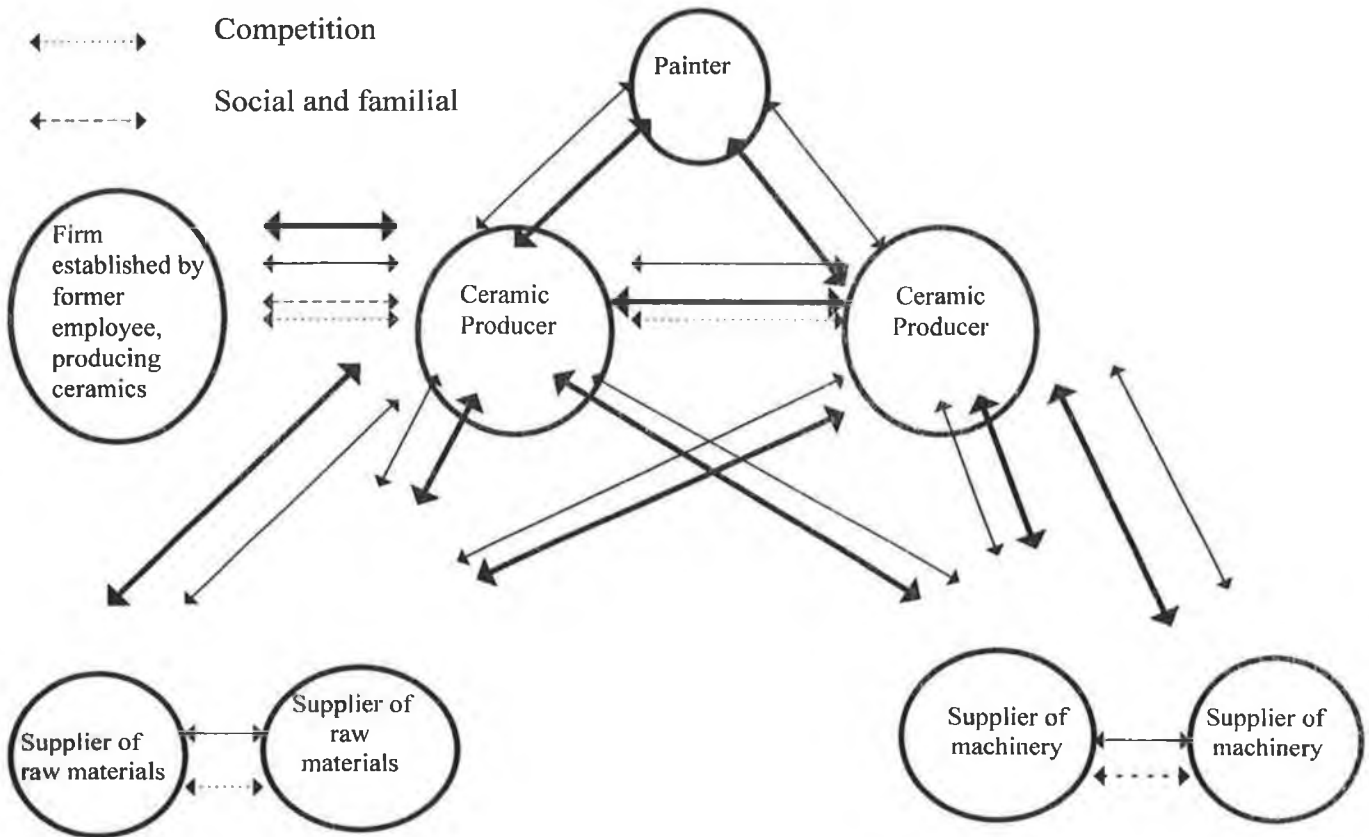
#### 3.4.3.1 Competition and Co-operation

Competition between firms in an industrial district is intense but parallel to this is co-operation. These two seemingly conflicting forms of relations occur simultaneously. There is horizontal competition and vertical co-operation, thus firms which are different are ready to work together, while firms which do the same thing compete strongly against one another (Brusco, 1989, p.15). In a number of cases firms which do the same thing also co-operate, resulting in horizontal co-operation.

Chart 3.1 The web of relations between firms in industrial districts -  
the case of the ceramic producer

**KEY**

-  Interdependent
-  Co-operation
-  Competition
-  Social and familial



The theory of industrial districts does not discount the age old idea of firms acting in their own best interest, rather it shows that this does not always have to mean competition on its own but can imply a combination of co-operation and competition. The advantages gained from co-operating allow firms to compete more effectively. The relations between firms in a district are not dominated by co-operation as 'co-operation between the actors



cannot stifle all competition or the incentives to innovate will be eliminated' (Lorenz, 1989, p.123). Thus competition and co-operation are both important.

#### 3.4.3.2 Competition

Traditionally firms compete solely on the basis of price but in an industrial district competition over efficiency, the quality of the product and design dominates. Thus firms in an industrial district are primarily concerned with continually improving the quality of their product rather than the more traditional concerns of minimising costs. Success in terms of market share and profits rests on having the best quality product in the market rather than the cheapest<sup>10</sup>. This concurs with what Best (1990) calls the new competition - this is based upon Schumpeterian competition which 'focuses on competition from new commodities (which include both new products and new versions of old products), new sources of supply, new technologies and new types of organization' (Jacobson and Andréosso-O'Callaghan, 1996, p.42). The types of organizations which succeed under new competition are "entrepreneurial firms". These differ from hierarchical firms in that they strategically choose the terrain on which to compete unlike a hierarchical firm which takes the terrain as given; the goal is to gain competitive advantage by continuous improvement in process and product, rather than minimising production costs, and finally organisational flexibility is paramount (Best, 1990, p.11-12).

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<sup>10</sup> Nonetheless in some industrial districts over time price also becomes an important benchmark, for example in Brazil (Schmitz, 1993).

Competition on the basis of efficiency and quality significantly alters the ethos of a company; rather than trying to minimise costs they are striving to maximise innovation and quality - a distinctly positive objective. It is this difference in the primary competitive concerns and objectives of the firms in an industrial district which alters the role of employees in such firms. Rather than being purely a means of production these employees are now the means to success via their innovation and experience. The type of competition which exists in an industrial district rests upon efficiency, innovation, adaptability and quality, and fundamental to success in such a competitive environment is co-operation between firms and the role of employees<sup>11</sup>.

Competition in industrial districts occurs at all stages of production. As buyers and sellers can easily change their business partners no firm is totally dependent upon its buyer or seller, thus competition does not just exist for the final good but at all stages of production. This differs from a system whereby dependence between firms mitigates competition, innovation and progress in the development of the product.

#### 3.4.3.3 Co-operation

Co-operation can be defined in many different ways. Solé and Valls (1991, p.198) adopt Paynes' (1986) definition: 'commercial and technical agreements can be loosely defined as formal arrangements between individual firms concerning the exchange of corporate resources'. While such formal agreements form an important aspect of co-operation in

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<sup>11</sup> As discussed in chapter 4, some industrial districts consist of "sweat shops" where employees are badly paid and work is menial.

industrial districts, equally important is informal co-operation. Easton and Araujo say 'formal co-operation is distinguished by being overt, planned and managed or at least capable of being so. Informal co-operative activities are much more likely to be individual, random and unplanned' (1992, p.76). Schmitz (1995, p.558) defines 'collective efficiency as the competitive advantage derived from external economies and joint action. The former are incidental, the latter is consciously pursued and the combination of the two varies between clusters and over time'. Here, co-operation will be taken to include both formal and informal co-operation unless specified. A further distinction in terms of types of co-operation can be made between firm led and association or government led. These issues will be studied in more detail in chapter 4.

Another important point to note when studying co-operation between firms is that the relations between firms in the district may not be identified by the firms involved as co-operation. This is particularly so between firms owned by members of the same family or former employees; instead it may be termed 'helping relatives or friends' or 'obligations' (Kristensen, 1990, p.152). Kristensen (1990, p.151) describes how one entrepreneur he

recently interviewed was vehemently opposed to any formalised co-operation, yet later during the interview, an upholsterer looked in to tell him that "their new sofa" had appeared on the front cover of a furniture magazine. Together they had not only produced the sofa, but had worked together several nights a week for six months to develop it.

This point is also made by Schmitz (1990, p.98) in an article on Baden Württemberg where he states 'There is probably a great deal of co-operation which is not strategically pursued but "just happens" in the course of transactions between firms and in the course of contacts between their staff in and outside the place of work'.

Co-operation in industrial districts can involve:

**(i) Collectively providing or purchasing services which all involved require**

An example of this is in Emilia where the small entrepreneurs established an association to provide the administrative services which they require; these services include preparing pay slips, keeping the books and paying taxes (Brusco, 1982, p.173). There is one case in Italy where 'such an association services 60,000 small firms' (Brusco, 1989, p.15). Similarly in Ikast, Denmark, since 1959 through the co-operative body Danikast, employers have organised buses to bring women to work from the surrounding areas, have built a dormitory for young women, and have collectively purchased raw materials' (Kristensen, 1990, p.150). In Carpi, Italy, 'several hundred firms share the same address (and often the same telephone numbers) with one or more other firms. In 1988, 332 firms listed 143 different addresses' (Bigarelli and Crestanello, 1994, p.129).

**(ii) Vertical co-operation - combining the experience of all those involved in the production process to improve the product**

Rather than just a vertical subcontracting type of system, firms work together to achieve the required result (Benton, 1990, p.49). The more egalitarian relationship that exists

between buyers and suppliers is mainly due to the fact that neither is totally dependent upon the other as there are many buyers and sellers in the market at each stage of production.

Vertical co-operation between buyer and seller encourages continual innovation which is a feature of flexibly specialised firms. Those involved in all stages of production have a role to play in the production of the final good and strive to improve the good at all opportunities. As Marshall states 'if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas' (Marshall, 1898, p.350). Co-operation between experts at different stages of production - for example the wood carver, the wood cutter, the designer and the retailer - ensures that the final product is the best that can be achieved at the given time, and as they co-operate to continually innovate they also ensure that their good continues to meet the highest standards in the future.

### **(iii) Horizontal co-operation - co-operation between competing firms**

The main characteristic of the relationship between horizontal firms is intense competition, however this does not necessarily eliminate co-operation, but the form that it takes is distinctly different from that between firms at different stages of the production process. Co-operation between these firms is less evident and is a relationship which is balanced precariously behind the instinct to compete. This can be exemplified in Denmark where 'some years ago government funds were available for financing an

export-agent if four firms worked together in co-operative export promotion. Several firms in Salling co-operated to exploit this opportunity. But, once public finance stopped, instead of building a co-operative trading company, several export agents established themselves as private self-owned independent firms' (Kristensen, 1990, p.152).

Co-operation among competing firms can have a number of benefits for all of the firms which take part. This co-operation can involve the sharing of tools and machinery to cut down on costs and ensure that the best equipment is available for the firm, joint marketing, joint research and development, or as in the case of Cyprus the establishment of a retail unit for which all of the firms produced newly-designed products on a specialised basis. In the Cypriot case the financial gains amounted to a 20-25 percent reduction in unit costs in the production of specialised furniture (Murray, 1990, p.266).

Co-operation between competitors can also occur when a firm assists a competitor by taking on sub-contracting work during particularly busy periods. An example of this is in West Jutland in Denmark where 'a winning firm often has to use as subcontractors, some of the firms which competed with it for the customer in order to be able to deliver the promised goods' (Kristensen, 1990, p.151).

Co-operation between firms can be in any one of these forms or can incorporate all of these aspects.

What must be made clear is that the trust required in order to co-operate 'is not the type of trust based on idealism or naiveté, but a trust based on the realisation by specialists that they need each other, in such a way that they will also have to trust each other to some extent' (Knorringa, 1994, p.76). In fact Solé and Valls (1991, pp.201-202) classify 'co-operation between companies... [as] the sign of a new competitive behaviour which is very different from what used to be understood by competition. This growth in co-operation ... gives it a significant role alongside the types of strategies used by companies in order to become international: takeovers, creation of subsidiaries, mergers and multinationals'. The economic rationale for such co-operation is that 'the short-term benefit of opportunistic breaks may be outweighed by the long-term benefits of continued mutual trust' (Maskell, 1990 as cited in Illeris, 1992, p.75). Granovetter (1985, p.485) warns that economists often oversocialize social influences by assuming 'that actors acquire customs, habits, or norms that are followed mechanically and automatically, irrespective of their bearing on rational choice'. In the case of industrial districts, while firms may be influenced by social, familial and inter-firm relations, they make strategic rational business decisions to co-operate. Also, Granovetter (1985, p.485) warns that 'what looks to the analyst like nonrational behaviour may be quite sensible when situational constraints, especially those of embeddedness, are fully appreciated'.

Lorenz (1992) argues that there are two explanations for co-operation: 'the anticipated benefits of future mutual cooperation are valued higher than the one-time rewards of defecting while others cooperate (Axelrod, 1984) ...[and it] may be motivated by social

norms which have been internalized through education and socialization and which cannot be reduced to optimising rationality' (p.197). Both of these explanations are relevant in industrial districts.

Continued co-operation is also affected by close social and family ties which are a source of trust, communication and co-operation and are discussed in sections 3.4 and 3.5.1.

#### 3.4.3.4 Interdependence

The make-up of industrial districts means that most firms would find it extremely difficult if not impossible to function alone - they require the products of other firms in order to remain in the business in which they operate. For example in the knitwear and clothing district of Carpi, the firm which 'makes up' the item is reliant upon the firm which cuts the material and supplies it, and the firm which irons the final product. In the words of Amin 'the single elements of the system flourish as a result of their interdependence; not because any one of them however competent, is capable of playing on the stage alone' (1989, pp.119-120).

It is this interdependence which distinguishes industrial districts from other regions which have a large number of small firms. In industrial districts small firms maintain their independence by having many suppliers and buyers; in Modena and Reggio in Italy 'the great majority of subcontractors in fact have the ability to switch customers' (Brusco, 1982, p.171), in Fuenlabrada in Spain only 7 percent of the firms were dependent on a



single client, and many firms marketed their goods directly through wholesale or retail outlets (Benton, 1990, p.60). It is the more equal relationship between the buyer and seller which allows interdependence between all firms, regardless of the stage of production in which they are involved. It is for this reason that Cawthorne (1995, p.48) used the term outcontracting rather than sub-contracting to describe the relationship between large and small-medium sized firms in Tiruppur's cotton knitwear industry. In a study on Emilia Romagna, Cappechi notes 'the factory that produced the final good did not necessarily constitute the centre of the sub-system because its role was often only that of assembling various parts produced by other firms, and some of these parts were so vital that their producers could set their own prices' (Cappechi, 1989, p.201).

#### 3.4.3.5 Social and Familial Ties

Within industrial districts much of the growth in the number of firms is assisted, encouraged and often financed by existing firms. Family members and former employees often establish firms in the same business or a spin off business and this adds another element to business relationships within the district. An example of this is the development of the Apple Personal Computer by two school drop-outs in their early twenties, working out of their garage in Menlo Park in the summer of 1976. They were only able to start the company because a former Intel executive came into the project as a third partner lending them \$91,000. 'It is this high risk funding by individuals who were knowledgeable about the trade, and who shared and understood the culture of their innovators, that made possible the endless birth of new firms in Silicon Valley' (Castells

and Hall, 1994, pp.19-20). Similarly in South Korea, the 'Little Owner System' whereby former technicians with 20-30 years of experience weaving or former supervisors of production lines are encouraged to purchase weaving facilities and run them under their own control. Parent firms offer financial aid, constant supply contracts and even administrative services (Cho, 1994). Clearly in such a situation the owners have a particularly close relationship which comprises social as well as business elements.

Inter-firm relations can also be a consequence of the owners' religious or political beliefs, membership of the same artisanal association, being friends or neighbours. The importance of the business activity is no longer confined to the business arena but is also involved in everyday social and family life. In Silicon Valley 'the Fairchild spin-offs were often projected, discussed, and decided in a nearby restaurant in Mountain View, Walker's Wagon Wheel Bar and Grill, frequented by the company's engineers' (Castells and Hall, 1994, p.18).

#### *3.4.3.5.1 Family and social connections are a source of trust, communication and co-operation*

Such familial and social connections between firms enhances co-operation and communication as information flows more freely and there is a stronger basis for trust. Granovetter (1991, p.490) points to the example of a fire in a building to show the different levels of trust between families and acquaintances. If there is a fire in a night-club there will always be reports of injuries as a result of the stampede to get outside, by contrast in a fire in

a family home rather than a stampede to get out, lives may have been lost as a result of a parent or older child returning to the house in an effort to save a younger child. Firms are more likely to co-operate, trust and exchange information as they either know their counterpart personally or by reputation - information about firms and their activities flow quickly throughout the district. Rather than contracts binding firms it is trust and reputation which determine the intensity of relations.

Lazerson (1995, p.49) reports that in Modena 'for most manufacturers and artisans, a party brandishing a written contract implicitly conveys a message of distrust and therefore should be avoided'. As a consequence of sectoral specialisation and location in the same area there are usually several successive transactions between the same firms and individuals, so that the possibilities of future business usually extend over a long, even unspecified period (Dei Ottati, 1994, p.531). According to Granovetter (1985, p.490) 'individuals with whom one has a continuing relation have an economic motivation to be trustworthy, so as not to discourage future transactions'. To gain future business firms must act appropriately and have a good reputation. 'News about uncooperative behaviour of a player appears to travel fast.... Thus by not co-operating in one relationship, a player puts several relationships in jeopardy' (Schrader, 1991, p.168). Thus the reputation of the individual becomes a disciplinary mechanism (You, 1994, p.27). Storper and Scott (1988, p.30) believe that 'in established place-bound business communities, entrepreneurs tend over time to learn collectively about one another's habits and capabilities, and this

learning may substitute in part for hierarchical control of transactions through vertical reintegration’.

The operation of an industrial district also creates ‘the widespread possibility of punishing those who behave incorrectly, chiefly by withdrawing the willingness to conclude future transactions with them and social disapproval’ (Dei Ottati, p.531). Scott and Storper (1992, p.17) note that ‘institutional infrastructure or social practices which increase information exchange and trust, ...limit the probability that opportunistic behaviour will benefit those who practise it’. Section 1.3.2 shows how game theory can be used to indicate formally the tendency for trust to encourage inter-firm co-operation. Furthermore, Dei Ottati (1994, p.532) building on the ideas of Marshall sees a good reputation and trust as personal capital.

There are many transactions which can only be carried out if trust between contracting parties is not limited to respect of the custom of reciprocal co-operation, but is also based on a knowledge of the personal, moral and professional characteristics of the other party.... For example, if in several successive transactions with the same buyer a subcontractor supplies good quality products and shows that he is able to adapt himself to changing circumstances without taking advantage of variations of market power in his favour, he accumulates real personal capital by doing this. This can be considered as capital because it is obtained at a certain cost, above all by choosing to sacrifice immediate, certain economic gains, in favour of future advantages which may be

uncertain. In addition, personal trust is capital because it can generate future yields through transactions which otherwise would never be carried out because they would be considered too risky..... This personal asset [also] ...enables him to turn to people who know him for help whenever he needs it.

Marshall (1923, p.82) concentrated upon the use of such personal capital as 'personal security' to obtain the credit which is necessary to start a new business.

The downside of such close links between firms, families and friends is that sometimes factors outside of work can be brought into the work situation. This can cause tension both between firms and even internally within firms and can have negative consequences for business activities. It is also possible that social identities can have negative influences on inter-firm relations - as with caste divisions in the Agra shoe industrial district. Jatavs know how to make shoes and other caste traders or entrepreneurs know how to sell shoes. 'Jatavs are treated roughly and with disdain by traders and contacts are kept to an absolute minimum... In effect there is a power struggle, mostly below the surface, between the two groups instead of a realisation of the need to co-operate' (Knorringa, 1994, pp.81-82).

In what can be described as the web of relations between firms in industrial districts (Benetton, 1990, p.49), this familial and social factor which results in high levels of trust is perhaps the relationship which is the hardest to imitate. Asheim (1994, p.98) states that it is 'questionable whether the intentional creation of trust between networking firms, as

argued by Lorenz (1990) and Sabel (1992) can be "embedded" in the same way as the original form of "mutual knowledge and trust" found in Marshallian industrial districts'.

#### **3.4.4 Strong social ties between firms and society**

features in an industrial district are that of a social milieu and the embeddedness of firms; in both of these features informal relations have a pivotal role. These concepts are similar and both relate to the importance of social relations in the functioning of a firm. Granovetter (1985, p.482) argues that 'the behavior and institutions to be analyzed are so constrained by ongoing social relations that to construe them as independent is a grievous misunderstanding'. Grabher (1993, p.4) defines the embedded firm as one in which 'economic actions and outcomes like all social action and outcomes, are affected by actors' dyadic relations and by the structure of the overall network of relations'. This contrasts with the neo-classical view that people act rationally and maximise their utility, and the oversocialized view whereby 'society influences are viewed as processes in which actors acquire customs, habits or norms that they follow in a quasi-mechanical way' (p.2). In the embeddedness approach 'the concept of social context... is not one of a once-and-for-all influence but of an ongoing process that is constantly constructed and reconstructed during interaction' (p.5). This tallies with the definition of a social milieu as 'the complex of actors (firms, public administration, financial systems, systems of services) operating in a particular territory and the recognised relations (both formal and informal) between them. Milieux are also dynamic by definition (and not static)' (Bramanti and Senn, 1991, p.94).

Embeddedness and a social milieu mean that there is a close link between society and firms: the relationships between the actors in the economy are not purely economic (Schmitz, 1993, p.26) - the relationship constitutes more than the exchange of labour for wages. What this comprises of in summary is a strong community of individuals, families and firms which is bound together by a 'socio-cultural identity and trust' (Schmitz, 1993, p.26). The distinction between embeddedness and a social milieu lies in the fact that embeddedness refers to firms - the firms are embedded in social relations - while the social milieu is what exists in the district as a whole, it is the community of firms and individuals and their relations.

This social milieu strengthens the social and familial ties between firms and as such increases the flow of information between firms - and thus levels of innovation - and encourages inter-firm co-operation, informal relations between owners and trust. The common values that the milieu creates serve both to bind the community together and to set unwritten rules which firms operate by: 'there is a network of values and institutions which is invisible to the economist, but quite visible to the sociologist and the anthropologist, and which holds the society together and makes it a sort of community' (Becattini, 1991, pp.102-114).

This makes firms more embedded. The social milieu also encourages the rapid flow of information and skills between participants. Information is transmitted easily and

frequently via continual face-to-face contact of those involved in the business and Nadvi (1992, p.9) describes how 'informal learning [occurs] through osmosis by the young'.

What it is that binds these communities together has been studied by many researchers and often a common background or belief, for example a regional political consensus, is pin-pointed as the main source of this community spirit and identity. In Italy 'regions which are most typical of small-firm development... are usually characterised by the existence of specific subcultures. In these areas, one often finds the predominance of a particular political tradition whose origins usually go back to the beginning of the century, and a complex of institutions (parties, interest groups, cultural and welfare structures) which derive from the same politico-ideological matrix' (Trigilia, 1989, p. 175).

An example of this is in Emilia Romagna, where in 1948 52 percent of the votes in this area were going to Communist and Socialist parties compared with an average of 31 percent in the rest of Italy (Capecchi, 1989, p.23). When analysing the potential for flexible specialisation in Cyprus, Murray (1990, p.261) identifies the strength of the Communist and Socialist parties which account for 40 percent of the national vote, and 'the threat from Turkey [which also] acted as a force of national cohesion'. According to Wilson (1992, p.59) the rural knitwear cluster of Mexico is characterised by a strong *mestizo* identity, 'rooted in shared values concerning family, God and work; and it has been closely interwoven with a highly conservative variant of Catholicism'.



It is evident that ties between the community and the firm are important factors in the development of many industrial districts, but is this an integral part of the development of a district, and if it is, does it maintain its importance as the district develops?

In the Sinos Valley in Brazil 'a strong community spirit developed in the region based on the common German heritage', however 'the speed of the export growth in the 70s and 80s undermined the previously existing social fabric. The influence of socio-cultural ties lessened. Greed and ambition squeezed out community values' (Schmitz, 1993, pp.27-28). Schmitz notes that in more recent times there has been a return to more co-operative relations, however this is 'not because of socio-cultural ties but because of the economic cost of not co-operating' (Schmitz. 1993, p.26). Trust remains important 'but its foundation is changing from trustworthiness being ascribed to being earned' (Schmitz, 1995, p.559). This example shows that while the socio-cultural element of a district may play an important role at the inception of an industrial district its importance may wilt, and although co-operation and links between society and the firm remain, the basis of it is no longer non-economic. This idea can be further expanded to show that the links between society and firms are often different in different industrial districts.

The background to the strong link between society and the firms is usually voiced in terms of political belief, culture or ethnicity however there are less formalised factors which can also encourage this socio-cultural identity. These factors include kinship, living locally, being involved in the same business and an agricultural background. Such

factors play a less observable part in the emergence of industrial districts but that is not to say that their role should be disregarded.

It must be remembered that in Italy, where the first post-Marshallian industrial districts were identified, politics and religion play a large part in the culture of the country. This was particularly so when many of the districts in the 'third Italy' were emerging in the early 1950's. While this may have created a social milieu in this particular region, other factors may be more important in other areas.

In the theory of new industrial spaces (Scott, 1988a and b) co-operation between firms typically rests upon corporate managers and other office staff being members of a 'professional community'. Being part of such a community creates a group identity similar to that resulting from belonging to the same ethnic group or having the same religious belief. This idea of a 'professional community' facilitates the inclusion of a number of areas which may otherwise not be categorised as industrial districts. It also contradicts the argument that industrial districts, and in particular the social milieu required for the existence of an industrial district, is particular to the 'third Italy'. The relationship between society and firms, and within firms, can take many forms, all of which can have the same consequences, namely the encouragement or strengthening of an industrial district.

### **3.4.5 High levels of innovation**

One of the main reasons for the success of industrial districts are the high levels of innovation which ensure that products continue to be competitive in the market. In most cases this innovation is a result of external rather than internal factors. Firms do not rely on large R&D departments but instead, in the words of Marshall, 'inventions and improvements in machinery, in processes and the general organisation of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas' (1898, p.350). Each firm gains from the new ideas of others and in turn their ideas benefit others in the district. Almeida and Kogut (1997, p.23) state that 'proximity facilitates contacts between individuals that evolve into social and professional networks; these networks develop the common stock of knowledge in the locality that becomes the foundation for further innovation by startups'.

'In Prato, information on production techniques does diffuse widely and rapidly, because owner-operators talk to one another, because families live in the same social context, and because apprentices move easily from one workshop to another' (Harrison, 1994, p.102). This process is one of incremental innovation, slight changes are made to products, processes and machinery on a regular basis by those involved at every stage of production. Such innovation is encouraged by frequent face-to-face contact to discuss ideas, by close proximity which allows information to flow quickly, and as a result of a

trusting relationship between suppliers and buyers. The milieu that exists in industrial districts enhances the information network. Most of the people in the district are involved in the same business and know each other personally and socially, they will discuss new developments and occurrences not only in work but also in social and family circles. This tight communication network facilitates the rapid diffusion of information and innovation. In some cases it facilitates the diffusion of information which firms might prefer to keep to themselves.

The distributors of ideas and information are not just owners but often employees and professionals in the business as well as members of the community. For example Lazerson (1995, p.49) observed in Modena ‘base prices for tasks such as button making, embroidery, and sewing collars and cuffs are public knowledge. On numerous occasions I heard these prices discussed in cafes, piazzas, and trade association storefronts, a tangible example of how in concentrated industrial areas “the secrets of the industry are in the air”’. Similarly in Silicon Valley ‘everyone talks and breathes computers’ (Hall, 1985, p.14).<sup>12</sup>

A professional milieu specifically encourages the flow of technical information. Carter calls this know-how trading and notes ‘no money changes hands, nor are formal records kept. Instead colleagues ask each other for very specific technical information. Technical assistance comes with the obligation to reciprocate later on’ (1989, p.155). ‘There was an

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<sup>12</sup> Harrison (1994, p.102) notes that in Prato while production information is in the air market information regarding future demand is not.

unusually high degree of interaction between employees of rival firms in Santa Clara County [Silicon Valley]. Many were close personal friends and had gone to school together or worked together in the past, and much information brainstorming and gossip were exchanged over the telephone or at the local “watering holes” (Saxenian, 1985, p.30).

In addition the flow of information and innovations is aided by the regular movement of employees from firm to firm. With them they bring the latest ideas and developments from the firm they have just left. In Silicon Valley ‘the constant circulation of talent from one firm to another made it literally impossible to maintain proprietary rights over each innovation. The only way out of the problem was for each company to accelerate its own path of innovation’ (Castells and Hall, 1994, p.18). ‘Workers can move with great rapidity through the job market because... their skills are agglomeration- and sector-specific rather than firm specific’ (Storper and Scott, 1988, p.32).<sup>13</sup>

High levels of innovation are linked to the other characteristics common to this type of agglomeration. Strong inter-firm relations enhance co-operation, and social and familial links between firms as well as interdependence encourage the exchange of information. The flow of information is also strengthened by a local milieu - Camagni (1991, p.122) sees the milieu ‘as a necessary and crucial element in the process of technology creation and as the “operator” that allows the individual decision-maker to cope with the problems

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<sup>13</sup> Notably as the authors observe this is not necessarily so for the lower-tier workers who find getting a job more difficult.

of static and dynamic uncertainty which are intrinsic in innovative behaviours'. The size of firms also means that they are reliant upon external rather than internal economies in order to succeed. Sengenberger and Pyke (1992, p.5) say that entrepreneurial dynamism in industrial districts is a product of conditions which include 'ease of formation of new firms (access to capital, premises, etc. and an advantageous legal framework); protection from domination and dependency upon large firms (permitting independent design capabilities and ease of access to final markets); knowledgeable individuals capable and confident enough to establish new firms; and access to... networks, ideas and services'.

The strength of an industrial district lies with its powers of innovation, and although in some cases some stages of production have been moved outside of the district, the development of ideas and designs remains very firmly within this area. It is notable however, that strong social and professional milieux as well as long-standing inter-firm co-operation can result in inertia - Grabher says 'strongly embedded regional networks insidiously turned from ties that bind into ties that blind'. Closed networks of firms and individuals can become convinced by their common world view which precludes competing perceptions and interpretations of information (Morgan, 1986 as quoted in Grabher, 1993). Marshall was also conscious of this issue:

even a little obstinacy or inertia may ruin an old home of industry whose conditions are changing, and although the opening out of new sources of supply or new markets for sale may quickly overbear the strength which old districts have inherited from past conditions; yet history shows that a strong centre of

specialised industry often attracts much new shrewd energy to supplement that of native origin, and is thus able to expand and maintain its lead (Marshall, 1923 as cited in Grabher,1993)

#### **3.4.6. Firms are often family run**

‘It has been shown that those areas included in the ‘third Italy’ are characterised by family-run firms’ (Pezzini, 1989, p.226). According to Goodman (1989, p.6) ‘underpinning the entire artigiano [craftsman] economy is the family’:

Members of the entrepreneur’s own family work in the business, as well as the in-laws (cognati). Many of them may live in residential quarters attached to the workshop. In times of economic recession it is usually found that employment in artigiano firms increases as young members of the family can now find a place of some sort working in the family business. Starting-up capital is usually found in the family before the entrepreneur goes to the local bank (Goodman, 1989, p.7).

The strong family influence in industrial districts also encourages the emergence of new firms. Kristensen (1990, p.149) studies the Durup furniture industry in Denmark and presents a ‘story of fathers, brothers and sons, masters and apprentices, and involves the development of a genealogical tree where craft and family relations have become interwoven into 70 years of business history’.

It all began with “Durup Upholstered Furniture Factory”, which by the 1920s had become one of the leading makers of upholstered furniture in Denmark. It still exists, but today is only a shadow of its former self.

The second enterprise, which became the first wood manufacturer, “Karl Plejdrup” started as a subcontractor for the upholsterer, manufacturing wooden frames. Its present name is Salling Chair Factory and its speciality is oak chairs, but a major part of its turnover remains frames for upholsterers, especially for “Skipper”, now a leading manufacturer in upholstered furniture in Durup, and for a brother of the owner of “Skipper”, who has a furniture factory in another town of Salling.

A third enterprise, the second wood manufacturer (now called Doca), was started by Karlo Plejdrup, a nephew of Karl Plejdrup, in the buildings of a former slaughterhouse, which had been run by Karlo’s father. Karlo served an apprenticeship as a slaughterer, but he learnt the art of making furniture when his father sent him to work in his uncle’s factory when the demand for slaughtering was slack. When the slaughterhouse closed due to its small size and low technology, Karlo had both the buildings and the necessary skill to turn it into a furniture factory (today Doca specialises in pine furniture).

Magnus Olsen came later. Before he started his business as a carpenter and cabinet-maker in 1937, he had worked as a journeyman in Karl Plejdrup’s factory.



But he started in building and construction and it was only to compensate for the cyclical downswing during the Second World War that he gradually moved towards furniture production during a phase when he carried out a mixture of activities, including subcontracting for Durup Upholstered Furniture Factory. In the 1950s, he moved into manufacturing high-quality furniture for the American market.

At least two apprentices from Magnus Olsen have crowned their careers, typically including their periods as journeymen in another firm and a period as foremen in a third, by setting up a furniture firm in Durup or in another of Salling's tiny towns (Kristensen, 1990, p.149-150).

The fact that the new firm in an industrial district is most often established with the aid of an existing firm and is headed by a family member or trusted previous employee means that the firms form a socially integrated system (Brusco, 1982).

The role of the family in industrial districts is apparent in most of the literature and it is the strength of the family and extended family unit that facilitates the flexibility of production in the firm. In Carpi during the 1950s and early 1960s a trader entrepreneur became independent by commissioning orders from the home-workers - usually from his wife - before taking on his own firm employees (Solinas, 1982, p.342). In busy periods all family members will be called upon to assist with production - the firm relies on the

family, and when there is little work in other industries members of the family will return to work in the family firm. This interdependence at different periods of time shows the inter-twining relationship between the family and the firm in an industrial district and helps to explain the flexible nature of the firm.

Not all industrial districts have family based firms. A prime example is Silicon Valley where individuals rather than families are the cornerstone of the district - Castells and Hall note the 'culture of individualism' and found in their 1984 study of workers that 31 percent of the workers studied had never married and 15 percent were divorced (1994, pp.22-23). Nonetheless some of the features, outlined above in districts dominated by family-run firms are also apparent in Silicon Valley.

#### **3.4.7 Agricultural background**

Much attention, especially in the literature on the 'third Italy', is paid to the influence of the agrarian background of these regions on the development of industrial districts. The correlation between agrarian background and industrial districts is made clear in Amin's article 'The model of a small firm in Italy' - 'in 1951 agriculture was the principal source of employment in [central and north-eastern regions of Italy], but by 1971 manufacturing industry had become the principal source' (1989a, p.113).

Some writers emphasise not simply agricultural, but more precisely sharecropping, as a background to the emergence of industrial districts. According to Paci 'the development

of the small firm seems to be strongest where mezzadria (sharecropping), small holding, and renting of land was widespread' (Paci, 1980, as cited in Pezzini, 1989, p.226). This is supported by the fact that of all Italian regions, Emilia-Romagna (perhaps the most cited example of an area with industrial districts) was one of those in which sharecropping was most widely practised; in 1947, 'in the province of Modena, this type of contract covered 70 percent of the soil' (Brusco, 1982, p. 180).

Sharecropping is important because in a region where there are widespread traditions of self-employment 'it is reasonable to think that there should be less resistance to someone who became an entrepreneur' (Pezzini, 1989, p.226). Those people who were involved in sharecropping or rented land had experience of small farm entrepreneurship (Capecchi, 1989, p. 24), and thus had the basic knowledge and experience of being self employed. In the case of Emilia Romagna Capecchi notes that 'another significant factor is that the experiences of people in the countryside extended beyond cultivation or animal husbandry to include proto-industrial experience in hemp processing, weaving and straw braiding' (Capecchi, 1989, p.25). Although people in these regions were involved in agriculture, it was this very involvement which allowed them to become successful in manufacturing - they had experience at being self employed, entrepreneurship was an acceptable and usual activity among the community and some were already involved in manufacturing activities within agriculture.

In the 1950s and 1960s 'the traditional Emilian worker - homeworking during the winter, and then rice and fruit picking, labouring or odd-jobbing during the summer - was the principal source of low-cost labour in the early development of Carpi's knitwear industry' (Solinas, 1982, p.341). There remains a link between agriculture and industry in these districts. In Emilia-Romagna there is a 'growing tendency for workers and artisans who are employed in the towns to go to live in the countryside, where they engage in a certain amount of part-time farming' (Brusco, 1982, p.181). In addition a former peasant, or *mezzadro*, family often continues to work a piece of land in order to maintain a subsistence base by using only part of the workforce of the family (Pezzini, 1989, p. 226). An agricultural background can also be identified in industrial districts outside Italy; in the West Jutland area of Denmark industrial districts were formed in 'small railway towns, which formerly functioned as service centres for the neighbouring agricultural areas' (Kristensen, 1990, p.126), and in Spain, Fuenlabrada and the nearby towns were 'tiny agricultural communities' (Benton, 1990, p.66). Nonetheless there are regions which have been identified as industrial districts which do not have an agricultural background. Two prime examples of this are Stuttgart and the districts surrounding Barcelona. A community similar to that created by an agricultural background may emerge as many firms set up business in the same area at around the same time. Such a community will not have the historical roots and contacts but establishing new lives and businesses in the same area encourages ties between individuals and firms and creates a social group.

The agricultural background of these regions has created a history of communitarianism and entrepreneurship, as well as small family-run businesses. Thus rather than the agriculture itself being the important characteristic of the industrial district it is the community and social relations which it created and encouraged which are significant.

#### **3.4.8 The role of local government and artisanal associations**

A number of the characteristics discussed can be affected by the role of local government and artisanal associations. These institutions can provide an environment in which owners have regular face-to-face contact thus encouraging co-operation and innovation between firms, they can create and encourage the geographical concentration of firms and enhance the social milieu. The importance of these two institutions is clearest in the 'third Italy'. For example, in Modena the Confederazione Nazionale dell' Artigianato (CNA), the largest national confederation of artisanal firms, has 11 sector federations which provide accounting services, financial services, assistance in the creation of business service centres, and co-operatives and the development of property facilities. 'Membership of the CNA allows member firms to co-operate in the provision of collective services while remaining autonomous in areas of decision making and finances' (Best, 1990, p.211).

In Modena the municipal planning authorities developed industrial parks where artisans could buy small plots of land and premises. 'Municipal plots cost only 25 percent of private ones. Establishing premises in large-sized sheds enabled even small artisans to enjoy considerable economies of scale. As a result, the *covered area* cost on average 35

percent - sometimes 50 percent - less than similar areas built by individual firms on privately owned estates' (Brusco and Righi, 1989, p.410). This encouraged the development of new firms and the geographical concentration of such firms acted as an incentive for co-operation. The loan guarantee consortium, founded in Modena in 1974, is an artisan co-operative which guarantees the loans its members take out with ordinary credit institutions. It also negotiates the interest rate with the banks and as 'a normal rule the rate agreed upon is 1.5 percent lower than the going rate for similar type operations.... The credit co-operative bases its decisions first and foremost on the trustworthiness of the applicant, his professional skill and his ability to fulfil his obligations: in a word, his reputation within his work and social environment' (Brusco and Righi, 1989, pp.412-413).

The role of local government and business associations is not evident in all industrial districts. Even in the 'third Italy' Brusco (1989) distinguishes between industrial districts which grew up in the mid 1970s without external intervention and those in the 1980s where, as discussed above local government and artisinal associations played an important role. He argues that at the beginning of the 1980s industrial districts faced the problem of how 'social districts are to be endowed with the new technologies which are necessary to revive a process of creative growth' (Brusco, 1989, p.17). While large firms could use their hierarchical structure to create the consensus necessary to adapt to new technologies throughout the firm, it was difficult in an industrial district to 'move this huge mass of people - not just the dependent workers, but the whole competence of all

the people' (Brusco, 1989, p.17). Support in the form of real services rather than financial help was identified as a possible solution. This involved the funding of centres for sectoral market and design research and the development and adaptation of new technologies. The market cannot supply these services as the initial investment is quite high, and as the market consists of industry sub-sectors it is small. This constitutes market failure which results in public intervention. However 'public financing for these centres is limited in time, to a period of about five years; and the entrepreneurs are expected to pay for the services they receive' (Brusco and Righi, 1989, p.416).

It follows that there can be an important role for local government and artisanal associations in industrial districts but this is not essential; some industrial districts have grown independently of any external intervention and others have had different levels of intervention at different periods of their development. Section 4.3.3 will discuss whether industrial districts are fundamentally different according to the role of local government or artisanal associations and whether such institutions can actually create or just encourage the development and growth of industrial districts.

### **3.5 Critique of literature on industrial districts**

#### **3.5.1 Lack of theoretical rigour**

Much of the literature on industrial districts takes a case study approach whereby districts are identified and described and evidence is often anecdotal<sup>14</sup>. The primary aim of those

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<sup>14</sup> The contribution of researchers including Marshall, Storper and Scott, Markusen, Park and Schmitz to the literature of industrial districts in terms of analysis of aspects and characteristics of these districts is noted. Nonetheless much of the work remains case study based.

working in the field has been to identify everywhere that an industrial district exists. Thus there are numerous case studies of industrial districts all over the world. However no systematic tests are undertaken to identify such industrial districts and many of the regions identified as industrial districts are very different from each other. According to Courlet and Soulage (1995, p.292) 'through successive and ever wider elaborations, the concept of the industrial district has lost some of its theoretical rigour'.

Nadvi and Schmitz (1994, p.54) believe 'a degree of analytical rigour and conceptual clarity has to be brought to the model and its associated categories'. This can only start from a clear definition: 'Because the districts studied vary so dramatically in age, size and characteristics, no single definition of [an industrial district] has emerged that captures the essential traits present in diverse analysis' (Park and Markusen, 1995, p.82). To date maybe this has been an advantage as regions which are very different from the 'third Italy' have been studied. However for further theoretical development, there is now a need for greater precision. As discussed in chapter 1 economists have an important contribution to make in this regard.

Many different types of districts have become classified as industrial districts, from small towns to large regions, from manufacturers of high tech goods to craftsmen of furniture, from districts dominated by large firms to those populated by micro-firms, and they are located in both developing and industrialised economies throughout the world.



These districts could not possibly be all exactly the same and rather than bundling them all together and calling them industrial districts, our understanding of how industrial districts work and why they develop would be further enhanced by differentiating between the industrial districts which have been identified. Amin and Robins (1990a, p.186) argue that 'the significance of the new industrial agglomerations is overstated by the orthodoxy as a result of its tendency to collapse very diverse processes and areas into one category'. A taxonomy of industrial districts, as presented in chapter 5, will allow all of the regions identified as industrial districts to date to be included but facilitates and encourages identification of their differences.

Many of the first researchers of industrial districts were studying the regions in which they lived (as outlined in chapter 6). Rather than these researchers looking for something they discovered something. Having done so it is now up to the researchers of this topic in the 1990s to develop a technique, other than chance, of studying potential districts and determining whether they can be classified as an industrial district. In doing so lessons may be learnt from the types of techniques and methods used by Porter (1990) in identifying industrial clusters (see chapter 7).

The nub of this argument is that the existence of industrial districts has now been proven, this study aims to contribute to the explanation and analysing of the reasons for their success and how they function.

### **3.5.2 Identification of industrial districts does not necessarily imply a crisis in mass production**

Piore and Sabel (1984) provided the English speaking world with evidence of industrial districts in the 'third Italy'. The theoretical framework within which they placed these findings was the crisis of capitalism whereby 'existing institutions no longer secure a workable match between the production and the consumption of goods' and there is a drive towards new technological developments (pp.4-5). They present two separate strategy choices: mass production or craft production.

While the evidence from industrial districts in the 'third Italy' was used to show the success of craft based production, this does not necessarily imply that mass production is doomed to failure. Flexible forms of industrial organisation can exist alongside mass-production, they are not mutually exclusive. In their criticisms of industrial districts Amin and Robins (1990b, p.8) state clearly that they do not intend to

lose the baby along with the bathwater... the perspectives we are criticising do indeed identify dimensions and dynamics of structural change in the present period. The issue is, what weight should we give them? How significant are these new phenomena, and how are we to interpret them? Although important changes are certainly happening, there are real problems in suggesting that they represent a fundamental break with the past and the dawning of a wholly new era of accumulation.

The theoretical framework within which Piore and Sabel, and others, have presented the evidence of industrial districts has overstated their importance in relation to mass production. Rather than a sign that mass production will break up, industrial districts are another form along the continuum of industrial organisation.

### **3.5.3 Industrial districts are part of national and international economies**

The industrial district literature is primarily concerned with local and regional development but in many cases this primary concern has become a single concern. There is sparse mention of how these districts or regions connect in the global world. Amin and Thrift (1992, p.574) believe the literature has rather 'limited analytical power, most particularly because of a tendency to cling to a model which is locally based and which does not therefore recognise the importance of emerging global networks'. Schmitz agrees, saying the literature 'is strong on linkages internal to the cluster but weak on external linkages' (1995, p.556).

In many cases markets, suppliers, retailers and sometimes even sub-contractors which are external to the industrial district have a significant role to play in the development of the industrial district. In fact this is becoming a more common feature of all industrial districts. Amin and Robins (1990b, p.115) believe 'the local economy can only be seen as a node within a global economic framework'. While industrial district research may have been perceived as (and in some cases, particularly in early stages, was) promoting self contained regional development, close scrutiny of the industrial districts identified shows

this not to be the case. At very least every industrial district is dependent upon the national, or more often the global market. Local development interlinks with global development. Park and Markusen (1995) 'introduce the notion of the satellite industrial district, comprised of branch operations of non-locally based corporations, as an example of a rapidly growing industrial district distinct from Marshallian and Italianate forms'.

Scott and Storper (1992, p.16) state

on the one hand, the global economy may be seen as a mosaic of specialised regional production systems, each with its own dense system of intra-regional transactional arrangements and local labour market activities. On the other hand, this same mosaic is caught up within a world-wide web of inter-industrial linkages, investment flows, and population migrations.

In industrial district research, the main area of interest is the local economy but to study this appropriately attention must be paid to national and global linkages and influences. Most authors of case studies have done this; it is now time that the accepted list of characteristics of industrial districts was modified accordingly.

#### **3.5.4 Industrial districts are a temporary phenomena?**

Harrison (1994, p.102) quotes from private correspondence from Alejandro Portes ('the eminent Johns Hopkins University sociologist') who says 'perhaps then the story is that these socially embedded productive experiences *can* work and be viable for a while, but they cannot sustain themselves indefinitely against the logic of global capitalism. Either

they are taken over, become MNCs themselves, or are torn apart by demands that their social fabric can no longer accommodate'.

There are a number of different bases for an argument like this. Firstly, Harrison has observed in the 'third Italy' that 'economic power relations are changing, with a definite re-emergence of concentrated corporate control that threatens to replace - or at least to challenge the model of co-operative competition among small and medium-sized industrial enterprises' (Harrison, 1994, p.103). Secondly, as discussed in section 3.1.4.2, increasingly firms are relying on suppliers and sub-contractors located outside the industrial district. Thirdly, Camagni (as cited by Harrison, 1994) argues that the regions in north-eastern Italy *are* in fact no longer performing more successfully in international competition than the industrially mature northwest - the home of Fiat, Olivetti, and other giant multinational corporations.

On the other hand, it is interesting as Oakey (1985, p.113-114) reports, that

the great potential of high-technology industrial agglomerations, such as Silicon Valley, does not stem from agglomeration economies derived from a single industry such as cotton textiles or steel, but from the output of a highly skilled research and development and production workforce which can create and adapt to totally new technical innovations and production concepts. Thus it is less likely that these new agglomerations will suffer the problems of innovation stagnation and subsequent decline common to their historical predecessors.

It is important to note that the evidence above points to changing industrial districts, not necessarily to the end of industrial districts. The structure, function, organisation and success of this type of industrial agglomeration are changing in some cases. This may provide researchers with the possibility of developing paths of development for this type of industrial organisation rather than assuming its inevitable downfall.

Just as it was argued above that to declare industrial districts as a sign of the demise of mass-production was over-zealous, so too is the cry that industrial districts are dying off and are not longer worthy of our attention. Many industrial districts are at different stages of development, and while some may no longer be as successful, their organisation, early success, as well as how they are becoming more globalized, are nonetheless of interest to industrial economists. Industrial districts are by their nature dynamic and periods of change should be of particular interest to researchers.

How will industrial districts change? What characteristics will change? If they no longer constitute industrial districts, what are they? Will all industrial districts follow the same path? What is it that causes these changes? Research questions such as these provide plenty of scope for continued research in the area of industrial districts and while they are different to the questions which have dominated the literature to date, they are nonetheless interesting and in fact may broaden and theoretically strengthen the literature considerably.

### **3.6 Conclusion**

This chapter has provided the theoretical backdrop for further analysis of industrial districts, providing a literature review and analysing the characteristics of industrial districts studied. What is clear is that the topic of industrial districts has been deemed to be important and worthy of study by a large range of researchers and yet clear definitions, processes and frameworks for this research need to be identified. This thesis will attempt to fill some of the gaps in the literature. A two pronged approach will be undertaken, both theoretical and empirical. Chapter 4 and 5 will develop the theory of industrial districts, while Chapter 6 will investigate the existence of an industrial district in Ireland.

## **CHAPTER 4: INDUSTRIAL DISTRICTS COMPARED**

Chapter 3 has outlined what an industrial district is and how researchers identify this type of agglomeration. This chapter tests the hypothesis that all industrial districts are not the same and investigates how they differ. The evidence and discussion in this chapter show the need for the taxonomy of industrial districts which is developed in chapter 5.

The characteristics most commonly associated with industrial districts were outlined in chapter 3, however all regions which have been classified as industrial districts do not exhibit all of these characteristics. Section 4.1 analyses some characteristics which are not common to all industrial districts. Section 4.2 addresses the question: should regions which do not have all of the characteristics of an industrial district be classified as something other than an industrial district? Finally, section 4.3 investigates more subtle differences among industrial districts in the literature.

### **4.1 The characteristics which are not common to all industrial districts**

A comparison of case-studies of industrial districts on the basis of the characteristics most often associated with industrial districts (those outlined in chapter 3) show that not all industrial districts are dominated by small firms, have a social milieu or have a high innovative capacity. The results of this comparison are shown in table 4.1.



<i>Industrial district</i>	<i>Author(s)</i>	<i>Concentration<sup>2</sup></i>	<i>Small firms</i>	<i>Competition between firms</i>	<i>Co-operation between firms</i>	<i>Social Milieu</i>	<i>Innovative capacity</i>
Sinos Valley	Schmitz (1993)	X	Not all	X	X	X	?
Emilia Romagna	Brusco (1982)	X	X	X	X	X	?
Silicon Valley	Castells & Hall (1994)	X	X	X	X		X
Baden Württemberg	Schmitz(1990), Mueller & Loveridge (1995), Cooke & Morgan (1990)	X	No	X	??	?	X
Vallés Oriental	Benton (1990)	X	X	X	X	?	?
Castellón	Benton (1990)	X	X	X	X	X	X
Limmasol	Murray (1990)	X	X	X	X	X	?
Carpi	Bigarelli & Crestanello (1994)	X	X	X	X	X	X
Salling - West Jutland	Kristensen (1990)	X	X	X	X	?	X
Herning-Ikast, West Jutland	Kristensen (1990)	X	X	X	X	?	X
Pakistan-Guranwala & Karachi	Nadvi (1994)	X	X	X	X	X	?
Engineering Valley, Oslo	Isaksen (1994)	X	Not all	X	X	?	X
Kumasi, Ghana	Dawson (1992)	X	X	X	X	?	?
Santiago, Mexico	Wilson (1992)	X	X	X	X	X	?
Mutare, Zimbabwe & Nakuru, Kenya	Sverisson (1992)	X	X	X	X	?	?
Lyons	Lorenz (1989)	X	No	X	X	?	?

**Key:** X - the characteristic exists in the specified industrial district.

? - this characteristic is not mentioned in the case-study analysed.

?? - there is disagreement among the authors regarding the existence of this characteristic.

<sup>1</sup> The characteristics of agricultural background and the significance of the family have been omitted. The reasons for this is as discussed in chapter 3; while these features may have contributed to the development and indeed functioning of industrial districts, the effects are contained in the characteristics of inter-firm relations and social milieu and do not require separate mention.

<sup>2</sup> Geographic and sectoral concentration

#### 4.1.1 Size of firms

Most industrial districts studied are dominated by micro enterprises employing less than ten people. In fact the evidence from research on industrial districts has often been used to support the view that small firms are of vital importance in national economies. However not all industrial districts are dominated by these small firms; for example, only 14.6 percent of enterprises in Stuttgart (in Baden Württemberg in Germany) employed less than 100 workers in 1988 (Schmitz, 1990, pp.93-94).

The arguments against over-emphasis on the size of firms in an industrial district have been expressed in chapter 3 (pp.61-63). Of primary concern here is whether the size of the firms which constitute an industrial district affect the way it functions: is an industrial district which is not dominated by small firms fundamentally different to others which are? If the answer is yes then it is apparent that industrial districts need to be distinguished according to the relative size of firms.

Rather than the size of firms per se being important, it is the nature of relations between firms which are most important in the context of an industrial district. The relative size of firms influences the existence of power and trust between firms and consequently the likelihood and nature of inter-firm co-operation. Lorenz (1988, p.197) defines trusting behaviour as action that '(1) increases one's vulnerability to another whose behaviour is not under one's control, and (2) takes place in a situation where the penalty suffered if the trust is abused would lead one to regret the action'. The opposite is the exploitation of power. The exploitation of power and trust are set as opposites in this situation, as a firm which

abuses its dominance over another firm will not regain the trust of this firm or others in the district. The reputation of the firm is damaged. In industrial districts dominated by small firms no single firm has power; the potential to exploit power is absent. Even firms that make up the final product are dependent upon those who supply the parts<sup>15</sup>.

The nature of co-operation can be quite different according to the firms involved. It can comprise: a dominant firm instructing two suppliers to co-operate to develop a better input; a dominant firm and a supplier drawing up an agreement to work together for a specified period; two suppliers putting in a bid for a contract; or a producer and supplier discussing and planning how to produce the best final product. The first two relations involve power as a factor while the latter two are more representative of inter-firm co-operation in an industrial district where trust between firms encourages co-operation. That is not to say that in some districts there will not be evidence of the former categories.

If one firm, or group of firms, is relatively larger than others, power is more likely to be an issue than trust. Stuttgart is an example of an industrial district where there are a number of large firms. There has been much contradictory research on inter-firm relations in Baden Württemberg, particularly with respect to co-operation (Herrigel, 1993; Cooke, Morgan and Price, 1993; Schmitz, 1990). It is beyond the scope of this work to contribute to this specific debate regarding Baden Württemberg, however some points can be made regarding the potential effects of dominant, larger producers in industrial districts in general.

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<sup>15</sup> In such a case the power that exists may be Foucauldian power which is external to the firm and internal to the district. For a fuller discussion of this issue refer to McGovern and Mottiar, 1996.

Schmitz states that 'the car and electrical/electronics industries in the Stuttgart region consist of intermeshing webs woven by four large spiders: Daimler Benz (Mercedes), Bosch, SEL and to a lesser extent, IBM' (1990, p. 99). Mueller and Loveridge state that in interviews with senior personnel executives of Bosch Group 'all... have stressed their world sourcing policy and desire to decrease their dependency on German sources... [Furthermore] the trend appears to be that manufacturers tend to place their future on cooperative relationships with the large first-tier "system suppliers", with most of the competitive pressure being shifted on to the small and medium-sized firm' (1995, p.573). These points indicate a hierarchical structure in which the large firms shape the environment and relations between firms, sub-contractors from outside of Germany are favoured and large sub-contractors are preferred. This is quite different from the "textbook" industrial district (as described in chapter 3) where firms are interdependent: 'the single elements of the system flourish as a result of their interdependence; not because any one of them, however competent, is capable of playing on the stage alone' (Amin, 1989a, pp. 119-120).

Given the hierarchical nature of this type of industrial district the co-operation is different from co-operation in the 'third Italy' for example. This co-operation is most likely to be formal and often determined by the large final producer - this is reflected in the fact that

at an operational level the Bosch system is renowned among suppliers and customers for its degree of standardization....In its operational relationships with suppliers and customers the Group's insistence on Bosch standards has often provided a source of irritation and conflict, not least because of the additional costs involved in interfacing with Bosch systems (Mueller and Loveridge, 1995 p.565).

Can Stuttgart be classified as an industrial district even though it has a number of large firms? Rather than the absolute size of firms in an industrial district being important, what is more relevant is the relative size of firms as this gives us insight into the levels of power, dominance and trust which affect inter-firm relations. Although it is clear that this region of Baden Württemberg does have a number of large firms, further investigation is required to conclusively study the relations between the firms in this district. Cho (1994, p.117) notes that 'as the role of small firms is upgraded, large-small firm relationships become more associational and collaborative in nature, although much of their hierarchical character remains'. Thus relations between large and small firms can change over time.

It is clear however that even if such a region is classified as an industrial district it differs from the typical 'third Italy' model (what we will later call the prototype industrial district) and any taxonomy must account for this fact.

#### **4.1.2 Type of Milieu**

A social milieu or industrial atmosphere as outlined originally by Marshall (1898) and subsequently by most of the researchers in this area, is an important foundation for any industrial district. It is this social milieu which creates trust between all of the actors in an industrial district (individuals and firms), facilitates the quick and easy flow of information and ideas and allows inter-firm co-operation.

Such social milieux became inextricably associated with Italy<sup>16</sup>. However Scott (1988a and b) and Storper and Scott (1988) introduced the idea that similar conditions could be created by a professional milieu. A professional milieu is created by corporate managers and other office staff being members of a 'professional community'. The office staff often have the same educational background and have been colleagues in some pioneer firms or incubator organisations in the area. The introduction of the idea of a professional milieu allowed many regions which were similar to industrial districts in the 'third Italy' but lacked a social milieu to be classified as industrial districts.

This professional milieu is similar to a social milieu but there are some notable differences.

As the name implies, a professional community only includes those who are members of that particular profession. For example in Silicon Valley the engineers constitute a professional community and engage in face-to-face discussion of developments in the industry, socialise together and initiate and develop new ideas as a group. However employees who work in the service industries in the district, or on the production line, may either not have a "professional community" or if they do it operates separately from the engineers' professional community. Whereas a social milieu will tend to have an all encompassing effect, a professional milieu may result in a number of different professional communities within a geographically defined area.

A social milieu is a consequence of a history which most often pre-dates the oldest member of the community; by comparison a professional milieu has a shorter life-span. By its

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<sup>16</sup> This is despite the fact that Marshall originally studied industrial districts in England.

nature a professional community is made up of individuals who have often trained or worked together in the past; it is the individuals rather than their history or name which makes them part of this community. As this group of individuals retire and leave the profession they do not necessarily leave behind a structure or history within which others will operate; many of the new entrants into the professional community will have had little long-term contact with those departing. By comparison a social milieu re-asserts itself with new generations via history, family connections and first hand knowledge at an early age. It is these family and historical connections which strengthen the long-term consistency and security of a social milieu. This is not to say that a professional milieu cannot survive in the long-term, but that the relationships which it encourages and facilitates do not carry the same weight and do not necessarily have the same life-span as that of a social milieu.

The environment that a professional milieu creates is the same as that created by a social milieu. Thus either type of milieu can exist in an industrial district. However, the fact that the milieux differ in terms of lifespan and inclusiveness mean that industrial districts with social or professional milieux should be distinguished from each other.

#### **4.1.3 Innovative Capacity**

It is the combination of economic, social and institutional arrangements in industrial districts which provide conditions for innovative capabilities among other things (Späth, 1992, p.290). Thus different combinations of these arrangements result in differing innovative capabilities. Asheim (1994, p.101) categorises endogenous technological

capability-building according to local government intervention (or a strong local co-operative environment) and the level of internal resources and competence of firms.

Table 4.2: Different models of industrial districts with respect to technological capability-building

Internal resources & competence	Strong local co-operative environment	
	<i>Industrial district Mark I</i>	<i>Industrial district Mark II</i>
<i>Low</i>	I Low Local production systems with a <i>low</i> potential for technological capability-building (Ex. Gnosjö, Sweden)	II Some Local production systems with <i>some</i> potential for technological capability-building (ex. Carpi and Reggio-Emilia in Emilia-Romagna, Italy)
<i>High</i>	III Good Local production systems with a <i>good</i> potential for technological capability-building (Ex. Jaeren, Norway; Sassuolo, Emilia-Romagna, Italy)	IV High Local production systems with a <i>high</i> potential for technological capability-building (Ex. Modena, Emilia-Romagna, Italy; Baden-Württemberg, Germany)

Source: Asheim, 1994, p.112

The industrial districts Mark I have no government intervention while the government does play a role in the Mark II type. The Low internal resources and competence category includes those firms which have command of artisanal competence or informal knowledge acquired through working-life experience. By contrast those with a high level of internal



resources and competence have command of professional competence through the employment of engineers or other university-trained staff, i.e. in possession of formal knowledge (Asheim, 1994). The necessity of local government intervention reflects the fact that 'in large firms, ...the hierarchical decision- making process makes it relatively easy to introduce new technology' (Asheim, 1994, p.104). By contrast small firms in industrial districts need assistance, often in the form of real services, in order to remain innovative and competitive.

Table 4.2 classifies industrial districts as having low, some, good or high potential for technological capability-building (TCB). In cell I the low potential reflects a relatively low level of internal resources and competence, the districts in cell II have similar difficulties but local government intervention enhances the potential for TCB. The industrial districts represented in cells III and IV have the benefit of a high level of resources and internal professional competence, and in the case of type IV intervention improves the potential for TCB further.

Table 4.2 shows that industrial districts can have a wide variety of technological capabilities. Industrial districts in which firms have low levels of internal resources and competence are more likely to 'adopt develop or imitate mainly *incremental* innovations. To be able to adopt, adapt and develop *radical* innovations firms must have access to intrafirm-based professional technological competence' (Asheim, 1994, p.104). It is noted however that 'while *radical* innovations normally lead to more incremental innovations, it is also possible that... "learning-by-doing" and/or "learning-by-using" processes of

*incremental* innovations can also, in exceptional cases, result in *radical* innovations' (Bramanti and Senn, 1991, p.101).

Industrial districts are usually described as consisting of firms which are highly innovative, although as far back as 1986 Brusco, observing industrial districts in the 'third Italy' remarked that 'some are more developed and capable of innovations, others are more backward, with low wages, without steady relations with foreign markets and exposed to the competition of the newly industrialized countries' (p.195). This table shows that while some industrial districts are highly innovative not all have equal potential for technological capability building and the nature of innovation - incremental or radical - differs according to the internal structure of the firm and local government intervention.

#### **4.2 Should those local economies which do not strictly comply with the characteristics outlined in chapter 3 be classified as industrial district?**

There is not a tightly defined model or definition of an industrial district. Instead the list of characteristics outlined in chapter 3 provides a framework for the researcher trying to identify an industrial district. Rather than the characteristics themselves being important, it is the environment or relations which they create which are of primary concern.

The actual size of firms is irrelevant in an industrial district; what is important is the relative size of firms as this can affect inter-firm relations.

More important than the source or type of milieu, is the fact that it results in an environment in which information flows freely and the prospect of co-operation between firms is enhanced. However the type of milieu can affect its long-term sustainability and inclusiveness and thus the environment of the district.

A district which has a high potential for technological capability building can function in many other ways just the same as one which is significantly less innovative. They are similar forms of industrial organisation, although their capacity for innovation and their long-term sustainability may be different. Not all areas which are classified as industrial districts are the same, and the differences should be made clear, but they are related and belong to the industrial district family.

#### **4.3 Additional ways of differentiating between industrial districts**

The last section, 4.2, differentiated between industrial districts on the basis of a pre-determined list of characteristics. This type of narrow and restricted analysis is not sufficient to adequately categorise industrial districts, although it does provide some distinguishing features. A careful reading of the literature combined with delving below the list of characteristics results in further factors which serve to distinguish between industrial districts. While at the outset firms displaying a specific list of characteristics may appear the same, deeper investigation in some cases shows distinctions.

The additional ways of differentiating between industrial districts which will be studied are:

- the nature of horizontal co-operation between firms
- the location of suppliers
- the existence of external intervention
- micro and meso characteristics

This approach both broadens and deepens the framework within which industrial districts are studied by adding new factors of interest and delving deeper into those already identified.

#### **4.3.1 The nature of horizontal co-operation - formal versus informal**

Almost all industrial districts in the literature exhibit inter-firm co-operation. However, closer investigation exhibits differences in terms of how this co-operation functions and is maintained.

Co-operation between firms can be formal or informal. This distinction, developed by the author, is new to the industrial district literature, but was subsequently discovered in work on industrial networks (Easton and Araujo, 1992). Formal co-operation involves an agreement to co-operate in a particular activity and it will often be formalised through legal contracts or binding agreements. Such activities include sub-contracting, supplying goods or services or jointly bidding for an order. An example of formal co-operation is in Cyprus where the furniture firms in Limassol, with the support of the Cyprus Development Bank, 'agreed to open a joint retail shop for which they would produce newly designed products

on a specialized basis' (Murray, 1990, p.266). Another example is that described on p.68 where firms in Salling received government financing to establish a joint export agency.

Informal co-operation is more sporadic and unorganised and is often a consequence of personal relations. It may include lending machinery and inputs to a fellow manufacturer, jointly agreeing to purchase a large order of inputs on one occasion, or collecting a sub-contractor's products. This type of co-operation is most often a consequence of personal, familial and social contacts and is enhanced by spatial proximity. Informal co-operation occurs in the Santiago knitting industry where owners provided 'assistance at times of emergency especially when machines broke down or when insufficient time remained for a single workshop to complete an order; the pooling of information such as warning of a government official's impending visit or blacklisting a "troublesome" worker; and reciprocities with respect to trying out new machinery' (Wilson, 1992, p.61). One executive in Silicon Valley described how technicians in competing factories co-operated: 'When the gas line stopped at 2 a.m., you just called your buddies at the company across the street and shared their gas. Or if the epi-reactor was down, your friend did your chips on his second shift and you helped him out the next week with his ion implants. This all happened without any legal paperwork' (Saxenian, 1994, p.44).

Firms can engage in both formal and informal co-operation simultaneously. There can also be an almost natural progression for some firms from formal to informal co-operation. As the individuals concerned begin to know each other better and establish a good reputation they are less likely to require legal documents as their word of agreement will be viewed as

binding enough. Formal co-operation between firms establishes a link which often lasts longer than the formal arrangement to co-operate; personal contact and knowledge of the work of others may encourage further contact and co-operation, some of which may be informal.

Does it make a difference if co-operation between firms is primarily formal or informal?

The location of a firm which relies on informal relations and thus frequent face-to-face contact with counterparts is extremely important for the future success of the business. By comparison, what is most important to an owner/manager who has formal relations with his/her colleagues is the existence of adequate channels of communication so that relations with suppliers, customers and colleagues can be maintained. Thus the relative importance of formal and informal relations between firms affects the importance of location for firms.

Informal relations between firms can result in deeper and stronger associations in the long-term. They comprise two tiers, business and personal (as compared to formal relations which most often just involve business). This constitutes more than a business arrangement as the individuals involved are often friends or relatives rather than simply suppliers, sub-contractors or customers. In such cases breaking an agreement not only jeopardises a business relationship, it also affects friendships or families: 'since both letting others know about one's personal, moral and professional characteristics, and getting to know the characteristics of others involves some cost, it is obvious that when two or more agents have formed a relation of personal trust, this leads them to deal as much as possible with each other' (Dei Ottati, 1994, p.534). The fact that business and social relations overlap

means that personal reputations, friendships and trust transcend the need for formal agreements and often informal relations among owners and employees develop. The trust and friendship and time that informal relations require nurture and strengthen the relations between firms and enhance their long-term viability.

The literature on industrial districts lays much emphasis on the fact that firms co-operate; what this section has done is to look beyond the obvious, to find that this co-operation can be either formal or informal (or both). Whether inter-firm relations are formal or informal affects the location of firms, and the long-term strength and sustainability of relations between firms. It also reflects the embeddedness of firms so industrial districts which are dominated by each type of relations should be distinguished from each other.

#### **4.3.2 Internal vs external supply**

While some industrial districts consist of firms which supply and support the main industry, there are others which are dependent on firms that are not from the district to supply at least some inputs, such as machinery, components and services. It is also possible for industrial districts to have internal supply and support firms in one period and subsequently rely on external sources and vice-versa.

In a number of industrial districts all, or almost all, stages of production are contained within the district. For example in the Sinos Valley in Brazil there are 480 firms in the footwear industry but there are also 135 in the tanning industry, 26 in the rubber industry and 710 service rendering workshops. Specialised producer services include export and

forwarding agents, freelance designers, consultants and transport firms (Schmitz, 1993, pp.5-6). Specialisation among firms means that each of the stages of production are internalised within the district rather than within individual firms.

This description of a self-contained industrial district is not representative of all industrial districts. Kristensen (1990, p.155) notes that 'since the 1960s, semi-finished goods and standardised components have increasingly been produced outside Denmark'. 'The more labour intensive operations such as sewing have now been sub-contracted out to low wage countries, mainly in eastern Europe. The activities retained in Herning-Ikast are the more skilled and those related to information and intelligence about markets and trends in fashion' (Dunford and Hudson, 1996, p.76). Carpi is another example of an industrial district which used to have internal supply but in the 1980s there has been a move towards using sub-contractors located outside the district (Bigarelli and Crestanello, 1994). It is interesting that in both of these cases it is the more skilled activities which have been retained in the district.

Whether supply and support firms are internal or external affects the way an industrial district functions. Relations between firms within an industrial district bear hallmarks of trust and reflect a social and/or professional milieu. If supplier firms are located elsewhere it may be more difficult to maintain such relations. In such cases the industrial district will exhibit characteristics of co-operation and competition between horizontal competitors but vertical co-operation may be less evident.



In addition, industrial districts are often rated by researchers and policy makers according to the proportion of national output, exports or GNP which they represent (for example Kristensen, 1990; Brusco, 1982). A district which has a number of supplier firms will clearly fare better in terms of added value, contribution to GNP, output, and possibly, number of firms and employment. The greater the reliance on internal suppliers in an industrial district, the greater its national economic contribution.

An internal supply industrial district may secure the long-term future of an industrial district in that the suppliers play a role in the development of new products and processes. The joint expertise of the supplier and manufacturer of the final product enhances the likelihood of continually meeting the customers' requirements in terms of design and quality. In some cases the products of the supplier companies are also sold outside the district to other industries, so that in times of recession when there is reduced demand for the main product of the district these companies may maintain at least minimal levels of economic activity in the district. As Marshall states 'a district which is dependent chiefly on one industry is liable to extreme depression, in case of a falling-off in the demand for its produce, or of a failure in the supply of the raw material which it uses' (1898, p.352).

#### **4.3.3 External intervention**

Brusco (1989) identifies two types of Italian industrial districts - Mark I and Mark II. Industrial districts Mark I are those which grew up in the mid-1970s without external government intervention while the development of Mark II industrial districts was assisted

by government intervention in response to the emergence of new markets and technologies in the early 1980s.

This distinction between types of industrial districts remains important in the Italian context and can also be useful when studying industrial districts elsewhere, although to make it more generally applicable we read any intervention for government intervention. This facilitates the inclusion of Silicon Valley for example, which was virtually created by one individual, Fredrick Terman, who leased university land to firms on very advantageous terms. His actions were similar to those of the municipal government in Modena which established an industrial park for small firms and assisted in the construction of suitable buildings (Best, 1990, pp.212-213).

The extent of differences between Mark I and Mark II industrial districts depends upon the type of intervention. In the case of Silicon Valley and Modena making land available at relatively cheap rates resulted in the location of many firms close together; this type of intervention can result in the birth of an industrial district. By comparison the establishment of a real services centre which provides services such as the translation of tenders advertised in foreign countries, the provision of information regarding the technical standards enforced by law in various foreign countries for a set of producers, or the provision of testing facilities for raw materials used (Schmitz & Musyck, 1994, p.897) facilitates the development or growth of an industrial district; the firms are already located in close proximity to each other and have some level of relations with each other and the local community.

It can be argued that acts of intervention can often only affect aspects of the industrial district and in many ways facilitate rather than create. For example in West Jutland, Denmark, a government policy of giving funding to companies which worked together to develop export promotion units succeeded in encouraging co-operation between firms but when the funding stopped these firms returned to their competitive relations. In this case the intervention temporarily over-turned the usual activities of the firms. Brusco and Righi's (1989, p.421) analysis of the role of local government in Modena notes that 'local authority initiatives can have a decisive role only rarely, and then only if they are carried out in an area which has intrinsic growth potential'. By contrast Cooke's (1996) analysis of industrial districts in Emilia-Romagna, Baden-Württemberg, Denmark, Wales and Austria show that 'co-operation can be encouraged by policy action' (p.11) and he describes the successful Danish Network Programme where 'there was little tradition of inter-firm co-operation amongst SMEs, [but] a programme to foster business networking has been successfully designed and implemented' (p.vii).

As discussed on pp.104-105 government or external intervention can assist the potential for technological capability-building in industrial districts. In the case of two districts with the same level of internal resources and competence, as long as the assistance is appropriate, the one which also has external assistance has a higher potential for innovation.

#### **4.3.4 Micro and meso characteristics**

The 'textbook' type of industrial district (most like those in the 'third Italy') is one which has a high growth rate and industrial success due to high levels of innovation, quality and

use of flexible methods of production. There has however been debate about whether this “high road” of development is the only picture or whether in fact some industrial districts consist of firms which take the “low road” - seeking competitiveness through low labour costs and a deregulated labor market environment (Anonymous, 1992, p.46).

The literature on industrial districts is often associated with flexible specialisation methods of production; some even call industrial districts the small firm variant of flexible specialisation (Asheim 1992, p.52; Brusco, 1986, pp.186-187), and much of this work concentrates upon production methods and the organisation of work. This is despite the fact that there is a noticeable lack of investigation into the internal operations of firms in the industrial district literature.

The flexible specialisation argument is that the firms in an industrial district rely upon their flexibility to compete with larger competitors. This flexibility can be achieved by innovative production methods and the flexible use of labour. These small firms do not operate mass production techniques and rather than individuals having specific jobs, each has a role in the whole process. The innovative process incorporates the owner and all employees<sup>17</sup>, and incremental changes are made continually in order to improve the quality of the product. The flexibility of the work force is enhanced by the use of family members. It is this picture of an industrial district as a group of firms in which quality and innovation are the key to

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<sup>17</sup> It is notable that while innovation is undertaken within firms the diffusion of innovation occurs within the district, outside individual firms.

success and employees are recognised as holding this key which is closest to the theory of flexible specialisation.

The “low road” consists of firms ‘seeking competitiveness through low labour cost, and a deregulated labour market environment. It is believed that cost-cutting will boost productivity and profits, and create new employment. Institutions and rules aimed at regulating competition are seen as mere straightjackets, and should be kept to a minimum’ (Sengenberger and Pyke, 1991, p.12). Often there is a black or informal economy operating.

Schmitz (1995, pp.541-542) notes

the reality often cuts across the distinction [of “high” versus “low road”]: some clusters share aspects of both growth paths, notably innovation and cheap labour, often within the same firms which have embarked on the innovation/quality path and others which rely entirely on using the cheapest workers and materials. We found no example in the reviewed material of a cluster living up entirely to the “high road” idea, but some fall squarely into the “low road” category. Most seem to show some aspects of both.

This is exhibited by Wilson’s (1992, p.61-62) description of the differences between large enterprises, small workshops and an intermediary group of firms in Santiago (Mexico) which

came to differ markedly in terms of rate of technological innovation, productivity, quality of product and market supplied...[In addition] different labour relation

regimes emerged [whereby] worker action forced large enterprises to offer minimum wages and social security [while] in the smallest workshops wages remained low but the relaxed working atmosphere is seen as a compensation, ...[and in the intermediary group] labour relations are most explosive; there, management tends to be more highly authoritarian as owners demand both quantity and quality from a labour force not paid minimum wages.

Nadvi (1992, p.1) states that industrial districts are

bifurcated into two distinct yet interlinked components. The first, at the micro level so to say, deals with the system of production organization within the firm. The second component, at the meso... level deals with the links between firms, the role of the community in enforcing such ties and the functions of the state and other institutions in support of the district.

The “high road” is associated with factors internal to the firm - micro characteristics - such as production techniques, work practices and innovation as well as meso characteristics internal to the district rather than the firm. The districts which are classified as taking the “low road” do not have these firm specific characteristics but what makes them industrial districts is the fact that they exhibit meso characteristics such as strong inter-firm relations and a social milieu. This facilitates a distinction between types of industrial districts - those that have micro and meso characteristics (or take the “high road”) and those that have only meso characteristics or take the “low road”.

The reason why the terms micro and meso have been introduced is to keep in context with the rest of this chapter which has studied the characteristics of industrial districts - these characteristics can easily be divided into micro and meso. High and low road refers to ways of competing or development paths, micro and meso refer to characteristics of an industrial district which are of primary concern in this research.

Is the issue of the production process within firms so central to an industrial district that in fact those that take what can be called the "low road" should not be classified as industrial districts? While an important aspect of the firms' activities, the methods of production are unlikely to radically alter the other characteristics most often associated with an industrial district, primarily co-operation between firms and the existence of a social or professional milieu. Therefore a district in which firms pursue flexible methods of production and one in which they do not can both be industrial districts although clearly they need to be distinguished from each other. They need to be distinguished as the way they produce, levels of innovation, the types of products and the type of employment offered will all differ.

#### **4.4 Conclusions**

This section has pin-pointed a number of issues which not only serve to distinguish between industrial districts, but also represent a method of deeply probing and dis-aggregating the characteristics which have become firmly attached to almost all research in this area. This chapter has shown that all industrial districts are not the same. They differ according to the:

- size of firms
- type of milieu
- potential for technological capability building
- type of horizontal co-operation
- location of suppliers
- existence of external intervention
- existence of micro and/or meso characteristics

This provides a new framework within which industrial districts can be compared. The next step is to formulate these findings into a structured and coherent taxonomy and this is undertaken in chapter 5.



## CHAPTER 5: A TAXONOMY OF INDUSTRIAL DISTRICTS

The purpose of this chapter is to develop a taxonomy of industrial districts. As chapter 4 has shown that all regions which have been classified as industrial districts do not have the same characteristics, it is appropriate to develop categories of different types of industrial district. This is an inductive approach which uses the empirical evidence in the literature to develop a taxonomy. Chapter 3 surveyed the literature on industrial districts, chapter 4 then focused on the ways that the empirical evidence in some cases differed from the "textbook" type described in the former chapter. The taxonomy builds upon these blocks and uses the issues raised in chapter 4 to suggest different categories of industrial districts.

There is some evidence of this type of work in the literature to date. Langlois and Robertson (1995), distinguish different organisational forms, and within this framework they differentiate between 'third Italian' and Marshallian industrial districts. Scott (1988a) introduces new industrial spaces which are compared with industrial districts, the primary difference being the existence of flexible specialisation and professional milieu. Storper and Harrison (1991) differentiate between regional production systems on the basis of input-output structure, structure of governance and territoriality. While linked to the industrial district literature this does not constitute a taxonomy of industrial districts but rather a typology of industrial agglomerations. The most comprehensive attempt to develop a taxonomy of industrial districts appears in the work of Markusen (1996), Park and Markusen (1995), and Park (1996). They differentiate between types of industrial districts according to the level of internal and external activity and the role of government. They are

investigating 'the extent to which the NID [new industrial district] model could explain the durability and flourishing of regional economies in the United States, Japan, Korea and Brazil as adequately as it appeared to do so in the Third Italy' (Markusen, 1996, p.295). They concluded that new models of industrial district, which they developed, were more appropriate - 'these models exhibit greater propensities for networking across district lines, rather than within, and a much greater tendency to be exogenously driven and thus focused on external policy issues than do NIDs' (Markusen, 1996, p.294). Park (1996) outlines the nine types of district which they have developed; they can be summarised as follows:

Type 1: Extensive local suppliers' and customers' networks and only limited nonlocal networks. Mainly small firms which are locally embedded forming a typical Marshallian industrial district

Type 2 & 3 are 'hub and spoke' industrial districts. Type 2 has extensive local suppliers' linkages and nonlocal customers' linkages while type 3 has extensive nonlocal suppliers' linkages and local customers' linkages. The transactions between hubs and local small firms are somewhat hierarchical.

Type 4 have extensive nonlocal suppliers' and customers' networks with only limited local networks. Called a 'satellite' industrial district, it is most commonly found in developing countries or the peripheral regions of industrialised countries.

Types 5 and 6 are 'advanced hub and spoke'. With advances in sub-contracting and interfirm relations in the district, extensive local customers' linkages in type 5 and extensive local suppliers' linkages in type 6 develop.

Types 7 and 8 are 'advanced satellite' industrial districts which evolve from the satellite industrial district (type 4) as local networks and embeddedness develop.

Type 9 is a 'pioneering high-technology' industry district. Complex extensive local and nonlocal networks connect suppliers and customers.

The problem with this taxonomy lies in what is actually being described. The definition of an industrial district has been seriously strained to incorporate all of these factors. Rather than industrial districts, each of these new models are types of agglomeration, that is not to say that some of them do not also fall into the category of industrial district. Primary features of an industrial districts are that there is a social milieu and embeddedness. In the 'satellite' type of industrial district 'its most conspicuous feature is the absence of any connections or networks within the region and the predominance of links to the parent corporation and other branch plants elsewhere' (Markusen, 1996, p.304); in the hub-and-spoke districts 'markedly lacking is the cooperation among competitor firms to share risk, stabilize the market, and share innovation. Strategic alliances on the part of the larger firms are more apt to be forged with partners outside the region' (Markusen, 1996, p.303). As argued elsewhere in this thesis the definition of an industrial district does not have to exclude the existence of large firms, nor does it necessarily exclude those districts where

some firms sell their products outside the district. However to be an industrial district, the existence of a social milieu, the flow of information and innovation and the importance of reciprocity, trust and co-operation cannot all be omitted. More refined and detailed descriptions of each category may involve some of these characteristics which are currently omitted, thus making them more like industrial districts. Otherwise they would be more aptly described as types of industrial agglomeration. Markusen herself may have identified this as an issue, as although in the abstract she says that her paper identifies three additional types of industrial districts, throughout her article she refers to types of 'sticky places' (1996, eg. p.304, 306). She defines sticky places as those 'which sustain their attractiveness to both capital and labour' (1996, p.293).

The work of Park and Markusen in developing a taxonomy on types of industrial agglomeration is similar in aim to that of this thesis. Here, however, a more rigorous (or restrictive) definition of industrial district is adopted which would exclude most of the types of agglomeration that they classify as industrial districts.

The taxonomy presented in this chapter concentrates on industrial districts alone and relates to a number of operational and descriptive factors. Section 5.1 will show how using the taxonomy will require a different approach on the part of researchers. Section 5.2 presents the taxonomy, followed in section 5.3 by detailed comparison of these new categories of industrial district. Section 5.4 tests the taxonomy by attempting to categorise a number of industrial districts identified in the literature.

### **5.1 Using the taxonomy requires researchers to take a different approach**

Traditionally researchers have concluded that if a region is dominated by small firms, has a social milieu, is innovative and exhibits strong inter-firm relations, it is an industrial district. To use the taxonomy and identify what type of industrial district has been discovered, more detailed issues such as the relative size of the firms, the type of milieu, the level of innovation and the nature of co-operation must be investigated. The table below shows the additional areas of concern for the researcher who wishes to classify an industrial district. No empirical study to date answers all of these questions; to study industrial districts within this framework necessitates a more detailed and structured approach by the researcher.

**Table 5.1: A comparison of the traditional method of investigating the existence of an industrial district, and the information required to use the taxonomy developed in this chapter.**

<b>To ascertain if a district is an industrial district researchers have asked the following questions:</b>	<b>To use the taxonomy and determine what <u>type</u> of industrial district it is, the following <u>supplementary</u> questions need to be asked:</b>
Is there geographical and sectoral concentration of firms?	
Are firms small?	What is the relative size of firms in the district? Does one firm dominate?
Is there competition and co-operation between firms?	Is co-operation formal or informal?
Is there a social milieu?	Is there a social or professional milieu?
Is there evidence of high levels of innovation?	Is the potential for Technological capability building low, some, good or high? Are there micro and/or meso characteristics?
Is there evidence of the significance of the family?	Are suppliers internal or external to the district?
Is there a history of agricultural activity?	Is there/has there been external intervention

## **5.2 A taxonomy of industrial districts**

Four types of industrial district emerge from the identification of differences between industrial districts in the literature. These have deliberately been called types rather than models of industrial districts. Rabelotti (1995, p.29) states that the 'industrial district framework... is not an analytical model, but rather a list of stylized facts useful for organizing empirical investigation and to compare it with real world cases'. This is similar to the approach in this section, whereby a list of issues is used to differentiate between categories of industrial district. It is in the nature of industrial districts to change, thus rather than these categories being narrowly defined, what is presented is something of a guiding structure within which there is the space for many varying types of industrial district.

These categories of industrial district have been called the *prototype*, the *Marshallian*, the *profsoc* and the *dominated* industrial district. There has been some work on the *Marshallian* industrial district in the literature but the others are all new and original classifications, although they may have similarities with some of the nine types outlined by Park (1996). Each is described below and the characteristics and issues outlined in chapter 4 are used to distinguish them from each other.

### **5.2.1 The *prototype* industrial district**

The *prototype* industrial district has each of the five characteristics associated with an industrial district - geographical and sectoral concentration, small innovative firms, strong inter-firm relations and a social milieu. It can perhaps be called a "classic" or "textbook" industrial district off which most of the other models of industrial district have been hived.

This type of industrial district is most commonly associated with those described in the 'third Italy'. It has deliberately not been called a 'third Italy' type of industrial district for a number of reasons. Firstly, to call it such ignores the fact that industrial districts in other countries can also be classified as this type of industrial district. Secondly, as the discussion of innovation in industrial districts in chapter 4 (pp.103-106) shows there can be differences between industrial districts in the 'third Italy'; as more industrial districts are identified and a system of categorizing these districts is developed, it is unlikely that all industrial districts in the 'third Italy' will fall into the same category.

Classifying industrial districts as *prototypes* implies that they are the original industrial district. This clearly is not so as the *Marshallian* industrial district was first described almost 100 years earlier. However the literature on industrial districts since the late 1970s has been firmly moulded upon that developed in the literature on the industrial districts identified in the 'third Italy'. In this way this type of industrial district has become the *prototype* although historically this place should be reserved for the *Marshallian* industrial district. As the industrial district described by Marshall (discussed below) differs from the *prototype* industrial, it is classified separately.

The table below shows that *prototype* industrial districts are dominated by small firms, suppliers are most often concentrated within the locality, there is a high potential for innovation and both micro and meso characteristics are in evidence. This is a community type of industrial district where there is a social milieu and inter-firm co-operation can be

both formal and informal. There are two varieties of *prototype* industrial districts - Mark I and Mark II - depending on the existence of external intervention.

This type of industrial district will be used as a benchmark against which to compare other types and quick comparison can be made by comparing column two of this and subsequent tables.

Table 5.2: The *Prototype* industrial district

<i>Features that differentiate between types of industrial district</i>	<i>Prototype industrial district</i>
Size of firms	Similar - small
Co-operation	Formal and informal
Milieu	Social
Potential for TCB	Good to High
Location of suppliers	Internal to district
Micro and/or meso characteristics	Both
External intervention	Often

### 5.2.2 The *Marshallian* industrial district

The 'third Italy' industrial district concept is based on Marshall's theory of localisation and identification of industrial districts in England in the late 19th century. There are however distinct differences. Much emphasis in the more recent literature on industrial districts is placed on the idea that firms co-operate but this is not an important part of Marshall's description of an industrial district: 'as applied to the third Italy, the term [industrial district] indicates a higher degree of co-operative co-ordination than would be present in a *Marshallian* industrial district' (Langlois and Robertson, 1995, p.125). Marshall's description of industrial districts and in particular the existence of a social milieu and



“industrial atmosphere” would indicate informal co-operation between individuals and firms which occurs as a result of personal contact and the close proximity of firms, rather than more formal arrangements to co-operate as are often described in the ‘third Italy’.

Marshall outlines a process of innovation whereby ‘if one man starts a new idea it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas’ (Marshall, 1898, p.352). The craft-based nature of the industries Marshall described as industrial districts, combined with the fact that there is no evidence of what we have called micro characteristics, indicate that even with this channel for information and ideas the potential for innovation is relatively low. There can be some external intervention in this type of industrial district; Marshall describes one of the causes of localisation as ‘the deliberate invitation of rulers’ (1898, p.348). On the location of suppliers, Marshall said that over time ‘subsidiary trades grow up in the neighborhood, supplying it with implements and materials, organizing its traffic, and in many ways conducing to the economy of its materials’ (Marshall, 1898, p.348). Thus the suppliers are predominantly located in the district although some may be external.

As in the *prototype* industrial district, the local community play an important role in the *Marshallian* industrial district, creating trust and a social milieu.

Industrial districts identified in the literature of the 1990s that are most like *Marshallian* industrial districts are those in developing countries, for example Pakistan (Nadvi, 1992), Santiago, Mexico (Wilson, 1992) and Nyala in Sudan (Hansohm, 1992). These types of districts are often involved in craft-based production, only have the meso characteristics,

levels of innovation are relatively low and co-operation is informal. As Marshall was describing agglomerations in nineteenth century Britain is it not surprising that such districts are now most prevalent in developing countries.

Table 5.3: The *Marshallian* industrial district

<i>Features that differentiate between types of industrial district</i>	<i>Marshallian industrial district</i>
Size of firms	Similar - small
Co-operation	Informal
Milieu	Social
Potential for TCB	Low to some
Location of suppliers	Internal and external to district
Micro and/or meso characteristics	Meso
External intervention	Sometimes

### 5.2.3 The *profsoc* industrial district

This type of industrial district is distinguished from most other types by the existence of a professional milieu. However, some of the industrial districts in this category will have a social milieu - thus its name *profsoc* - professional/social.

This type of industrial district differs from the *prototype* in the following ways: it is possible for industrial districts in this category to have a professional milieu, suppliers can be located outside of the district, firms do not have micro characteristics and the potential for technological capability building is relatively low.

It is envisaged that this type of industrial district will include many of those regions identified in Europe (apart from the 'third Italy') in the early 1990s. These districts were

less self-contained, the existence of a social milieu was in some cases less apparent, and the firms were not necessarily as innovative as their counterparts in the 'third Italy', but they boasted similar high growth rates in terms of exports, output and contribution to GNP.

Table 5.4: The *Profsoc* industrial district

<i>Features that differentiate between types of industrial districts</i>	<i>Profsoc industrial district</i>
Size of firms	Similar
Horizontal co-operation	Informal and/or Formal
Milieu	Social or Professional
Potential for TCB	Low to some
Location of suppliers	Internal and external to district
Micro and/or meso characteristics	Meso
External intervention	Sometimes

#### 5.2.4 The *dominated* industrial district

The distinguishing feature of this type of industrial district is that one firm or group of firms dominates the district because of their size. As discussed on pp.98-101, the issue of the relative size of firms can be important in terms of power and trust between firms. In this type of industrial district inter-firm relations are balanced differently; competition and co-operation may exist but their nature differs due to the dominance or leadership of particular firms. It is more likely that vertical rather than horizontal co-operation is in evidence and inter-firm relations are primarily formal in nature. In such an industrial district relations between firms can be hierarchical. This category of industrial district is similar to the 'hub-and-spoke' industrial district described by Park and Markusen (1995).

Aside from the different size of firms and the formal nature of co-operation between firms, this type of industrial district can have various combinations of the other characteristics

shown in the table below. For example, both internal and external suppliers are used, the milieu could be either social or professional and the source of trust can be community or self-interest.

Table 5.5: The Dominated industrial district

<i>Features that differentiate between types of industrial district</i>	<i>Dominated industrial district</i>
Relative size of firms	Different
Co-operation	Informal and/or formal
Milieu	Professional or social
Potential for TCB	Good to high
Location of suppliers	Internal and external to district
Micro and/or meso characteristics	Either or both
External intervention	Sometimes

Appendix B shows the compiled results of tables 5.2 to 5.5.

### **5.3 Comparison of types of industrial districts**

The primary objective of this taxonomy is to provide clarity by ensuring that very diverse processes and areas are not collapsed into one category. This taxonomy distinguishes between industrial districts and allows regions such as Silicon Valley, Modena, Santiago and Kumasi to be classified as industrial districts, but different types of industrial districts. These regions have many things in common but also have distinct differences - they constitute a family of industrial districts which are distinguishable from each other and yet related. The strength of this taxonomy is that in attempting to illuminate the differences between industrial districts, the important features which typify this type of agglomeration, namely co-operation between firms and the existence of a milieu, have not been side-stepped. The relative importance of these features in the different types of industrial districts differs but they exist in each.

To show the differences between these types of industrial district they will be compared using three techniques: single variant analysis, tabular analysis and diagrammatic analysis.

### 5.3.1 Single Variant analysis

In simplistic terms the industrial districts identified above are variants of the *prototype* industrial district; they are variants, because one characteristic can distinguish them from the *prototype*. As the chart below shows, different categories of industrial district have been pin-pointed according to the characteristic which they do not have. For example if an industrial district is identified which exhibits a professional rather than a social milieu it could be characterized as a *profsoc* industrial district.

Table 5.6: Single variant analysis

<i>Omitted characteristic</i>	<i>Resultant industrial district type</i>
None (all characteristics present)	<i>Prototype</i> industrial district
Geographical and sectoral concentration	Not an industrial district - essential characteristic
Predominantly similar sized firms	<i>Dominated</i> industrial district
Co-operation between firms	<i>Marshallian</i> industrial district
High levels of innovation	<i>Profsoc</i> or <i>Marshallian</i> industrial district
Social milieu	<i>Profsoc</i> industrial district

This table facilitates quick comparisons between each type of industrial district and the *prototype* in terms of the characteristics most often associated with this type of agglomeration. What it does not allow is detailed comparison between the different types of industrial district in terms of a wider variety of features.

### 5.3.2 Tabular analysis

Table 5.7 compares the types of industrial district which have been identified in terms of the features outlined in chapter 4. For example looking across from *prototype* along the row and down from *profsoc* along the column we find a cell in which the features which distinguish between each type of industrial district are listed. While the firms are small in the *prototype* this is not necessarily so in the *profsoc*, there is a social milieu in the *prototype* but in the *profsoc* it can be either social or professional. Also, in the *prototype* suppliers are located within the industrial district while in the *profsoc* industrial district they can be located both internally or externally. Each cell provides a guide to the features which distinguish between the corresponding types of industrial district.

Table 5.7: Types of industrial district compared

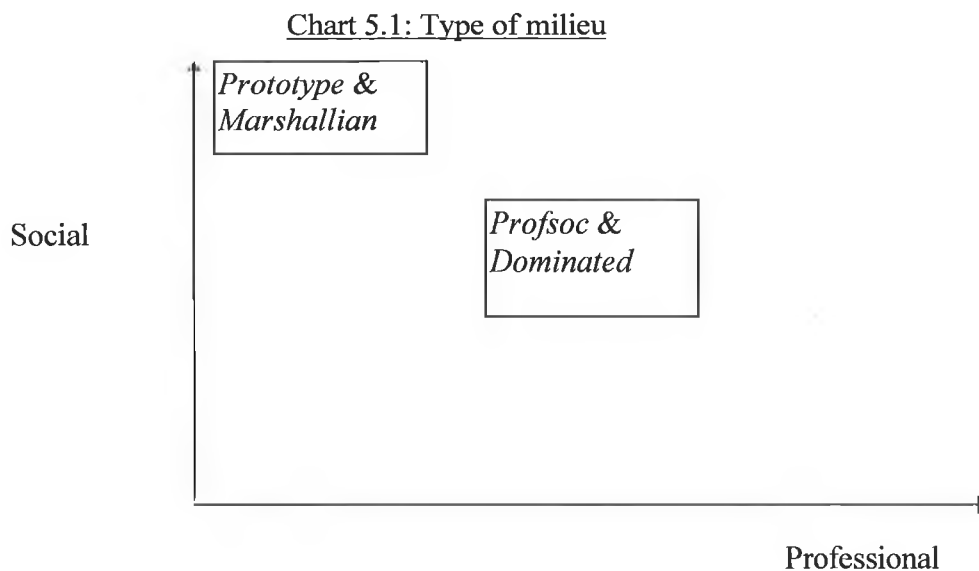
	<i>Marshallian</i>	<i>Profsoc</i>	<i>Dominated</i>
<i>Prototype</i>	Types of co-operation Micro/Meso Potential for TCB	Size of firms Type of milieu Location of suppliers	Size of firms Type of milieu Location of suppliers Type of co-operation
<i>Marshallian</i>		Size of firms Type of milieu Location of suppliers External intervention Type of co-operation Potential for TCB	Size of firms Type of milieu Location of suppliers Type of co-operation Micro/Meso Potential for TCB
<i>Profsoc</i>			Size of firms Type of co-operation Micro/Meso Potential for TCB

### 5.3.3 Diagrammatic Analysis

Langois and Robertson (1995) initiated the idea of differentiating between different organisational forms using particular criteria, for example governance. This technique can be usefully applied and extended to different types of industrial district. It allows comparison of types of industrial districts according to specific features; for example it shows the relative importance of informal and formal relations in each type of industrial district, different sources of trust and the relative potential for TCB (see charts 5.1 to 5.3).

#### 5.3.3.1 Type of milieu

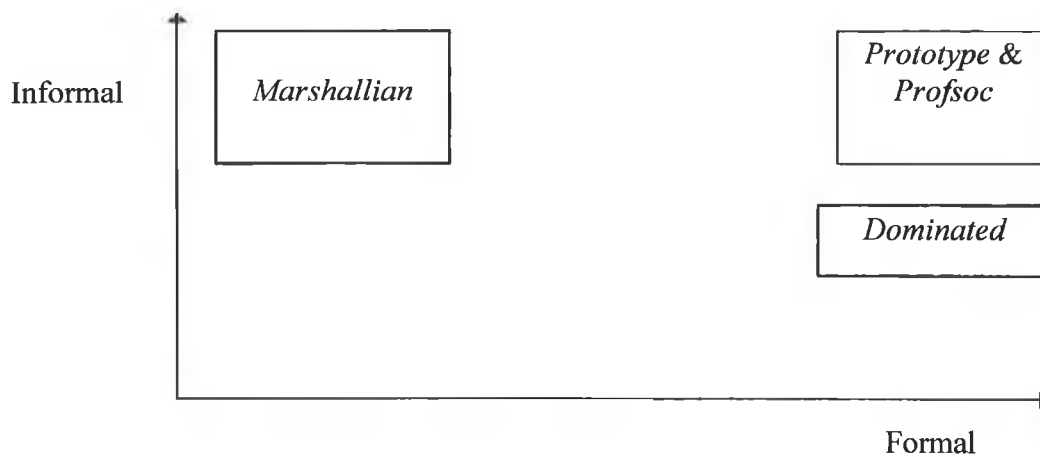
Strong links between individuals and firms can be created by a social or professional milieu. As the chart below shows in the case of the *prototype* and *Marshallian* industrial districts a social milieu is all important while the *profsoc* and *dominated* industrial districts can have either a social or professional milieu.



### 5.3.3.2 Co-operation between firms

In each type of industrial district co-operation is important. In the case of the *prototype* and *profsoc* industrial districts both formal and informal relations are exercised while in the *Marshallian* industrial district emphasis is on informal relations and in the *dominated* it is on formal relations.

Chart 5.2: Co-operation between firms - formal vs informal



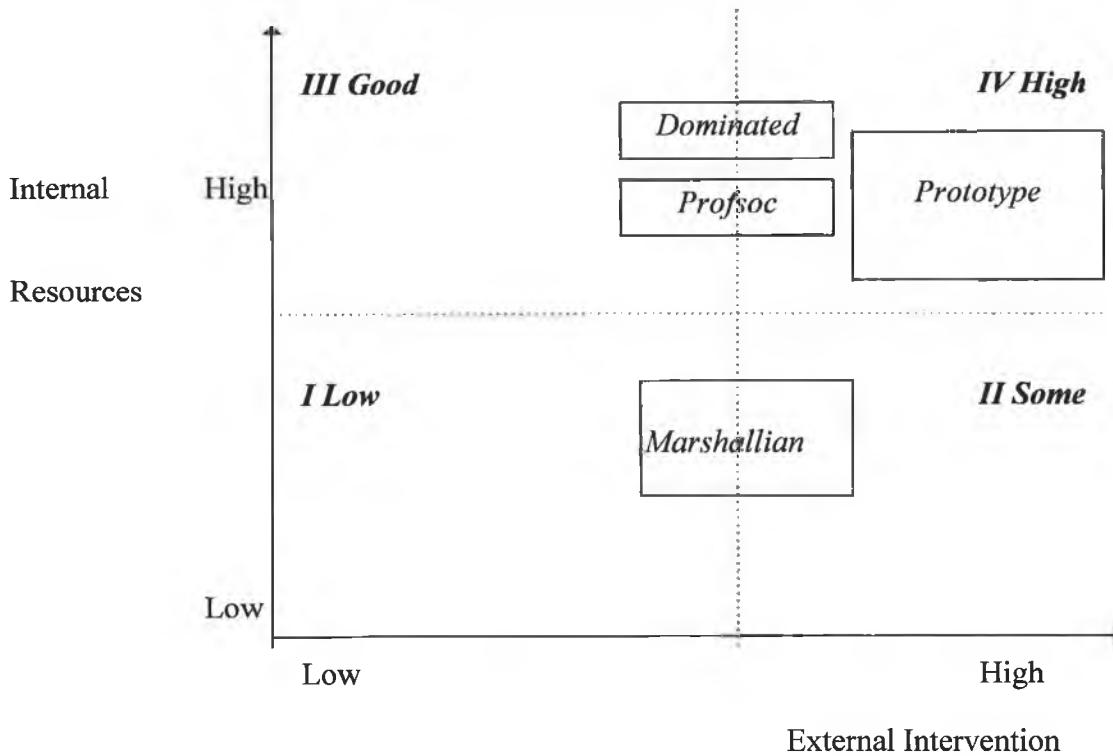
### 5.3.3.3 The potential for technological capability building

The next diagram (chart 5.3) represents the relationship outlined by Asheim (1994 and above p.113) between the internal resources and competence of firms in an industrial district and external intervention, and the resulting potential for technological capability building (TCB). The phrases good, high, low and some refer to the potential for TCB. The potential is highest for *prototype* industrial district which can have both external intervention and a high level of internal resources and competence. *Marshallian* and *profsoc* and *dominated* industrial districts straddle the quadrants because they can include industrial



districts which have differing levels of external intervention but are clearly distinguished from one another on the basis of internal resources.

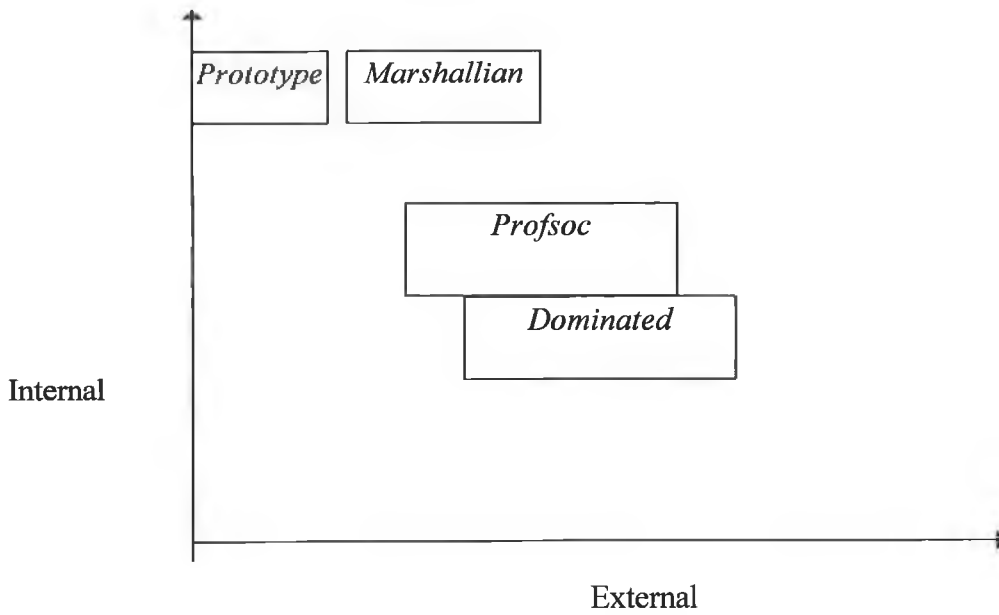
**Chart 5.3: The potential for technological capability building**



**5.3.3.4 Location of Suppliers**

In the case of most industrial districts there is a combination of suppliers located both within the district and outside its boundaries. In the *prototype* industrial districts suppliers are internal to the district while in the *Marshallian* some can be located externally. The *profsoc* and *dominated* have a mixture of both.

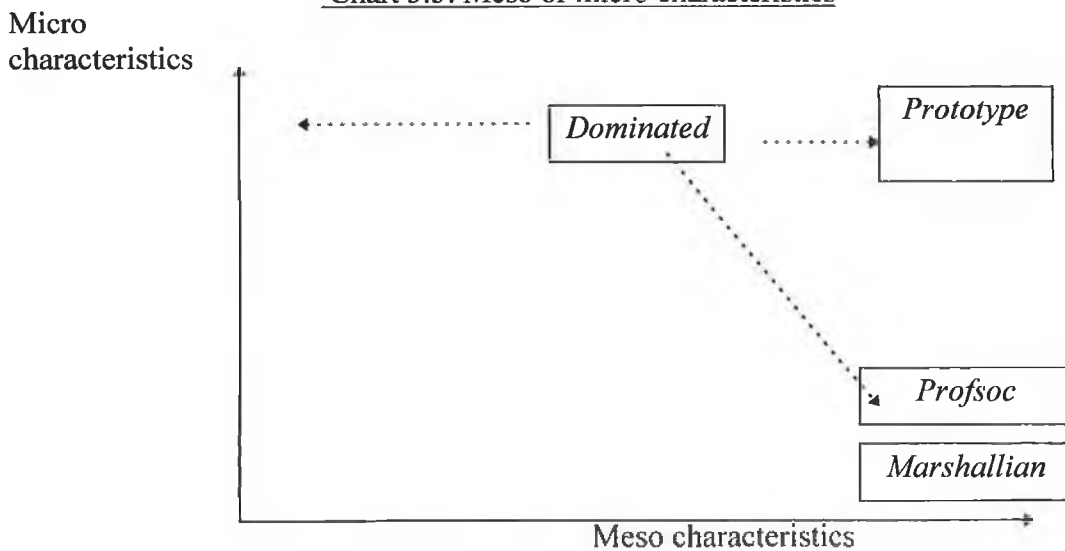
Chart 5.4: Location of suppliers



**5.3.3.5 Micro and meso characteristics**

The *Marshallian* and *profsoc* have meso rather than micro characteristics, while the *prototype* has both. The *dominated* can have either or both types of characteristics, so its positioning on the chart will depend on the particular district.

Chart 5.5: Meso or micro characteristics



## **5.4. Testing the taxonomy**

This taxonomy aims to provide a framework within which industrial districts can be classified. The most appropriate way to see if it does this is to examine various industrial districts using the methodology and tools of analysis which this taxonomy requires. Table 5.8 shows a number of industrial districts from the literature and using the method of analysis developed in this chapter classifies them where possible. The information from the relevant articles is used to answer the questions posed in the first row. The basis upon which Sinos Valley, Guaranwala and Karachi, and 'Engineering Valley' were classified is presented below.

### **5.4.1 Sinos Valley, Brazil**

The results of Schmitz's (1993) research were used to analyze this region.

Type of milieu: There is a social milieu in Sinos Valley. Schmitz (p.26) refers to the 'socio-cultural identity which facilitates trust relations between firms and between employers and workers'. This can be traced back to the fact that most of the population was of German origin.

Characteristics, meso versus micro: The meso characteristics are evident in terms of inter-firm co-operation, the importance of trust and the role of self-help institutions. Schmitz says:

it would be wrong to deduce from this that the Sinos Valley is a show-case of flexible specialization [however]... large firms are beginning to

decentralize internally into mini plants, throwing out their conveyors, introducing cellular manufacturing and internal just-in-time, trying to stabilise their workforce, investing more in training, and building more cooperative relationships with their suppliers (p.31-32).

The conclusion in table 5.8 is that there are meso characteristics and there is some evidence of micro characteristics.

Horizontal co-operation, formal or informal: There is evidence of both formal and informal co-operation. Formal co-operation occurs via the self-help institutions; Schmitz defines this as 'collective actions which are institutionalized in associations, service centres and the like'. Informal co-operation occurs as a result of non-economic ties which 'exert pressure to keep commitments and to cooperate'. It is noted that more recently 'there has been a return to more cooperative relationships but this has little to do with socio-cultural ties amongst actors' (p.28).

Location of suppliers, internal or external to the district: Suppliers are located within the district,

within a radius of 50 kilometres of Novo Hamburgo, the economic centre of the Valley, most inputs are produced: uppers, soles, heels, insoles, insocks, shanks, glues, nails, eyelets, dyes, etc - all of them made to many different technical specifications. Also most of the machines to turn these material and components into shoes are made locally. Roughly speaking, for every job in shoe manufacturing there is a job in the local supply industry (p.5)

Potential for innovating: There are 'good' levels of innovation in this industrial district. This reflects the fact that there are low levels of external intervention but internal resources are high. Up until the 1960s 'most of the Sinos Valley was a cluster of craftsmen, with the exception of a few factories' (p.32) but now there are many firms which operate either mass production or flexible production techniques. This has required a more professional workforce. It is notable that in spite of the growth of the industry in the 1980s 'the various sources consulted point towards a decline in real wages over the 1980s' (p.29).

Small firms: 'the shoe industry of the Valley comprises firms of all sizes, including very large ones' (p.8).

*This is an example of a profsoc industrial district.*

#### **5.4.2 Guaranwala and Karachi, Pakistan**

The results of Nadvi's (1994) research were used to analyse these regions.

Type of milieu: Social networks were identified in both regions. 'The defining criterion for the community in Karachi was felt to be ethnicity and in Guaranwala social caste'. The community played an important role in defining a 'code of social behaviour. The violation of such codes does not lead to being ejected from the caste group but can result in isolation from the social space of intertwined relations defined by the caste.... To acquire skills and to access informal credit it became necessary to be part of the community' (p.18).

Characteristics, meso versus micro: Nadvi describes the nature of work and labour conditions in the firms studied and concludes 'these patterns correspond to the classic image of small firms in LDCs where manufacturing is based upon the use of low waged and poorly skilled labour with little hope of upward labour mobility'. This is far from the micro characteristics of flexibly specialized firms. There is evidence of meso characteristics such as a social milieu and inter-firm co-operation.

Horizontal co-operation, formal or informal: Both formal and informal co-operation were reported. Under a quarter (22 percent) of small firms 'carried out sub-contractual work for medium and large scale units [and] almost half of all enterprises sampled (45 per cent) were involved in some form of production arrangement with other small firms and household units' (pp.16-17). While this sub-contracting is most often formal it often involves 'the sharing of equipment between units as well as of labour across firms' (p.17).

The importance of the community, and thus informal relations were important in terms of 'how firms reproduce themselves, i.e., how and from whom is credit availed and skills acquired' (p.18). Also, 'very small firms do share information with each other, labour and tools are also shared, and new designs (for example in the textiles sector) are often developed cooperatively between firms and retail outlets' (p.22).

Location of suppliers, internal or external to the district: It is not clear whether suppliers are located within or outside the district. However extensive sub-contracting would indicate that a considerable amount of activity is undertaken within the district; for example,

the manufacture of a wooden sofa set in the furniture making sector was the combined effort of four independent small concerns consisting of the plankmaker, the frame maker, the cushion manufacturer and the polisher. These independent units were considered to be autonomous artisanal workshops skilled in specific tasks each of which required a distinct set of tools and equipment' (p.16)

Potential for innovating: These are not highly innovative firms; 'adoption of qualitatively new technologies, which either raised productivity, improved quality, or widened the set of production options available to the firm, were rarely seen. In a number of industries where mechanised techniques were common the type of technology being used had not altered significantly over the past decade' (p.21). The potential for innovating is low, with low internal resources: 'almost 30 percent of the sample of enterprise owners were illiterate as well as two-thirds of the waged workers sample. Only 4 percent of the waged labour sample were formally educated to the secondary level' (p.21). In addition, it is reported that there is 'little active support from the state, either at the national, regional or municipal levels' (p.19).

*These regions are most like the Marshallian type of industrial district.*

### **5.4.3 'Engineering Valley', Oslo**

The article by Isaksen (1996) is used to analyze the 'Engineering Valley' in Oslo.

Type of milieu: There is a professional rather than a social milieu. This milieu enhances the flow of information and the establishment of firms: 'those starting up smaller firms have often obtained knowledge of... opportunities through previously having worked for the larger companies' (p.39). Also there is 'fast and frequent contact face-to-face... [and as] several smaller projects have been assigned without bidding... it becomes increasingly important to meet people outside of work in order to obtain information quickly' (p.39).

Characteristics, meso versus micro. Both micro and meso characteristics are in evidence. Meso, in terms of the flow of information, inter-firm relations and the existence of a milieu and micro in that 'firms involved in technical consultancy in "Engineering Valley" use flexible production methods' (p.39)

Horizontal co-operation, formal or informal: Informal co-operation dominates, it is 'increasingly important to meet people outside work in order to obtain information quickly, as well as being able to influence decision makers in informal circumstances' (p.39).

Location of suppliers: This type of business is such that there are not tiers of suppliers. Isaksen (1994) does note that 'considerable growth in demand for technical consultancy resulted in a certain vertical disintegration. A number of sub-contracting firms have been set up. These are firms which supplement the larger companies by offering specialized competence or extra engineering capacity' (p.39). It is not clear from the article whether all suppliers are located within the district or externally.



Potential for innovating: The potential for innovating is 'good' as while there is no external intervention the internal resources of the firm are high - 'a certain functional flexibility is achieved through the use of highly qualified labour' (p.39).

Small firms: This district has large as well as small firms: the three larger firms within technical consultancy have more than 100 employees (p.38).

*The Engineering Valley is most like the profsoc industrial district.*

Two districts which are classified as the same type of industrial district will not be exactly the same. This reflects the fact that the case-studies have been undertaken by a wide variety of different researchers, in different countries and sectors and it was with this in mind that the categories of types of industrial district were kept deliberately broad and called types rather than models.

This procedure of testing the taxonomy shows that it can be useful in classifying types of industrial districts which have been identified in the past, but its real strength is likely to become apparent when applied to current or future research.

## **5.5 Conclusions**

This chapter has developed and explained a taxonomy of industrial districts. Rather than a rigid categorization of this type of agglomeration, the taxonomy is more like a loose guiding framework which facilitates comparison between different types of industrial district. From a theoretical perspective it has delved below the traditional emphasis on a list of characteristics, and thus adds to the literature by broadening and deepening understanding

Industrial district	Type of milieu		Characteristics				Horizontal co-operation		Location of suppliers		Potential for innovating				Small firms	External intervention	Type of industrial district
	<i>Social</i>	<i>Professi- onal</i>	<i>Meso</i>	<i>Micro</i>	<i>Formal</i>	<i>Infor- mal</i>	<i>Internal to district</i>	<i>External to district</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>Most similar to</i>				
Sinos Valley	X		X	Some	X	X	X				X		X		Prototype		
Carpi	X		X	?	X	X	X	X	X				X	X	Profsoc or Marshallian		
Silicon Valley		X	X	X	Some	X		X					X		Profsoc		
West Jutland	X	X	X	Some	X	X		X			X?		X	X	Profsoc		
Mutare & Nakuru	X		X		X	X	X		X				X		Marshallian		
Oslo		X	X	X		X					X				Profsoc		
Guaranwala & Karachi	X		X		X	X	X		X				X		Marshallian		
Limassol	X	Some	X		X					X			X	X	Profsoc		
Baden Württemberg		X	X	X	X	X		X				X		X	Dominated		

Potential for innovating I - Low    II - Some    III Good    IV High  
X Present in this industrial district    ? Unknown/unclear from literature

The information is taken from case studies on the region as identified in Table 4.1.

of what constitutes an industrial district and facilitates clarification of the literature. It also explains how very different types of regions and industries can be part of the industrial district family, having many of the same characteristics and yet distinguishing features or attributes.

## **CHAPTER 6: IS THE TIMBER AND WOODEN FURNITURE INDUSTRY IN MONAGHAN AN EXAMPLE OF AN INDUSTRIAL DISTRICT?**

The objective of this chapter is to investigate the hypothesis that the wooden furniture industry in Monaghan is an example of an industrial district. This chapter is organised as follows: Section 6.1 studies industry in Monaghan since the 1800s. The reasons for choosing to examine the wooden furniture sector in Monaghan are discussed in section 6.2 and section 6.3 provides a general discussion on the sector and its future. The next section presents the results of the empirical work conducted to test the hypothesis that this region and industry constitute an industrial district. Finally, section 6.5 determines what type of industrial district this is.

Monaghan is located in the north east of Ireland, on the border with Armagh, Tyrone and Fermanagh and nestled between Louth, Meath and Cavan. The fifth smallest county in Ireland, Monaghan has a population of 51,262 and a size of 129.093 hectares.

### **6.1 Industrial history of Monaghan**

Agriculture was the predominant activity in Co. Monaghan throughout the period 1800 to the 1960s: 'the occupations of the people are almost wholly agricultural, there being few industries and these of an unimportant character' (County Monaghan Year Book and Directory, 1909, p.39). But there were also cottage industries which were unrelated to agriculture. Coote (1801) observed the importance of weaving at the turn of the previous century, reporting that in the Barony of Cremourne (around Castleblaney) 'scarcely a cabin is to be seen without a loom or two, and many of the occupiers rent the cabin and the looms from the master weaver' (p.78).

Similarly in the Barony of Dartrey (around Newbliss and Clones) 'amongst the lower orders the proportion may be twenty weavers to one labourer, and this is still increasing, as every labourer will have his children taught to weave' (p.102-103). This tradition continued into the twentieth century when lace and crochet became important industries, especially in Clones and Carrickmacross.

Between 1951 and 1961 Monaghan suffered a decline in agricultural employment of almost 26 percent and industrial employment fell by 7 percent in the same period. However, the period 1961 to 1966 'marked what could be called the beginning of Monaghan's industrial revolution': although agricultural employment fell by another 13 percent employment in industry went up by nearly 25 percent (Livingstone, 1980, p.460). Between 1967 and 1970 alone 46 new firms were set up in the county. The growth in the numbers in industry in this period was aided by the establishment of a county development team in 1966 to foster industrial expansion in the county, and by the scheme for the promotion of small industry which was extended to include Monaghan in 1968 (Livingstone, 1980, p.460).

By the 1970s there were also significantly more firms employing more than ten people. Between the late 1950s and the early 1970s the number of firms employing more than 50 people increased from ten to 23 and similarly those employing between ten and 50 more than doubled to 41. 'Some of these industries had an agricultural base, others were in the field of light engineering, others were concerned with textiles and footwear. There were [also] great developments in the furniture industry during the sixties' (Livingstone, 1980, p.460).

Table 6.1: Number of industrial enterprises in Co. Monaghan employing more than 10 people 1959-1971.

<i>No. employees</i>	<i>1959</i>	<i>1965</i>	<i>1971</i>
10-50	20	24	41
>50	10	16	23

Source: Livingstone, 1980, p.461

Industry in Monaghan suffered from the recession which struck in 1973, and the closure in 1974 of two large shoe factories resulted in 290 people losing their jobs immediately (Livingstone, 1980, p.462). Nonetheless during this period many industries survived and even flourished providing 'every indication that the county would weather the storm' (Livingstone, 1980, p.462).

Over the decade 1980 to 1990 the relative importance of agriculture continued to decline - by 1991 only 22.5 percent of Monaghan's labour force were directly employed in this sector (CSO, 1991). At the same time the number of industrial firms continued to grow, reaching 124 firms in 1987, in sectors ranging from mining to food and furniture. In 1989 there were thirteen more industrial enterprises than a decade earlier. Of these, eight were in the timber and wooden furniture sector and a further five were metal and engineering firms (Census of Industrial Production, 1979 and 1989).

Table 6.2: Number of industrial enterprises and employees in Monaghan 1979 - 1995.

<i>Year</i>	<i>No. industrial enterprises in Monaghan</i>	<i>Total employees</i>
1979	99	3,419
1982	129	3,462
1987	124	3,689
1990	108	3,852
1995	109	4,042

Source: CSO, Census of Industrial Production, various.

### **6.1.1 Industry in Monaghan in the 1990s**

The latest Industrial Census (CSO, 1997) reports that there were 109 industrial establishments in Monaghan in 1995 employing 4,042 people. This region is dominated by small firms. According to Forbairt's Regional Manager for the North East, approximately 50 percent of firms in the industrial sector in Monaghan, Cavan and Louth employ less than 15 people (Business and Finance, 21.7.94).

In terms of number of firms, the largest sector in Monaghan is timber and wooden furniture with 31 firms. The next highest concentrations are the metals and engineering and food sectors<sup>18</sup> with 21 and 20 firms respectively (CSO, 1993)<sup>19</sup>. Almost 3,000 people in Monaghan are employed as

<sup>18</sup> Particularly important in the food sector are the mushroom and poultry industries.

<sup>19</sup> More recent Census of Industrial Production data classify furniture firms with 'other manufacturing' firms, so data published in 1993 is relied on for this information.

woodworkers, engineering and related trade workers and food workers (CSO, 1991). This accounts for about 75 percent of the county's industrial employment which totals 4,042 (CSO, 1997).

Table 6.3: The main industrial sectors in Monaghan 1979 - 1993

<b>Year</b>	<b>No. timber and wooden furniture firms</b>	<b>No. firms in the food sector</b>	<b>No. firms in Metals and Engineering</b>
1979	26	20	17
1985	36	22	25
1993	31	20	21

Source: CSO, Census of Industrial Production, various

**6.1.2. The wooden industry in Monaghan**

Although the wooden furniture sector in Monaghan is of primary interest in this work, it is interesting to note that this is just one part of a whole range of wooden products manufactured in Monaghan. These include audio speakers, furniture and builders' joinery products (see chart 6.1). This is an example of an industry which continues to thrive despite the fact that the supply of local timber is negligible; a limited supply in the past has long been depleted.

Table 6.4 reorganizes the information from chart 6.1 into four main categories.



Chart 6.1: Wooden products manufactured in Monaghan

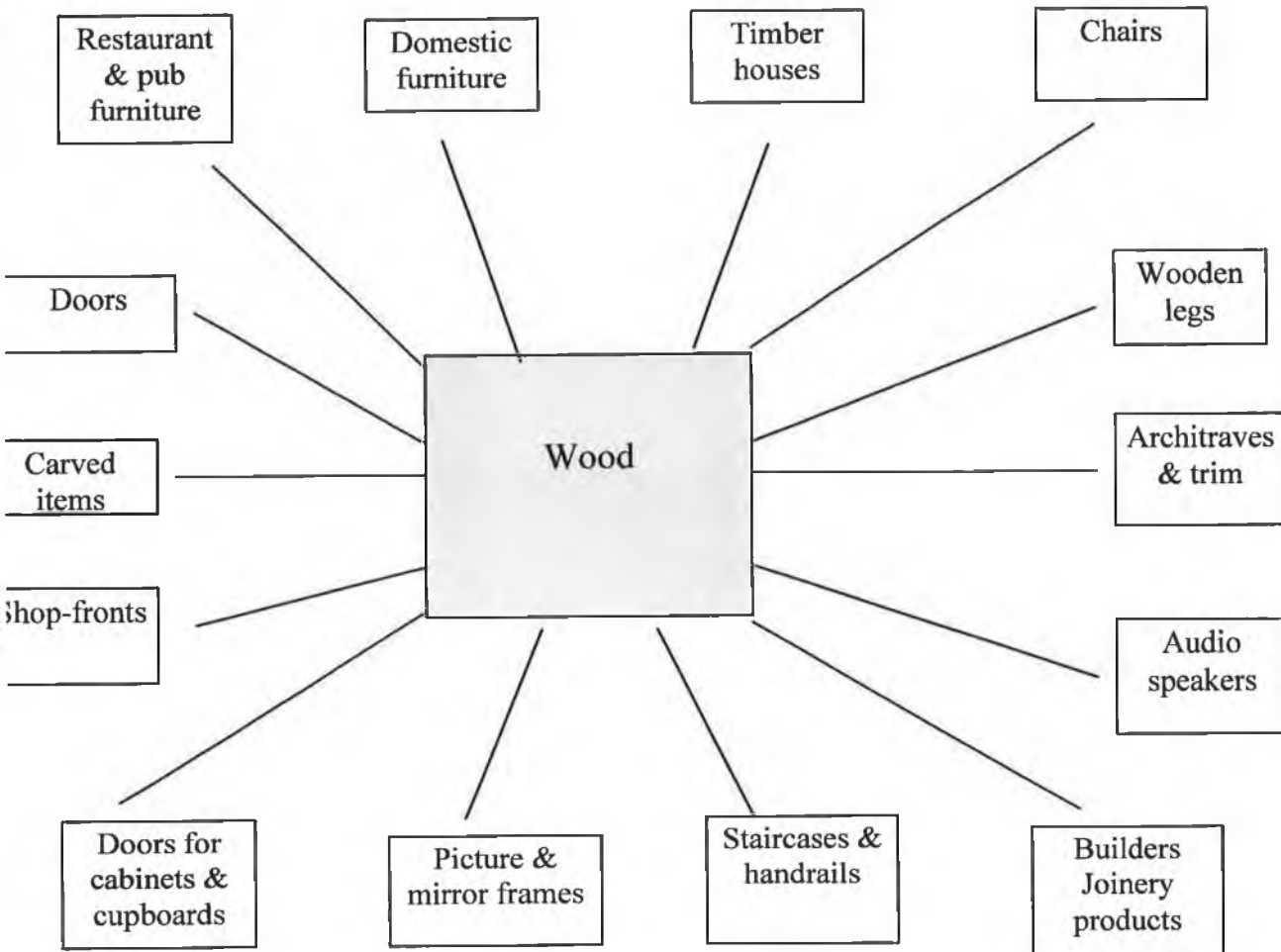


Table 6.4: The stages of production in the manufacture of  
wooden products located in Monaghan

<i>Category</i>	<i>Wooden products</i>
Primary	<ul style="list-style-type: none"> <li>• treatment of wood</li> <li>• fire retardents for wood</li> </ul>
Components	<ul style="list-style-type: none"> <li>• glass manufacturer</li> <li>• turning</li> <li>• carving</li> <li>• cabinet and cupboard doors</li> <li>• chair frames</li> <li>• chairs</li> </ul>
Services	<ul style="list-style-type: none"> <li>• wholesale distribution of timber</li> <li>• accountants and insurance</li> <li>• wood working machinery re-conditioning services</li> </ul>
Final	<ul style="list-style-type: none"> <li>• domestic furniture</li> <li>• pub and restaurant furniture</li> <li>• timber houses</li> <li>• picture and mirror frames</li> <li>• audio speakers</li> <li>• shop-fronts</li> <li>• doors</li> <li>• chairs</li> <li>• staircases and landings</li> <li>• handrails</li> <li>• architrave's and trim</li> <li>• builders joinery products</li> </ul>

There is a variety of different stages of production in the manufacture of wooden products that are located in Monaghan. They include primary where firms are involved in the preparation of wood, the manufacture of components for the industry, services to manufacturers in the industry and the production of final goods.

1. Primary. This includes those firms that are involved in the preparation of wood. This is primarily undertaken outside county Monaghan as most of the wood is imported or brought

from other regions in the country. The only treatment of wood is undertaken by IJM Timber Engineers which has a timber impregnating and creosote treating service. In addition a fire retarding chemical for wood is manufactured locally by European Chemicals Industries.

2. Components. These firms manufacture components which are assembled, combined or modified by the manufacturer who then sells the finished good on to the retailer or public. Examples are cabinet and cupboard doors, chair frames, and turned or carved items. There is also a number of firms which manufacture wooden fittings for houses. They are: McQuillan Staircases which produce wooden staircases and doors; George Quinn which manufactures wooden handrails; Essexford Joinery which specialise in wooden doors and staircases and landings and; Kelly Bros. which produces doors and wooden architraves and trim. While these goods can be sold directly to the consumer it is more common for them to be purchased by builders and construction companies.

3. Services. There is a number of service functions which are required by the firms in the industry. They include repair workshops, materials suppliers and wholesale distributors and accountancy services. AS Quarry Plants in Newbliss services and repairs wood working machinery while R.B. Coogan, P.McCabe and Cormeen Cabinets are wholesale distributors of timber.

3. Final. These firms produce goods which are sold directly to retailers or the public as finished goods. The final wooden goods produced in Monaghan are: domestic furniture, furniture for hotels and restaurants, fitted Irish pubs and shopfronts, speakers, picture and mirror frames, timber frame houses and builders joinery products.

## **6.2 Why study the wooden furniture industry in Monaghan?**

The decision to study this particular sector was driven by a number of different observations both of the county and the industries therein.

### **6.2.1 Choice of County Monaghan - apparent industrial success**

Firms in Monaghan appear to be particularly successful. A number of indicators point to a growing local economy. First, compared with other similar areas, there is a high number of industrial enterprises per population. Second, individual firms have succeeded in terms of market share, exports and employment. Third there is a high rate of start-ups and fourth relatively low levels of unemployment.

1. Per population, Monaghan has the highest number of industrial enterprises in the state. In 1990 there were 474.6 people for every firm. This compares to 733.43 for the state as a whole. As table 6.5 shows Monaghan is one of only three counties which have a ratio of less than 600 people per firm (Monaghan, Louth and Carlow). While this data on its own could indicate too many small firms, it is indicative of high growth when taken with the other three factors.

2. There is an impressive number of successful firms and industries located in this county. Most significantly many of these have expanded into export markets. For example:

- Monaghan Mushrooms has the largest fresh mushroom production unit in Ireland and the UK (Business and Finance, 21.7.94) and supplies 25 percent of the UK's total mushroom requirements (Management Innovation, 15.1.94).

Table 6.5: Population per enterprise by county 1990/91.

County	Population	No. industrial enterprises	Population per industrial enterprise
Carlow	40,946	69	593.4
Dublin	1,024,429	1342	763.4
Kildare	122,516	143	856.8
Kilkenny	73,613	93	791.5
Laois	52,325	61	857.8
Longford	30,293	41	738.9
Louth	90,707	181	501.1
Meath	105,540	135	781.8
Offaly	58,448	80	730.6
Westmeath	61,882	71	871.6
Wexford	102,045	124	822.9
Wicklow	97,293	141	690.0
Clare	90,826	136	667.8
Cork	409,814	557	735.8
Kerry	121,719	119	1022.9
Limerick	161,856	209	774.4
Tipperary South	74,791	81	923.4
Tipperary North	57,829	91	635.5
Waterford	91,608	144	636.2
Galway	180,304	215	838.6
Leitrim	25,297	37	683.7
Mayo	110,696	118	938.1
Roscommon	51,876	49	1058.7
Sligo	54,736	62	882.8
Cavan	52,756	83	635.0
Donegal	127,994	161	795.9
<b>Monaghan</b>	<b>51,262</b>	<b>108</b>	<b>474.7</b>
State	3,523,401	4,804	733.4

(Source: CSO, 1991 & CSO 1993).

- Moffett Engineering 'exports 95 percent of its £20 million turnover and has become a world leader in materials handling technology' (Business and Finance 9.2.95). 'In 1986 total output

was 14 machines; today, the factory capacity is 20 machines per week' (Business and Finance 21.7.94).

- Grove Turkeys, Monaghan Poultry Products and Monaghan Mushrooms (all located within a few miles of Monaghan town) 'form the centre of Monaghan business life and are the three largest employers with close to 600 direct employees between them. Indirectly there are over 1,000 people employed in satellite growing stations. Up to half of the farmers within a 25 mile radius of Monaghan town are thought to be locked into satellite growing arrangements with one or other of the companies' (The Sunday Tribune, Business Supplement, 25.12.1995, p.1).

- Rye Valley Foods is reported to be the largest producer of frozen and chilled ready prepared meals and breaded poultry in the country (Business and Finance, 26.5.94).

- Century Homes which builds timber houses, manufactured and erected 750 houses in 1995. It has secured orders for houses from Japan and expects to build 100 houses there in 1997. Since the developers require complete Irish houses, carpets, furniture and fittings as well as traditional walls, floors and roofs are supplied (Sunday Tribune Business Supplement 21 April 1996, p.3). Some 70 percent of these inputs are sourced from Monaghan (Sunday Business Post 1.10.95, p.2).

- The largest furniture firms in Ireland are located in Monaghan and dominate the national industry's exports to Northern Ireland and Great Britain.

3. A study on new firm formations found that Monaghan had the highest rate of successful business start-ups with a formation rate of 20.6 during the period 1980 to 1990. This rate is almost double the national average of 11.5, and the findings correlate quite closely with a similar study of the period 1973 to 1981 (Business and Finance, 11.8.94).

4. Perhaps associated with the high level of enterprise in the county, there is a relatively low level of unemployment. In 1994 unemployment was 6.96 percent, significantly lower than the national average and even lower than the EU average of 10.5 percent. Carol Moffett, of Moffett Engineering, attributes this low rate of unemployment to the work ethic which exists in Monaghan. She believes that the "can do" attitude of the young local workforce played a significant role in Moffett's success (Business and Finance, 21.7.94). IDA Assistant Regional Manager, Michael Logan, noted 'in fact, the performance of Co. Monaghan industry is a very positive model...if the rest of the country were to achieve the same level there could be about 100,000 more people employed in Ireland as a whole' (Business and Finance, 21.7.94).

### **6.2.2 Choice of industry**

Having identified Monaghan as an interesting county to study, the second decision had to be which industrial sector was a possible industrial district. This was influenced by the national concentration of firms in this industry, their size and the nature of the industry. Most industrial districts consist of craft based firms; for example knitwear in Carpi, textiles in Prato, ceramics in Sassuolo, furniture and shoes in Marche, shoes in Sinos Valley and furniture in West Jutland (Amin and Robins, 1990a p.196; Schmitz, 1992; Kristensen, 1992). This reflects not only the type of good produced but also the size of firms, the often family dominated ownership, production techniques and relations with other firms. The main

industries in Monaghan are mushrooms, poultry and wooden furniture. In both the mushroom and poultry business a single firm dominates the sector thus reducing the chances of either exhibiting features of strong horizontal inter-firm relations.

In addition the sub-contracting relations in the poultry and mushroom industry are such that the sub-contractor is reliant upon the firm for its inputs and purchase of the final products; for example growers for Monaghan Poultry Products buy day old chicks from the company, spend twelve weeks feeding them with meal bought from the company and then sell them back for slaughter. This indicates vertical dependency rather than vertical co-operation. Brusco (1986) outlines three models of small firms, the traditional artisan, the dependent sub-contractor and the small firm in the industrial district. At the outset it seemed more likely that the majority of firms in the poultry and mushroom industries could be classified as dependent sub-contractors.

Closer inspection of the wooden furniture industry showed a sector with a large number of firms most of which are small, with a concentration in Monaghan. After the two largest cities, Dublin and Cork, Monaghan had the next highest number of timber and wooden furniture firms located within its boundaries (CSO, 1993) (see map 6.1).

### **6.2.3 Justification of method of selection**

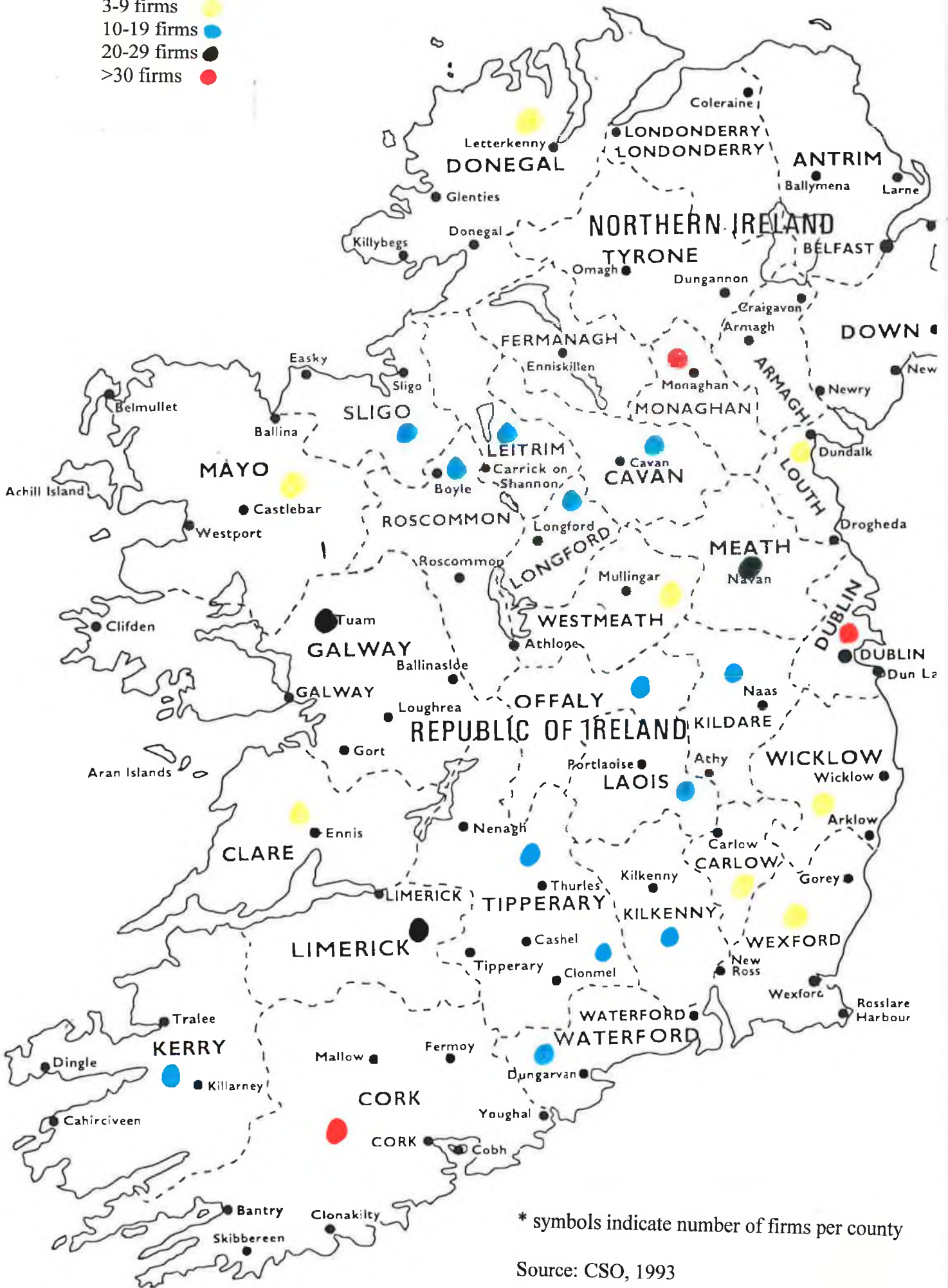
Research on industrial districts is usually based on the researchers' interest in a region rather than necessarily an industry. Interest in the region can include the fact that the researcher lived there -

- Brusco was living in Modena when he began writing about the Third Italy;



**Map 6.1: The geographical distribution of wooden furniture firms in Ireland\***

- 3-9 firms ●
- 10-19 firms ●
- 20-29 firms ●
- >30 firms ●



\* symbols indicate number of firms per county

Source: CSO, 1993

- Saglio, who studied the plastic firms of Oyonnax, heads a research team in Lyons;
- the geographers who proclaim Los Angeles the “capital of the late twentieth century” are talking about their home city;
- Hull Kristensen, who writes about the transformation of Danish industry, is a native of Jutland; and
- among the first insightful reports about Baden-Württemberg was a book of political self advertisement by the governor of the *Land*, Lothar Spaeth

[also important can be the fact that the region was exhibiting high rates of economic growth or success - ]

- Bagnasco found the ‘third Italy’ while sorting through industrial census data; Broken, a township in the North-west of the Federal Republic of Germany which converted textile mills to the production of speciality fabrics, attracted attention because of its low unemployment rates.

(Sabel, 1989, pp.23-24).

### **6.3 The wooden furniture industry in Monaghan**

As far back as 1801 a furniture firm was recorded by Coote in his statistical survey of the county: 'Near Glennon is a thickly inhabited neighbourhood where about an hundred carpenters reside, who are constantly employed in furnishing the neighbouring fairs and markets with the several articles of country work and furniture; the adjoining wood supplies them with timber on very cheap terms' (1801, p.154)<sup>20</sup>.

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<sup>20</sup> Glennon is located a couple of miles from Gaslough where today there are many wooden furniture firms.

In 1909 the County Monaghan Year Book and Directory listed 29 carpenters in the county; 10 in Monaghan town, 3 in Ballybay, 3 in Castleblaney, 5 in Clones, 3 in Gaslough, 2 in Newbliss, 1 in Scotstown and 2 in Smithboro. In addition there were saw mills in Emyvale, Smithboro, Ballinode, Monaghan and Clones.

The concentration of firms Glennon (near Gaslough) and Monaghan, Clones, Gaslough, Scotstown and Ballybay has remained generally the same over the last 200 years (see map 6.2).

However, the industry today is considerably different from that of the early 19th century; there are some 32 firms<sup>21</sup>, the wood is purchased outside Monaghan (and often internationally) and the markets which are supplied are in most cases far from local. Most of the furniture produced is mahogany veneered domestic furniture. The best known furniture ranges are Coyles and Rossmore produced by the largest firms but a range of products of varying quality are produced as well as many furniture components and parts.

The oldest factory which exists today is James O'Reilly & Sons Ltd. which was established in 1923 on Jubilee road in Clones and employed seven people. It is now run by the son of the founder (also called James O'Reilly) and employs four people. (McElroys and Grahams were also important firms in their time but closed down in the late 1970s).

The four largest firms in the industry today were established before 1970. Coyles was established in 1936, when its founder, originally an upholsterer from Armagh, decided to move to the area. Neeson Brothers chair makers began operations in 1950. McNally and Finlay

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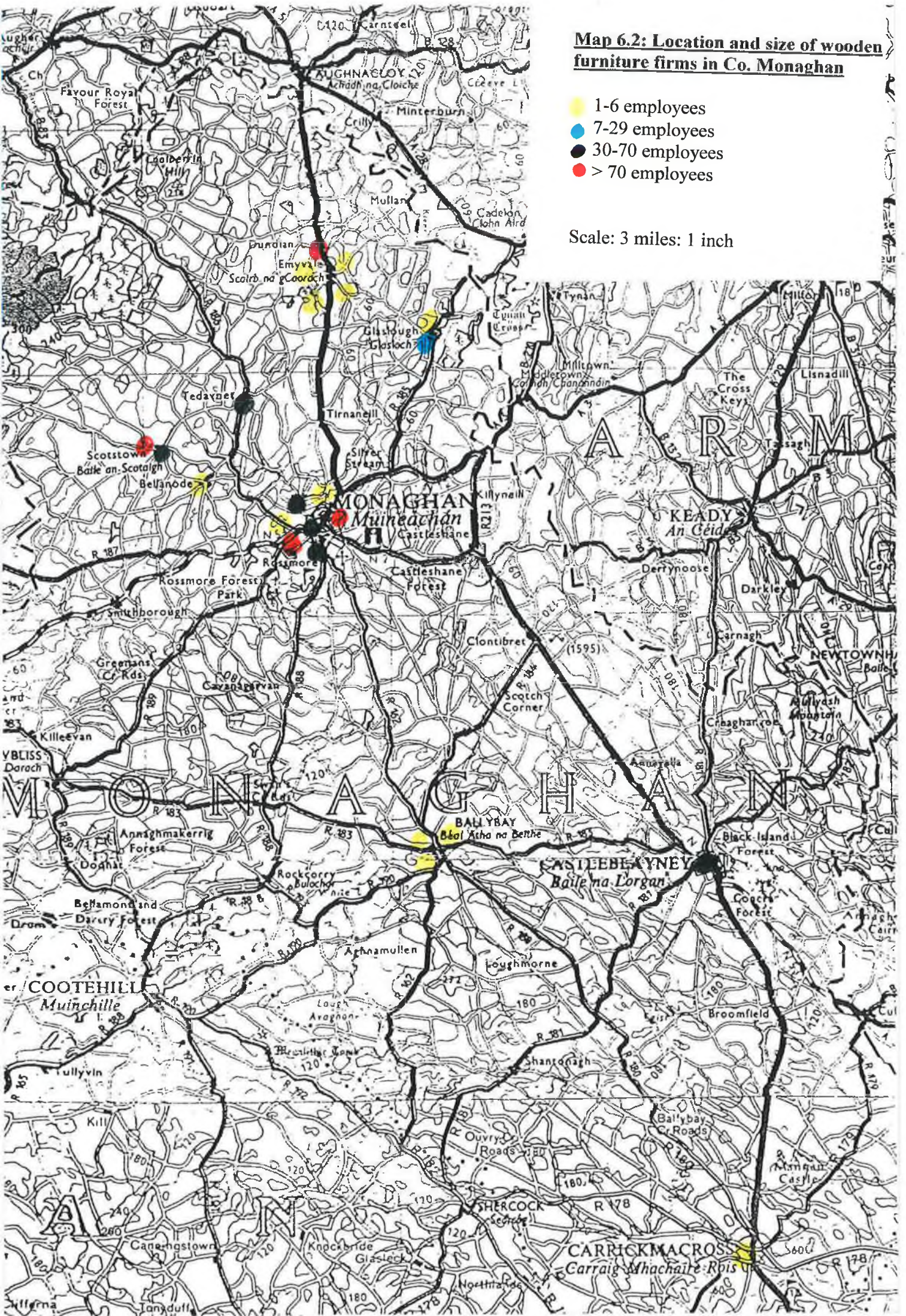
<sup>21</sup> This research identified 32 firms, one more than reported in CSO, 1997.



**Map 6.2: Location and size of wooden furniture firms in Co. Monaghan**

- 1-6 employees
- 7-29 employees
- 30-70 employees
- > 70 employees

Scale: 3 miles: 1 inch





In 1909 the County Monaghan Year Book and Directory listed 29 carpenters in the county; 10 in Monaghan town, 3 in Ballybay, 3 in Castleblaney, 5 in Clones, 3 in Gaslough, 2 in Newbliss, 1 in Scotstown and 2 in Smithboro. In addition there were saw mills in Emyvale, Smithboro, Ballinode, Monaghan and Clones.

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<sup>21</sup> This research identified 32 firms, one more than reported in CSO, 1997.

opened their firm in 1962. Gola began business 'some 53 years ago producing chicken coops and pig troughs' (Walsh, 1996) before subsequently entering the wooden furniture business. Also, SF Quinn established a small factory in Killygoan in 1948 and by 1972 employed 11 people (Livingstone, 1980, p.489).

### **6.3.1 Localisation of industry**

By 1970 the furniture industry 'employed some 500 people in 12 factories. Although McElroys in Castleblaney had the largest factory, the weight of the industry was located in the North of the county in Monaghan, Scotstown and Emyvale' (Livingstone, 1980, p.461). In terms of location little has changed in the industry today. As map 6.2 shows the furniture firms are concentrated around Monaghan town and its northern villages and hinterland. It is also apparent that the smaller firms are more geographically dispersed than the larger firms; those firms employing more than 26 people are concentrated within six miles of each other in Monaghan town, Scotstown, Emyvale and Gaslough. The concentration of firms in the northern part of the county is related to the fact that many firms have been established by former employees of the largest firms. Most often these individuals live in the area in which they work, thus when they set up their own firm they are likely to do so in the same general location. In addition these firms are nearer to the Northern Irish market and Larne port from where products are exported to Britain.

### **6.3.2 Causes of localisation of wooden furniture firms in Monaghan**

There are a number of different factors that can be used to explain the development and subsequent success of the wooden furniture industry in Monaghan. Marshall discussed the causes of localisation as physical conditions, hereditary skills, the growth of subsidiary trades and new firms and accident of history. In addition the literature of industrial districts,

particularly in the 'third Italy' pointed to the importance of agricultural decline and a history of manufacturing activities. Each of these factors has had an influence on this industry and the location of Monaghan close to Northern Ireland has also played a role in its localization.

#### 6.3.2.1 Physical resources

The availability of natural resources was an important factor in the birth of the wooden industry. There used to be extensive afforestation and the ash wood at Gaslough, which covered about one hundred acres, was, according to Coote 'the finest timber in Ireland' (Coote, 1801, p.30). The original Monaghan furniture factory 'purchased wood from a nearby forest' (Coote, 1801, p.307). Furthermore Coote reported in 1801 that 'Dawson Grove demesne has by far the most considerable quantity of timber [while]... Castle-Blaney demesne has also a tolerable appearance of wood, and all the improved demesnes throughout the county are well planted with young timber, which will soon make a fine show - among these Ankettle's Grove will undoubtedly take the lead' (Coote, 1801, p.31). The map in Appendix B shows the main forests which Coote identified in his statistical survey of the county in the early 1800s. The extent of afforestation in the Northern part of the county is apparent, although Dawson Grove near Cootehill is the most dense<sup>22</sup>. It is clear that historically there has been a considerable supply of wood in Monaghan and it is likely that this encouraged the development of industries which utilised this natural resource. It is notable that this wood was used to make looms to weave linen, shafts for the bleach mills and the cabins in which people lived and worked.

This natural resource has been all but depleted. Livingstone (1980, p.303) notes that 'by the early nineteenth hundreds the ancient woods of Monaghan were no more.... The principal woods

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<sup>22</sup> It is likely that there were other plantations that Coote did not mention

remaining were on the demesnes of the gentry. Of these the most notable were the woods at Dawson Grove, Anketell Grove, Gaslough and Castleblaney'. All of the wood which is used for the manufacture of furniture is now either imported or brought from elsewhere in Ireland. Some medium density fibreboard (MDF) is purchased from Scarriff in Co. Cork and there are now two wholesale distributors of this product located in Monaghan. Physical resources were an important factor in the development of this industry in the first instance but are no longer relevant.

#### 6.3.2.2 Hereditary skills

Most people in this industry have acquired their skills by working in a workshop or factory rather than attending any training course. The skills that one person has are transferred to others and this ensures the continued importance of the industry and the quality of craftsmanship. In addition with family run businesses operating from the home or the back yard, children are aware from a young age how furniture is made. However in recent years it is notable that rather than entering the family business many children are now attending third level education. One manufacturer complained that in the long-term there will be a lack of people with the required skills to manufacture furniture. It could be argued that gaining skills and experience outside of the local area could mitigate against possible inertia and bring in new ideas and processes. Against this however, in West Jutland the problem was that when children left the area to attend college and universities they 'were not returning to use their newly acquired knowledge to the benefit of the small communities' (Kristensen, 1990, p.160).



### 6.3.2.3 Growth of subsidiary trades and new firms

An important source of growth in industrial districts is the emergence of spin-off firms. These are firms which are established by former employees or family. These firms are usually involved in subsidiary or related trades. As discussed in chapter 3 in some cases this can be done with the assistance of employers or family in the form of finance, guaranteed orders or assistance with machinery. In Monaghan while only in a few cases was such clear and active support offered, nonetheless there is evidence of many spin-off firms.

Chart 6.2 shows that the roots of most of the furniture firms which exist today can be traced to Coyles<sup>23</sup>. Young men (the few women who work in these firms work only in the office) who did their apprenticeship with Coyles later set up their own firms. Subsequently many of the employees of these firms have done likewise. There are many reasons for this but a common feature must be entrepreneurship. In addition the recession in the 1970s left many who were put on short time or temporarily laid off with few options, but to establish their own firms, in the area in which they lived, often in their garages or sheds. Some of these firms are little more than family enterprises with a total employment of less than five but others are considerably bigger, employing anything up to 95 people.

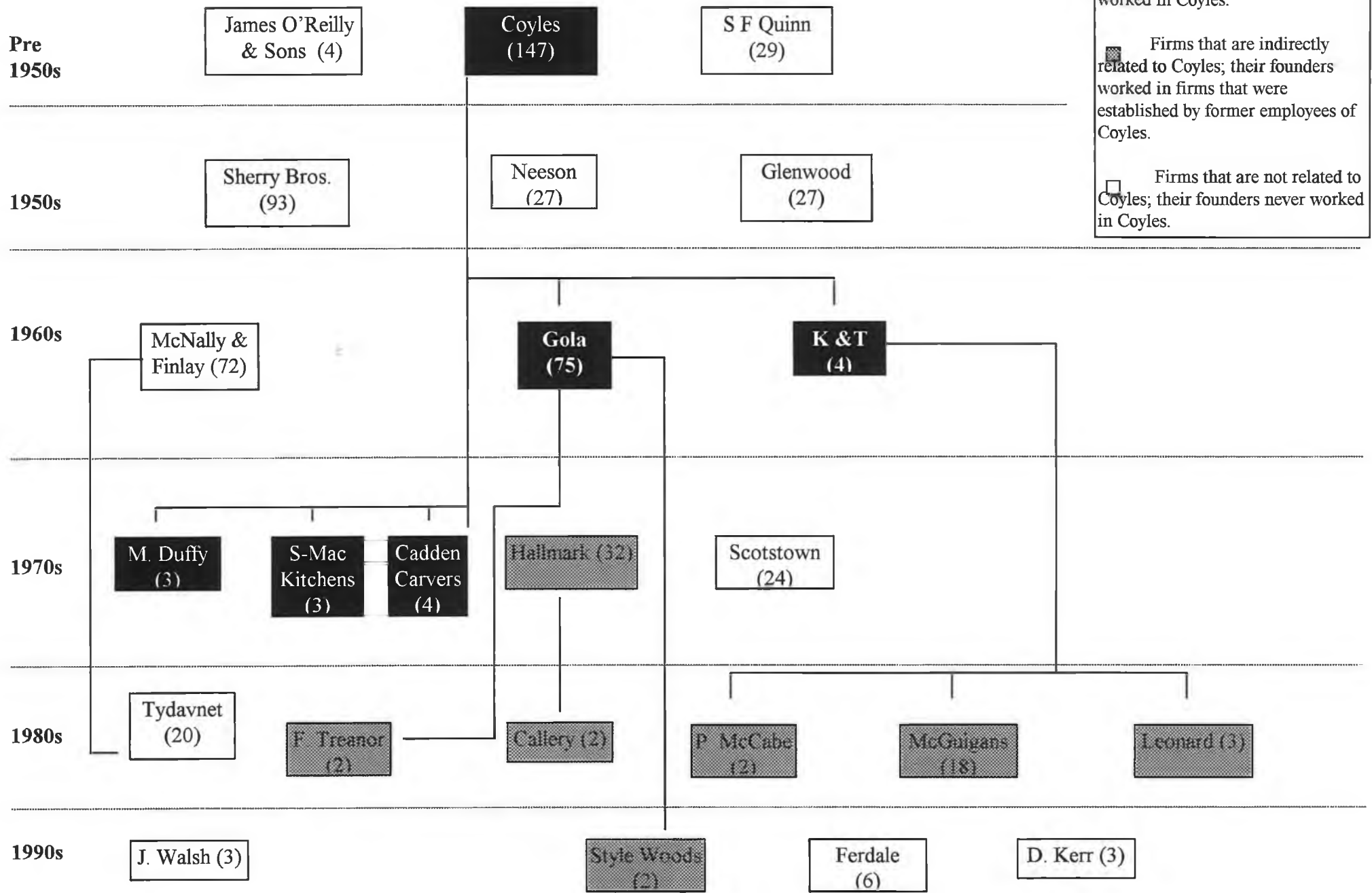
The study undertaken as part of this thesis shows that 75 percent of the furniture firms in Monaghan which responded<sup>24</sup> are either directly or indirectly related to Coyles. The owners of nine firms did their apprenticeship in Coyles before establishing their own firms and a further nine firms are indirectly related in that their founders worked in firms owned by those who had

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<sup>23</sup> The number in brackets in the chart are numbers employed.

<sup>24</sup> These responses represent some 78 percent of the total number of wooden furniture firms in the county.

**Chart 6.2: The spin-off effect in the wooden furniture industry in Monaghan**



originally done their apprenticeship in Coyles. This mirrors other industrial districts, for example in Santiago, Mexico where 'it was generally accepted that owners would give assistance at some future date when the worker wished to separate and start his own business... For example, the pioneering owner in Santiago estimated that he had taught well over 100 men the arts of loom work and machine repair' (Wilson, 1992, p.61). 'In Emilia-Romagna the new firms will be headed by a family member or trusted previous employee who wishes to establish an independent firm' (Best, 1990, p.207). In Monaghan May (1995) stated that if the person setting up the firms 'was a senior person they would be on their own, if it was somebody who was in their early twenties... there would be moral support'.

It is this continual emergence of new firms which has perpetuated the industry in Monaghan and assured its continued growth. The pattern of the size of firms related to age also indicates the internal growth of firms over time. Central to the emergence of spin-off firms, and a common factor identified by industry experts and owners of firms alike, is the business ethos which is evident throughout the county. This ethos encourages individuals to set up their own firms and encourages owners and managers to continually improve and develop their businesses.

#### 6.3.2.4 Accident of history

Marshall (1920, p.287-288) describes how the 'arrival in times far back of energetic artisan immigrants have founded industries, which have maintained their predominance till now'. In the case of the wooden furniture industry in Monaghan the arrival of John Coyle from Northern Ireland in 1936 has had a driving effect on the industry to this day as it is the largest firm and apprentices from this firm have continually established their own firms, thereby expanding and

strengthening the local industry. According to Ryan (1995) part of the attraction to move across the border was state incentives. This was at a time when there was a policy of import substitution and domestic production of furniture was encouraged by tariff protection against imports.

#### 6.3.2.5 The decline of agriculture

The land in Monaghan meant that few could rely solely on agriculture for their survival. Coote (1801, p.40) reported that 'occupiers in general do not look to agriculture, as returning more than is necessary for home consumption; for the corn of Monaghan is by no means sufficient for the supply of its inhabitants, and great quantities are annually imported'. Thus for those involved in agriculture in Monaghan in the early 19th century the manufacture of other goods was essential. Weaving and more recently carpentry were common options as they were craft based, there was a history of this type of industry in the locality and it was possible to undertake these activities in homes, sheds and outhouses.

In their study of Jutland in Denmark, Dunford and Hudson observed 'one implication of this combination of a meagre natural resource base and a peripheral location was that people in Jutland were forced to rely heavily upon their own enterprise, ingenuity and skill in order to make a living there' (1996, p.61). Similarly entrepreneurship has developed in Monaghan and has had an important influence in both the emergence and development of the wooden furniture industry.

### 6.3.2.6 History of manufacturing activities

Capecchi (1989, p.25) noted that in Emilia Romagna the history of local manufacturing in conjunction with agriculture equips individuals with the experience and support to set up their own businesses. There is a history of manufacturing activities in Co. Monaghan, primarily in the manufacture of linen. While agriculture was a common livelihood many families supplemented their incomes with manufacturing activities, weaving in their homes: in the Barony of Trough (around Emyvale) 'lands bring from twenty to thirty shillings per acre, on which the poor tenants toil incessantly, and might be said to starve rather than to live, were it not for their manufacturing. Scarcely a cabin is without a loom or two, and webs are brought to market from hence to Armagh and Monaghan' (Coote, 1801, p.149-150). This tradition of family businesses and craftsmanship<sup>25</sup> created an environment which favoured the development of manufacturing activities and new firms.

### 6.3.2.7 Proximity to Northern Ireland

Geographical proximity to Northern Ireland brings advantages for firms located in Monaghan. Goods can be easily and quickly transported through Larne, making northern England and Scotland particularly accessible markets. These markets provided a route for expansion for firms which had only a limited domestic base of potential customers. In addition the closeness of the six counties themselves with large populations like Belfast and Derry provide almost an extension of the domestic market, particularly for fitted kitchen manufacturers. The Monaghan firms are not only located closer to these towns but they were also better able to efficiently pass customs. In the evening the Monaghan truck driver could bring the stock to the border with the

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<sup>25</sup> crafts included lacemaking particularly in Carrickmacross and Castleblaney and pottery in the town of Lisgoa near Gaslough using a local supply of potter's clay, as well as weaving and carpentry (Coote, 1801).

required documents which take time to clear, and return home for the night. By morning everything would be cleared and ready to go. By comparison if travelling from somewhere else considerable time was lost waiting for customs clearance (May, 1995). (This is no longer relevant since the Anglo Irish Free Trade Agreement).

Exposure to the Northern Irish and English markets has ensured that the goods produced by these firms are of high quality. Due to the costs of transport it is not possible to compete on price so quality is the tool employed to compete with British counterparts. Initially the furniture produced was primarily reproduction furniture; copies of the furniture which was popular in Britain. In more recent years however there have been significant developments in the standard and originality of designs as well as technology; three years ago a company in the UK did a reproduction of Coyles' range.

The success of this industry is attributable to the localization of the industry, its location, the continual emergence of spin-off firms, and hereditary skills. In addition the importance of strategic choices made especially by the larger firms and the role of Forbairt and Bord Trachtála particularly for the larger firms must not be underestimated. External expertise in the form of designers, marketers and management accountants have considerably aided the development of Coyles, Sherry Brothers and McNally and Finlay and facilitated their movement into the British market. Another factor is the work ethic and business ethos which has meant that unlike other concentrations of furniture firms in Ireland, these firms re-invest a large proportion of their profits back into the business (May, 1995).

### 6.3.2.8 The role of the state

While the state has played an important role in the success of this industry the role is very different from that recorded in places in the 'third Italy'. The role has been one of supporter and encourager rather than organiser or participant. Support can be divided into two different sections, training and exports. Fás offers four-year apprenticeship training courses (although much of the training in this sector is conducted on the job within the firm), and management training. In addition from time to time specialist courses are offered. For example an Italian wood finisher provided a two day workshop which was attended by representatives from 18 firms (Redmond, 1995). The grant system for firms has been used by Forbairt to encourage the development of trade, when gaining a grant became dependent upon exporting to the UK. It was this scheme which encouraged the larger firms in particular to look outside the domestic market. A similar scheme to encourage firms to look to London or the rest of Europe is likely (private interview).

The state initiatives which have aided the development of the furniture industry in Monaghan have been for the most part central policies rather than specifically geared towards the Monaghan industry. This differentiates them from the strongly regional and local approach of policies undertaken in industrial districts in the 'third Italy'. The objective in the Irish case has been the development of the national rather than the regional industry. Perhaps as a consequence of the fact that the manufacturers association is concerned primarily with wage issues (private interview) there is no evidence of real service centres or technology centres being established by either the association or the state.

It is clear that the state has played a role in the development of this industry but in a general rather than a specific way. The detailed information in this thesis points towards policies which would be of particular benefit to the Monaghan furniture industry, although in fact similar policies would probably be beneficial for the whole industry. For example further developing and enhancing the apprenticeship system and perhaps offering a course in the locality, would encourage young people to look at carpentry and the furniture industry as a career option, either instead of or after gaining a third level qualification. This would solve the problem outlined by one owner that as the majority of young people in the area leave to go to college there is a shortage of skilled labour.

Another example is the establishment of a real services centre which would centralise some of the services which most of the small firms avail of, for example accounting, but more importantly to encourage the development of marketing, branding and exporting among these smaller firms. The success of this industry depends upon design and quality as well as price so establishing an innovation centre in Monaghan, which could perhaps initially be supported by Forbairt (or the association or the local enterprise board) in conjunction with firms, with the long-term plan that the firms should operate it jointly, could enhance competitiveness. This centre would provide firms with information regarding the international market as well as providing technological, design and marketing support. Clearly the benefits of such a centre would be largest for the smaller firms, but if it is effective, the option of reducing costs in areas such as marketing and design within the firm, and instead relying on the services provided externally, would facilitate gains greater specialisation. Such a centre would be modelled on those in places like Emilia-Romagna. The best institution to undertake such policies would be local rather than national.



### **6.3.3 The future for the Monaghan furniture industry**

In many ways the furniture industry in Monaghan may be at a watershed. For the more successful and export oriented firms future growth is dependent upon movement into new markets. However to some extent the type of furniture which this industry specialises in does not easily lend itself to European markets where consumer tastes are different.

The furniture industry is extremely dependent upon tastes and if tastes in furniture were to change significantly radical departures in terms of the wood and design of products may be essential. Some in the industry point to the fact that the standard of equipment is now so high that firms can be relatively flexible over the medium term and if changes in consumer tastes were to necessitate it, it would be possible to use a different wood or different designs. This view is supported by the fact that in the last three years, in response to changing tastes, there has been a move to producing cherry veneered furniture which has become more fashionable (May, 1995). Those firms competing primarily on the domestic market in the low to medium quality bracket are finding competition increasingly intense with the high level of cheap imports.

There is a declining number of start-up firms - only three firms have been established in the first half of the 1990s as compared to six in the comparable period in the 1980s. Best (1990, p.207) believes 'that one index of the health of an industrial district is the rate of creation of new firms, particularly spin-off firms'. The reduction in new firms may indicate that it is generally believed that the industry has now reached saturation point. Questionnaire responses show that 13 (52 percent) of respondents believe that over the next five years the number of firms employing up to 50 people will increase, 16 firms (64 percent) and 15 firms (60 percent) respectively believe

that the number of medium (employing between 51 and 100) and large firms (employing more than 100) will remain the same. Thus those in the industry are not convinced that there will be considerable growth in the number of firms over the next five years. Ryan (1995) observed that 'it is getting increasingly difficult [to set up a small firm] for the very simple reason that machinery now is doing what six men did before. The standard of quality control in a large plant is excellent - close to perfection'. This machinery is too costly for small firms and consequently many of them tend to concentrate on manufacturing the products which require the most skill.

It could also be reflective of a change in views, whereby on balance the relative security and financial stability which is assured by being employed by an established firm is preferred to the option of self-employment. It is notable that while the number of firms in the sector has remained relatively static, most firms report increased output and levels of exports during the last five years.

#### **6.4 Is the timber and wooden furniture industry an industrial district?**

This section addresses the question as to whether the wooden furniture industry in Monaghan constitutes an industrial district. The method of testing this hypothesis was to collect information from a representative sample of firms using questionnaire and interview techniques (the questionnaire is in Appendix A). A total of 32 wooden furniture firms were identified in Monaghan. Of these firms 25 completed questionnaires or were interviewed for the purposes of this study. This indicates a response rate of 78 percent. In a number of questions interviewees were asked whether particular items are important; in such cases it was possible to answer yes to more than one item, therefore in some cases the percentages for each response may exceed 100 percent. The information received from questionnaires and interviews will be assessed in the

light of the usual characteristics of an industrial district as outlined in chapter 3. These characteristics are:

1. geographical and sectoral concentration of firms
2. mostly small firms
3. strong inter-firm relations
4. strong social ties between firms and society - milieu
5. highly innovative firms
6. significance of family
7. a history of agricultural activity in the region

#### **6.4.1 Geographical and sectoral concentration**

Industrial districts are most often examined in terms of a confined region or district. In this case county borders were taken as the natural division between Monaghan and the rest of the country. As map 6.1 shows, there is a concentration of furniture firms in Monaghan. In fact there is on average one firm every four hectares. However these firms are even more confined than this; within a six mile semi-circle of Monaghan town there are some 22 such firms. Aside from Monaghan town, Emyvale which is about six miles north of the county's capital is the most densely populated area in terms of furniture firms boasting six firms which employ almost half of the local population aged between 25 and 64 years (see map 6.2).

##### 6.4.1.1 Sectoral concentration

As outlined in chapter 3 (p.56) sectoral concentration can be vertical and/or horizontal: horizontal when there are many firms producing the same good located in the one area; vertical

when all stages of production are carried out within this area. The extent of vertical and horizontal relations is to a large extent definitional. If the product is defined as all wooden furniture then there is more horizontal and less vertical sectoral concentration. Alternatively, if each part (and operation) is classified as a different sub-sector then there will be more vertical and less horizontal concentration.

#### *6.4.1.1.1 Horizontal concentration*

There is certainly horizontal sectoral concentration among these firms in Monaghan as they are all producing wooden furniture. There is in some cases, however, differentiation in terms of the product. Broadly, there are two groups, those producing domestic furniture and others manufacturing contract furniture such as furniture for restaurants and pubs, and shop-fronts<sup>26</sup>.

In the domestic furniture sector, most firms are involved in the production of veneered domestic wooden furniture which 'in terms of its visual impact... all looks the same' (May, 1995). They do not specialise in a small number of specific products: one industry expert stated that some firms 'would make up to 150-200 products; from TV video units to CD units to hall table stands, to bed heads' (May, 1995). They do however specialise in terms of segments of the domestic furniture sector. Most firms produce both bedroom and living/dining room furniture. A number of others specialise in kitchens, some of which also manufacture fitted bedroom furniture.

Some distinctions can be made between the products of different firms in terms of quality, design or veneer but these are few, and in general the products are being sold to the same or

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<sup>26</sup> There is also a number of firms which specialise in upholstery (seven were identified in the course of this study) - one owner estimated that approximately 200 suites are produced weekly in the county - but they are far outnumbered by those producing wooden furniture and are not included in this study. There is a concentration of upholstery firms in Navan, Co. Meath.

similar final consumers. These firms are all each other's competitors: 19 firms (79.2 percent) stated that their main competitors are located in Monaghan.

#### *6.4.1.1.2 Vertical concentration*

In a number of industrial districts all, or most, of the inputs required in the industry are manufactured locally. This is not the case in the wooden furniture industry in Monaghan. The primary input wood, is purchased either from elsewhere in Ireland or abroad; according to the responses in this study some 46 percent of the wood required comes from each (the remaining 8 percent comes from Monaghan). According to the responses, 83 percent of new machinery and 64 percent of second hand machinery is purchased abroad<sup>27</sup> (see Chart 6.3). It is clear that few of the raw materials and capital equipment required for this industry are manufactured locally.

There are a number of local firms engaged in servicing the industry. There are three firms which are wholesalers for the veneered chipboard which they purchase elsewhere in Ireland and sell on to local furniture manufacturers. One firm in Ballybay supplies veneered kitchen tops which are purchased by fitted kitchen manufacturers. Local accountants are also used.

In addition some stages of production are sub-contracted to other firms in the area. One firm specialises in turning legs, another in the manufacture of doors for fitted kitchens, another two in fireside chair frames, one in manufacturing dining room chairs and yet another in carving occasional tables. It is notable that the manufacture of each of these products requires special skills, in particular in the case of turning legs and the carved rope-edging on the occasional

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<sup>27</sup> It should be noted that while components such as wood and machinery may be purchased from domestic firms the products themselves may be manufactured outside the country.

tables. As discussed in chapter 1, according to Williamson, such asset specificity should result in the internalization of this stage of production. However in Monaghan strong inter-firm relations and entrepreneurship help the gains from specialisation to offset the tendency towards internalisation.

Thus the wooden furniture industry in Monaghan is not reliant on local inputs; the majority of inputs and machinery are purchased from elsewhere. However, all of the stages of production in the manufacture of furniture are undertaken in the local area, some of them internally, within firms, and others sub-contracted out to specialist firms in the area. There is evidence of a high degree of vertical sectoral concentration.

Casson and Panniccia (1995) compare types of networks: the 'local network used for internal co-ordination in an industrial district [and] the long-distance network associated with overseas economic development'. The textile district in Prato is used to exemplify the former and the iron-making and coal-mining district of Merthyr Tydfil in South Wales representing the latter. As part of their study they investigate the product flow within the two areas. Building upon this type of analysis, chart 6.3 shows the product flow through Monaghan. It is clear that the wooden furniture industry in Monaghan is not self-sufficient, it requires the rest of Ireland for inputs, certain services and the market that it supplies. Similarly, countries outside Ireland are sources of supply of inputs and provide a market. Inputs come into the county, all stages of production involved in the manufacture of furniture take place locally and the final goods are then distributed to the local, Irish and European markets. To summarise, in Monaghan there is sectoral concentration in the manufacturing stages of production of wooden furniture and this local production system has both backward and forward national and global linkages.

This sector could be said to fall somewhere between the Sinos Valley example, where 'within a 50 km radius of Novo Hamburgo, the centre of the Valley, most inputs are produced' and most of the machines used in the industry are made locally (Schmitz, 1993, p.5), and West Jutland where 'since the 1960's semi-finished goods and standardised components have increasingly been produced outside Denmark' (Kristensen, 1992, p.154). If both Sinos Valley and West Jutland are industrial districts, then the absence of total vertical sectoral concentration should not prevent Monaghan from being classified as the same.

#### **6.4.2 Mostly small firms**

The wooden furniture industry in Monaghan is dominated by small firms. The average number of employees is 25 per firm. This mirrors the national situation in this industry where 93 percent of employees are in firms with up to 50 people (CSO, 1993). There is however a wide range of different sized firms ranging from two employees to 147 (Table 6.6 shows sizes of firms).

Some 81 percent of firms surveyed employ up to 30 people. An important sub-sector is the micro-enterprises which are often discussed in the literature on industrial districts; firms employing less than seven people account for 48 percent of the total firms surveyed. This is similar to the proportion of small firms in Hering-Ikast (59 percent of firms employ less than six people) and slightly lower than Valles Oriental in Catalonia (two-thirds of the firms employ between one and nine people) and Emilia-Romagna (75 percent of the firms employ less than ten workers) (as outlined in chapter 3 p.60). Although there are many small firms in the local industry, Monaghan has a concentration of the larger furniture firms in Ireland. Data from the Kompass directory shows that 41.7 percent of furniture firms in the country which employ

between 51 and 100 people are located in Monaghan. The size of these firms allows them to achieve economies of scale.

Chart 6.3: Wooden furniture product flow through Monaghan<sup>28</sup>

	Internal to the firm	Monaghan	Outside Ireland	Ireland
<b><u>Inputs</u></b>				
Wood (W)		W: 8%	W: 46%	W: 46%
Components (C)		C: 8%	C: 39%	C: 53%
Machinery (M) MN=new MS=second hand		MS: 7%	MN: 17% MS: 29%	MN: 83% MS: 64%
<b><u>Furniture Components</u></b>	Breaking out	Turning		
	Machining	Chairs/Chair frames		
	Upholstery	Upholstery		
	Finishing	Kitchen unit doors		
		Carving		
<b><u>Services</u></b> <sup>29</sup>				
Accountancy: A	A: 21%	A: 47%	A: 32%	
Repair of machinery: R	R: 47%	R: 47%	R: 5%	
Costing of products: C	C: 96%		C: 4%	
Selection of personnel: P	P: 100%			

In chapter 3 one of the reasons for the existence of large firms in industrial districts was shown to be that they had grown as the district had grown; in Sinos Valley 'the firms which are large

<sup>28</sup> Percentages relate to information supplied in questionnaires completed by 25 of the 32 firms

<sup>29</sup> Services supplied from the rest of Ireland could in some cases include Northern Ireland .



now were small 25 years ago' (Schmitz, 1990, p.8). This was contrasted with the 'third Italy' where the expansion of the local economy usually results in the emergence of new small firms. The wooden furniture industry in Monaghan represents both of these features. The youngest of the four largest firms were established in the 1960s and have grown with the industry to become the largest employers. As they have been growing internally over the years many of their former employees have also established their own firms (all but nine of the firms studied can be related by their owners to another firm in the industry). In this way the industry has simultaneously grown in terms of the size of the larger firms and in the number of firms in total.

Chapter 4 concluded that relative size is more important than the absolute size of firms as this affects inter-firm relations and in particular the existence of trust, power and co-operation. As the table (6.6) shows there are two clear groups, those firms that employ more than 70 people and the smaller firms employing less than 35. The continued growth of the larger firms and their expansion into the export market (the three largest firms all export more than 80 percent of their output) has increased the differences between the two groups of firms particularly in the last ten years. However as discussed in section 6.4.3.3 there remains a considerable amount of interdependence between firms in the district, rather than one group exercising power or control.

The success, development and expansion of this local industry cannot be regarded as another success story for small firms (as many industrial districts are) due to the important role of the larger firms. As all firms are not micro enterprises this clearly is not the same type of industrial district as many of those in the 'third Italy' or what we have called the *prototype*; further investigation of the other usual characteristics of an industrial district must be undertaken to assess whether the district could be another type of industrial district.

Table 6.6: Size of furniture firms in Monaghan<sup>30</sup>

No. employees	No. firms	No. employees	Percentage of firms	Percentage of employees
1-5	13	35.5	46	5.3
6-25	6	100	21.4	15.1
26-35	5	142	17.9	21.4
36-70	0	0	0	0
70-150	4	387	14.3	58.3
<b>Total</b>	<b>28</b>	<b>664.5</b>	<b>100</b>	<b>100</b>

### 6.4.3 Inter-firm relations

#### 6.4.3.1 Competition

The research shows that wooden furniture firms in Monaghan engage in Schumpeterian competition with each other. The products that they manufacture are in many cases homogeneous and therefore substitutable by either the retailer or the consumer. When asked where their main competitors were located, of 24 responses, six (25 percent) said competitors were located abroad, 19 (79.2 percent) said Monaghan, while 12 (50 percent) said other parts of the country<sup>31</sup>. Thirteen (52 percent) of firms said that their competitors were small employing up to 50 people.

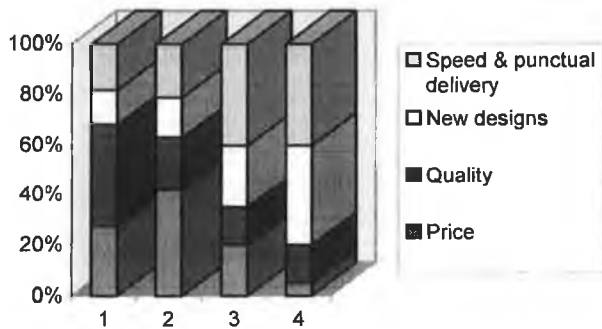
Chart 6.4 shows that price remains an important factor in competition among firms in this industry but not as important as quality. Quality was ranked as the most important competitive factor by nine (47.4 percent) of the 19 respondents (as compared to six (31.6 percent) who thought price was the most important factor). Price is ranked second most important by eight firms (42.1 percent) in the sample followed by speed and punctual delivery and new designs.

<sup>30</sup> Those furniture firms which responded to questionnaire plus an extra three where the numbers employed were available in Kompass.

<sup>31</sup> In a number of cases competitors were located in more than one location.

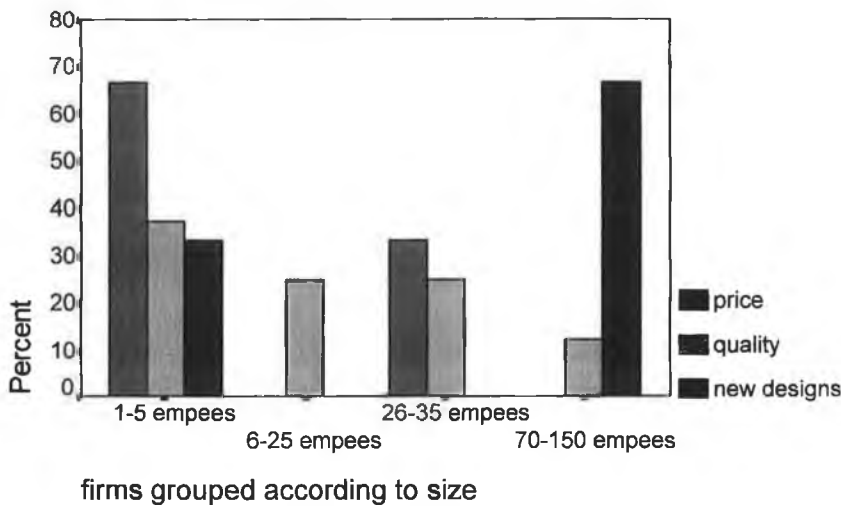
The percentage of respondents who thought speed and new designs were among the important sources of competition is not negligible, thus implying that competition takes place on quality, design and the speed of delivery of products as well as on price.

Chart 6.4: In order to out-compete your rivals, what are the four main factors (in order of importance 1-4)?



The chart below relates to which factors firms selected as the most important (ranked 1). In order to out-compete their rivals smaller firms rely primarily on price while larger firms compete on the basis of new designs.

Chart 6.5: The *most* important source of competitiveness: price, quality and new designs, by size of firm



### 6.4.3.2 Co-operation

There appears to be little co-operation among firms. All but one firm stated that they did not have any formal arrangements with other firms; only one firm owned equity shares in another furniture firm; and all firms said no other furniture firm owned equity in their firm. Thus there are few links between these firms in terms of common ownership unlike many districts in the 'third Italy'.

#### *6.4.3.2.1 Horizontal co-operation*

However, closer discussion and analysis indicates at least some degree of co-operation. As the table below shows there are varying levels of horizontal co-operation among local producers in product development, marketing, training of workers, the purchase of inputs and lending of machinery. Table 6.7 shows that the most common form of co-operation is the lending of machinery (mainly hand tools); 11 firms (47.8 percent of respondents) say that they would do this often or occasionally. Co-operation can be inhibited by the fact that a number of firms are manufacturing the same products, or, if they so wished, could relatively easily begin to do so.

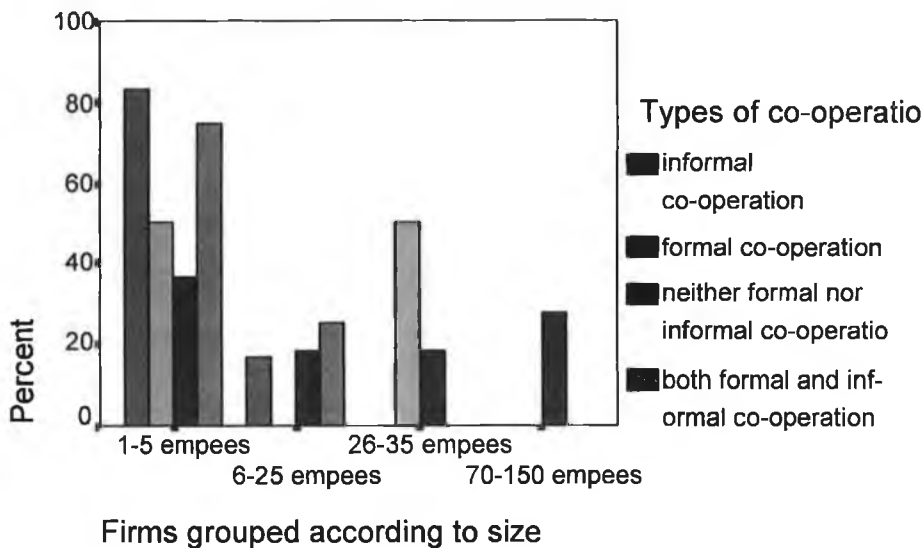
Table 6.7: Do you co-operate with other local producers in your industry in the following ways?

(Response choice: often, occasionally, never)

	Number (percentage) of respondents which said <i><b>Often</b></i> or <i><b>Occasionally</b></i>
Lending Machinery	11 (47.8%)
Product Development	4 (17.3%)
Purchase of inputs	3 (13%)
Marketing	2 (9.1%)
Training of workers	1 (4.5%)

As the chart below shows the type of co-operation undertaken is closely related to the size of the firm. Informal co-operation in terms of lending of machinery is dominated by small firms; 80 percent of the informal co-operation which occurs in the district is among the smaller firms employing up to 25 people. The medium sized firms (employing between 26 and 35 people) which co-operate tend to engage in more formal activities such as joint marketing, product development, the training of workers and purchase of inputs. The largest firms, employing more than 70 people, do not co-operate at all. It is interesting that those firms which jointly manufacture the Rosssmore brand of furniture do not report any co-operation.

Chart 6.6: Informal versus formal co-operation by size of firm



The best known formal co-operation in the district occurs between McNally and Finlay, and Sherry Brothers. These firms jointly manufacture the Rossmore range. Their jointly employed designer designs products for each firm. One may expect that they would have specialised in particular products for the range but this is not so. Instead, they each produce the same goods and then compete on the market. Thus they co-operate to have the products designed, sell under the same brand name and in Ireland use the same agents (in the UK they are more competitive and have different agents). This arrangement appears to be successful for both parties but the difficulties of altering such a long-standing agreement would be complex and are likely to encourage continued compliance.

In other industrial districts, and the 'third Italy' in particular, trade associations played an important role as instigator of inter-firm co-operation. Only eight (33.3 percent) of respondents in this study belong to an association and there are criticisms of its lack of activity. However in the 1970s and up until 1980 there was a furniture manufacturers association in Monaghan which organised an annual exhibition to which the firms jointly brought retailers. Most firms were involved in this association with the notable exception of Coyles.

The Rossmore firms took part for the last time in 1980 and without this important attraction the exhibition soon ceased. The reasons for their withdrawal are not documented but it is possible that as they became more export oriented and larger they believed that it was more efficient to have agents overseas and be aligned to the larger firms exporting high quality products. Up until 1995 a similar arrangement between Rossmore and Coyles resulted in an annual furniture exhibition in Malahide, Co. Dublin. The opening of new showrooms in Monaghan has resulted

in the cancellation of this exhibition. Co-operation can also be instigated by export agents who bring British retailers to Ireland to visit a selection of firms.

Discussions with owners indicated other types of informal co-operation in addition to lending machinery, tools and equipment. There is a certain amount of exchange of information regarding bad-debtors. Subtle co-operation occurs among the two fireside chair manufacturers. According to one, each have their own customers and they 'do not step on each other's toes' in order to take business from each other. Furthermore if one gets an order from a new customer he rings his competitor to check that s/he has not stopped supplying them for bad payment etc. In this way they are perhaps unknowingly co-operating to ensure the continued viability of each firm. There is also evidence of an attitude among some of the owners of the firms interviewed that they simply wish to 'make enough money to have a comfortable life'. They are not entrepreneurs who aim to increase output and profits consistently and grow into a large employer or exporter, rather individuals who 'want to take home the money at the end of the week and know that [they] have a job to come to next week'<sup>32</sup>. This type of attitude permits a level of co-operation even between competitors.

#### *6.4.3.2.2. Vertical co-operation*

Vertical co-operation can take many forms. It can involve co-operation in the development of new techniques and processes, assistance in the transport of products and suggestions on improving products required in production.

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<sup>32</sup> This quote from an interview is more representative of the small, family firms.

Manufacturers appear to have a close consultative relationship with suppliers. Suppliers had approached 14 (58.3 percent) of respondents to offer assistance with problems arising from their products. When asked ‘do suppliers ask for suggestions on how to improve their products?’ 13 (59.1 percent) of respondents replied affirmatively. It should be noted that in interviews many of these respondents said that rather than necessarily being asked, they volunteered their suggestions.

Table 6.8: Extent of vertical co-operation<sup>33</sup>

<i>Types of vertical co-operation</i>	<i>Number (percentage) of firms respond</i>
<b><i>Have your suppliers approached you to:</i></b>	<b><i>Yes</i></b>
a) offer assistance with problems arising from their products?	14 (58.3%)
b) ask for suggestions on how to improve their products?	13 (59.1%)
c) explain the characteristics of their products?	15 (71.4%)
<b><i>Do you provide any of the following to your sub-contractors?</i></b>	<b><i>Often or occasionally</i></b>
a) advance payments	0 (0%)
b) lending of machines or equipment	2 (20%)
c) repair/maintenance of machines	0 (0%)
d) training of workers	0 (0%)
e) transport of parts or products	5 (50%)

There is also some evidence of co-operation between firms and their sub-contractors. Five firms stated that they provide sub-contractors with transport of parts or products often or occasionally and two occasionally lend machinery or equipment to sub-contractors. This facilitates the existence of small firms. In one case a fitted kitchen manufacturer collects the doors that he sub-contracts from a local manufacturer who does not have any transport. In a less localised and co-operative environment such a firm could not exist without transport.

<sup>33</sup> The total number of respondents differs from question to question.



The degree, level and significance of co-operation in this industry varies considerably from firm to firm. In some cases, as Kristensen (1990) found in West Jutland, co-operation may not be perceived as such; for example collecting kitchen unit doors from the sub-contractor down the road when they are ready, making a telephone call to warn an old friend, colleague or neighbour about a bad debtor or not stealing the competitors' customers. In other cases co-operation comes in the form of formal arrangements to develop and produce a joint brand-name. Other sporadic forms of co-operation occur in terms of lending hand tools, visiting each others' workshops and exchanging ideas or discussing problems or strategies, often socially. These types of co-operation are not structured, organised or regular but the important point is that an environment exists where relations between entrepreneurs involve more than just competition.

#### 6.4.3.3 Interdependence

Many of these firms are interdependent in that they do not produce final products. This interdependence mirrors what is occurring in most small and medium sized firms, where globalisation makes firms 'recognize that their stand-alone resources and capabilities are insufficient to sustain their international competitiveness, and that they need to draw upon resources and capabilities of others' (Acs and Preston, 1997, p.2). Most furniture firms in Monaghan are reliant on another firm in the area to purchase or manufacture either a component or accompanying product. This system is not the same as the putting out system as described by Lazerson (1995) in Modena or indeed Schmitz (1993) in Sinos Valley, Brazil where there was complete interdependence as all stages of production were sub-contracted. Lazerson showed that the manufacturer in the knitwear industry of Modena was responsible for buying yarn, designing samples, organising production and finding customers. The putting-out process means that other specific stages of production are undertaken by sub-contacting firms - in this way all

of the firms were dependent upon others. In Monaghan there is not a putting-out process but firms do sub-contract particular stages of production, primarily upholstery, carving and turning. The difference between this and the putting-out system is that in Monaghan the bulk of the manufacturing remains with a single firm. Thus the level of interdependence is more constrained than in other industrial districts.

It is the fact that many of the manufacturing activities have remained internal to the firm and that only some firms have specialised in particular stages of production, that reduces the degree of interdependence. It must also be noted that of the eight firms which have worked as sub-contractors for another firm over the last five years, four have worked for one particular firm while the others worked for a number of different firms. Nonetheless, few firms are totally dependent on others in the district as both purchasers and sub-contractors have the option of working with other firms outside of the district.

This leads to the question why it is that in such a concentrated area firms have not specialised to a greater extent. Firstly it should be noted that some firms have become more specialised. It is reported that the larger firms in the district used to produce an even broader selection of furniture which included upholstered sitting room suites, but in more recent times smaller firms have emerged which specialise in this product. In some cases vertical corporate disintegration has occurred as former employees were assisted to establish firms to manufacture specific components.

In most industrial districts firms specialise in one stage of production; in this way all of the firms are interdependent because the final products could not be produced by one firm alone. In

the wooden furniture industry separate firms would be responsible for breaking out, machining, carving, turning, inlaying, upholstery and finishing. However in the Monaghan district many of these stages are contained within a single firm. The most commonly sub-contracted stages of production are turning, carving and the manufacture of chairs.

It is reported (Ryan, 1995) that high quality standards encourage firms to keep as much production as possible in-house. Another reason is the increasing level of mechanisation required in the production of furniture. The reason that some components such as carving and turning are sub-contracted include the high levels of skills required at this stage of production. In addition savings on premises and machinery and the greater efficiency of sub-contractors were the reasons given by 14 firms for sub-contracting work.

Table 6.9: Why firms sub-contract

<i>Why do you sub-contract?</i>	<i>No. Firms reply Yes</i>	<i>% of firms</i>
Savings on premises and machinery	6	54.5
To avoid social security payments	1	9.1
Low wages	2	18.2
Irregular demand	1	9.1
Greater efficiency	8	72.7
Total no. responses	11	100

6.4.3.4 Social relations between firms - milieu

Social rather than familial relations play an important part in the Monaghan furniture industry. Unlike other districts where family members would often set up their own firms, in Monaghan they would tend to stay in the family firm and perhaps take it over at a later date. However social relations between neighbours, friends and former colleagues link many firms together. According to 17 (73.9 percent) of owners who responded informal relations with other firms

usually came about because of spatial proximity, and 18 (75 percent) said they came about because of friends or former colleagues from courses or work.

In some cases links between firms can come about as a result of a former employer and employee relationship. Vertical disintegration in the case of two firms involved assisting employees to establish their own firms which specialised in a particular stage of production. Putting-out is evident in one case where the new firm makes and carves occasional tables. The new owner receives wood from his previous employer, he makes and carves the tables and the product is then collected by the larger firm's vans. In another case a firm was established by a former employee to turn wood which was sold to the firm which he used to be employed in. In this and other ways relationships between owners develop which facilitate sub-contracting, disintegration, co-operation and the flow of information. The importance of these social links is discussed in more detail below.

In conclusion, the relations between firms in the wooden furniture industry in Monaghan are varied and differ between firms and groups of firms. What is apparent is that inter-firm relations consist of more than just competition, although this remains an extremely important feature. In addition there is evidence of co-operation and this is enhanced and encouraged by the spatial proximity of firms and the social network of friends and former colleagues.

#### **6.4.4 Strong social ties between firms and society**

In many industrial districts the existence of a social milieu, whereby firms and communities are bound together by a common identity, has been an important factor. This social milieu facilitates and encourages trusting relations between firms and provides communication

channels through which information can easily flow. Common backgrounds or political beliefs have often been identified as the source of this common identity. One may have expected religion in the border county of Monaghan to be a unifying factor. In fact this seems not to be an important factor. When asked 'in order to succeed as an entrepreneur in the local industry is it important or useful to be Protestant or Catholic?' in only one case was there an affirmative response.

But a common religious or political belief is not the only source of a social milieu. The spatial proximity of firms facilitates the development of trust and communication. In addition the fact that many of the owners of these furniture firms used to work with many of their counterparts in other firms creates a professional community. It is this combination of spatial proximity and a network of individuals who used to work together which creates an environment which approximates a social milieu.

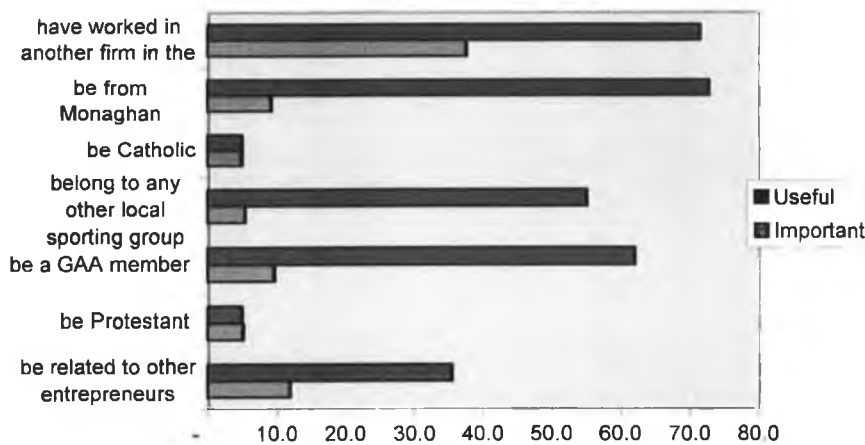
Chart 6.6 shows that to have worked in another firm in the area and to be from Monaghan were most useful to succeed as an entrepreneur in the local industry.

As discussed in chapter 3, the existence of a social milieu was considered particularly important in the research on districts in the 'third Italy'. Consistent emphasis on the common identity which existed in these regions may have obliterated the fact that spatial proximity by its nature enhances community spirit and the flow of information in the first instance. Perhaps the fact that

many industrial districts are dominated by those of the same political belief or background simply accentuates the environment created by spatial concentration<sup>34</sup>.

Chart 6.6: In order to succeed as an entrepreneur in the local industry,

is it important or helpful/useful to



The idea of a professional rather than a social milieu is more appropriate for a discussion on the wooden furniture industry in Monaghan. As discussed in section 6.3.2.3 the majority of wooden firms in Monaghan are genealogically related to Coyles either directly or indirectly. Many of these owners worked together at some stage in their working life. Furthermore one owner reported that he knew two of the other owners because they had been at school together. Another said that when he worked for his previous employer there were 16 employees in total, now 14 of them had their own businesses in the area. This creates a social network of owners of furniture firms similar to that described by Brusco (1982, p.178). The contact between owners

<sup>34</sup> An important factor that must also be considered is the area in which the spatial concentration occurs. Spatial concentration in a city does not have the same effect as spatial concentration in a relatively rural area - a rural communitarian history permits and encourages face-to-face contact between residents; this contact is frequent and information flows relatively freely.

of furniture firms in Monaghan is subtle, it occurs at church, socially, during occasional visits to one another's firms and at exhibitions and fairs. But this contact should not be overstated; only seven (31.6 percent) of respondents said that often or occasionally they would discuss business at social occasions (see table 6.12), however 19 (76 percent) firms reported that they would occasionally exchange ideas or discuss problems or strategies with other local furniture producers. While 13 (52 percent) would occasionally visit production sites of other local furniture firms only one firm (4 percent) would often do so. Rather than an organised network of individuals who jointly address problems, ideas or new developments these individuals comprise a number of different friendship networks within which one relational form is wooden furniture.

As discussed in chapter 4 (pp.102-103) it is possible that any one district or industry could have a number of different professional communities consisting of individuals with different skills or at different levels. Most of the firms in the wooden furniture industry in Monaghan are relatively small and do not have a hierarchical managerial structure involving tiers of management - in most cases rather than assigned duties, each employee undertakes all tasks. All are cabinet makers, who may have specialised in different products, resulting in one professional community.

The potential life-span of a professional milieu as compared to a social milieu was also discussed and it is possible that the milieu that exists in the wooden furniture industry in Monaghan will disappear as the group of individuals who worked together retire or there is a trend towards remaining an employee rather than becoming self-employed. There are few indications of the likelihood of this occurring, but it is notable that even in the 1990s new firms

have been established by owners who worked in larger factories, although there seem to be relatively fewer than in the same period in the 1980s. In addition, the spatial proximity of firms and their existence in a community structure means that there is the possibility of a social network of individuals even if they are not former colleagues.

#### 6.4.4.1 Is there trust between firms?

The trust that exists in any industrial district can be created by social factors, whereby the individuals know each other personally for many years, or economic, whereby they have recurrently worked with the same firms. For example in Monaghan those firms which make fireside chair frames are trusted to have the order completed when required by the upholsterer. This trust is partly economic in nature: if they are late they may lose future contracts. It is also partly social: for example the owners of the two firms used to work together, or one is the former employer of the other, or they are friends; their respective reputations and history enhance the possibility of trust.

#### **6.4.5. High levels of innovation**

The development of technical innovations often involves not only the manufacturer but suppliers, repair workshops and sub-contractors. Of the respondents, seven (33.3 percent) stated that technical innovations are developed in co-operation with machinery suppliers. In addition these suppliers are important sources of information. Repair workshops are less important, perhaps reflecting the fact that many firms repair their own machinery, and only two (9.5 percent) firms would develop technical innovations in co-operation with the repair shop. The majority of firms, 18 in all, buy their technical innovations ready-made either in the national or



international market. This is quite different from the micro characteristics associated with some industrial districts.

Table 6.10: Technical innovations

<b>Generally are technical innovations:</b>	<b>No. Firms (%) said Yes</b>	<b>Total no. responses</b>
a) bought ready-made in the national market	9 (42.9%)	21
b) bought ready-made in the international market	9 (45%)	20
c) developed internally	8 (40%)	20
d) adapted internally	2 (10%)	22
e) developed in co-operation with the repair shop	2 (9.5%)	20
f) developed in co-operation with the machinery supplier	7 (33.3%)	21
g) developed in co-operation with other local manufacturers	2 ( 9.5%)	21
h) developed in co-operation with clients	0 (0)	20

There is a wide differential between the larger firms which have Computer Numeric Control Machines (CNC) which cut shapes from sheets of wood thus reducing the amount of down time and smaller firms which have relatively basic equipment (Redmond, 1995).

Asheim (1994) rated technological capability-building according to internal resources and competence and local government. In the wooden furniture sector in Monaghan government has only had a limited role. This combined with the predominantly artisanal competence and informal knowledge most common in these firms results in low to some level of technological-capability. As such these firms are more likely to 'adopt, develop or imitate mainly *incremental* innovations'. In this study as shown in table 6.10 the majority of firms buy technical innovations either nationally or internationally. Only in two cases are technical innovations adapted internally. In many cases, rather than designers it is the owners who develop new products. When asked where they get their ideas for new products, five (22.7 percent) owners said from

hired designers, while 14 (60.9 percent) said from catalogues and magazines; the importance of trade fairs is also evident from the table below.

Chapter 5 distinguished between micro and meso characteristics. Micro characteristics in an industrial district are those that are internal to the firm while meso are external to the firm but internal to the district. Using Asheim's chart (see p.113), the wooden furniture firms in Monaghan have low to some potential for technological capability building. This reflects low levels of internal resources and competence. These are not examples of innovative firms operating flexible methods of production therefore micro characteristics are not readily evident. However, as discussed throughout this chapter there is evidence of meso characteristics such as inter-firm relations and a milieu.

Table 6.11: Source of ideas for new designs

<i>Where do your ideas for new designs come from?</i>	<i>No. (Percentage) firms</i>
Visiting local trade fairs	3 (12.5%)
Visiting trade fairs in other parts of the country	11 (45.8%)
Visiting trade fairs abroad	11 (45.8%)
Catalogues and magazines	14 (58.3%)
Specifications of clients	13 (52)
Hired designer	5(20%)
Total no. respondents	24 <sup>35</sup>

#### 6.4.5.1 The flow of information

Information does not flow freely between all owners of firms. The products that the majority produce are very alike and no one wants their competitors to know what they are doing. Rather, information flows sporadically in an unconstructed manner throughout the industry between

<sup>35</sup> Many cited more than one source of ideas, therefore these results do not sum to 100 percent.

employees of different firms, firms and their suppliers, employees and their new employers, export agents, friends and even competitors.

Machinery suppliers are an important source of information for firms - 20 (95.2 percent) firms surveyed say that often or occasionally sources of information for process innovation come from machinery suppliers and the same amount stated that often or occasionally exhibition or fairs were the source. These are the two most important channels through which information about machinery and the organisation of production processes flows. This is shown in table 6.13, which also shows that specialised publications, visits to other local enterprises and employees who used to work for other firms were, though less important, also significant sources.

What is going on in each firm is soon common knowledge among the community at large as employees discuss their jobs with family and friends. For example when a number of the larger firms employed a consultant who introduced piece rates that resulted in increased wages for the employees, within days the employees of another firm knew exactly what the differential was between the respective wage rates. Within a short space of time this firm introduced a similar scheme using the same consultant (Ryan, 1995).

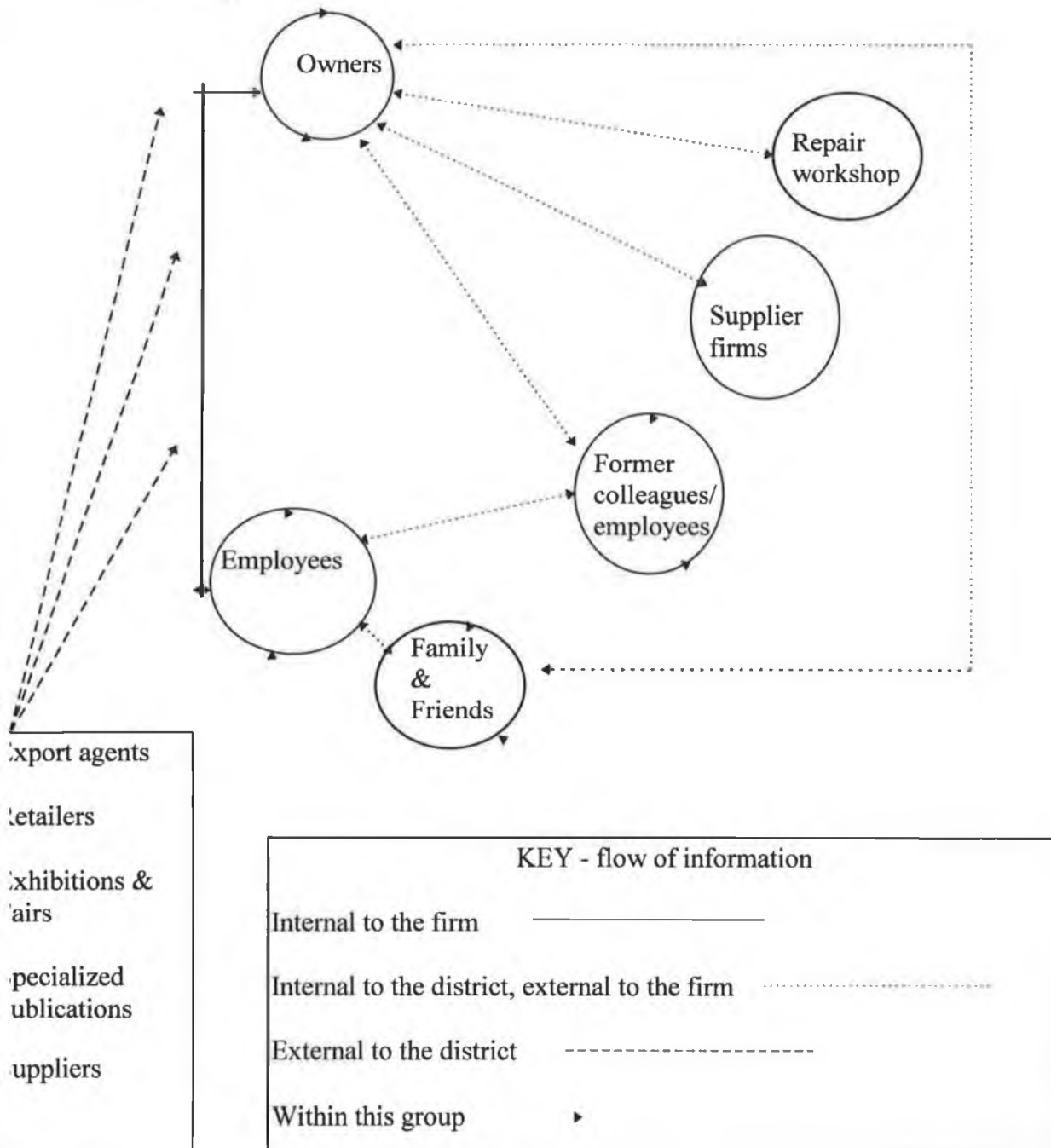
In some cases even competitors share information. As mentioned above, one fireside chair manufacturer reported that he and his competitor each have their own customers and although they could take business from each other they 'don't step on each other's toes'. If a new customer comes to him he will ring his competitor to check that he is not a bad debtor who is switching suppliers to avoid payment.

The relationship between McNally and Finlay, and Sherry Bros. is unique as they jointly manufacture the Rossmore brand. They would share considerable information about things such as bad debtors and changes in the market. There is also a social aspect to their relationship as reportedly they regularly meet socially playing golf.

Table 6.12: What are your sources of information for process innovation,  
ie. for machinery or organisation of production?

<i>Source of information</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>	<i>No. of respondents</i>
<i>Social occasions (bar, club, sports)</i>	1 (5.3%)	6 (31.6%)	12 (63.2%)	19
<i>export agents</i>	1 (5%)	5 (25%)	14 (70%)	20
<i>Machinery suppliers</i>	4 (19)	16 (76.2%)	1 (4.8%)	21
<i>Exhibitions/fairs</i>	6 (25%)	14 (58.3%)	4 (16.7%)	24
<i>Repair workshops</i>	0 (0%)	4 (25%)	12 (75%)	16
<i>client firms</i>	3 (18.8%)	3 (18.8%)	12 (75%)	18
<i>specialised publications</i>	3 (16.7%)	8 (44.4%)	7 (38.9%)	18
<i>visits to other enterprises in the local area</i>	2 (10%)	7 (35%)	11 (55%)	20
<i>visits to other enterprise in other regions</i>	0 (0%)	7 (28%)	8 (32%)	15
<i>workers previously employed in other firms</i>	0 (0%)	8 (47.1)	9 (52.9%)	17
<i>consultants from the local area</i>	1 (7.7%)	1 (7.7%)	11 (84.6%)	13
<i>consultants from outside the local area</i>	1 (7.7%)	3 (23.1%)	9 (69.2%)	13
<i>libraries or information services</i>	0 (0%)	2 (15.4%)	11 (84.6 %)	13

Chart 6.7: The flow of information in the Monaghan wooden furniture industry



There is also a flow of information among the export agents who would know what is going on in each of the firms. This relates only to the larger firms as the others do not have such agents. Rather than a clear network of communication between firms in the wooden furniture industry

there are many sub-networks which consist of employees, export agents, families, friends, former colleagues and former employees. Together these sub-groups represent channels through which a wide variety of information flows; some of it only flows between specific members of the network (for example groups of friends) and others flow to all, making it common knowledge. As chart 6.7 shows, three main channels of information exist: those internal to the firm, between owners and employees; those external to the firm but internal to the district, including contact with repair workshops, some suppliers, friends and family, and former employees; and those external to both the firm and the district including export agents, retailers and exhibitions and fairs.

#### **6.4.6 The significance of the family**

Many of these firms are small family firms which provide employment for family members; 68 percent of firms studied had at least one family member as an employee. In one firm the three people who work there comprise three generations of the same family; the father, son and grandson. In another the owner employs three people, all three his brothers-in-law.

While the larger firms are in custom made factories and workshops the majority of the smaller firms employing up to six people operate in specially constructed or adapted outhouses on the family property behind or beside the family home. In a number of cases although wives are not paid employees (in fact just under half of the sample do not have any female employees) they are involved in the office and financial business of the firm. In these ways many firms are family firms; they are located next to the family home, they give employment (officially or unofficially) to family members and as skills are transferred the firms are often passed down through

different generations. Four of the current owners/managers were sons, and one was the niece, of the original founders of their respective firms.

In many industrial districts the importance of the family has been highlighted as a source of loans or finance (Goodman, 1989); rather than borrowing from banks, entrepreneurs either use their own family money or borrow from family or friends. In this industry in Monaghan it seems that borrowed money is sought from bank and building society loans alone. However in the case of 19 (91 percent) of those firms which responded to this question, at least some proportion of the capital invested in the firm came from their own sources. This proportion varied from 10 percent to 100 percent in the case of eight firms. An important source of such finance for a number of firms may be the redundancy money which they received from their previous job.

Table 6.13: Personal investment in firms

<i>Percentage of capital invested in your enterprise comes from your own sources</i>	<i>No. Firms (%)</i>
0	2 (9.5%)
10	1 (4.8%)
40	1 (4.8%)
50	3 (14.3%)
70	1 (4.8%)
80	3 (14.3%)
86	1 (4.8)
90	1 (4.8%)
100	8 (38.1%)

It is thus apparent that the financial situation of many families is entwined in the business. Perhaps this reflects the fact that 15 (79 percent) of those firms which responded reported either a decline or no change in the percentage of borrowed capital over the last five years.

This description of the important role of the family in a number of these firms reflects a description of the 'third Italy' by Goodman: 'Members of the entrepreneur's own family work in the business, as well as the in-laws (cognati). Many of them may live in residential quarters attached to the workshop....Starting-up capital is usually found in the family before the entrepreneur goes to the local bank' (1989, p.7). In other industrial districts there has been evidence of family members setting up their own firms (see the example of the Durup furniture industry in Denmark described in chapter 3 pp.88-90). This is not apparent in the Monaghan furniture industry, although many individuals leave their employment in other furniture firms to establish their own firm. Thus the family connections between firms is not evident in this case and instead it is friendship or collegial relations which form a socially integrated structure (Brusco, 1982 p.183). While families play an important role in the functioning and development of firms, their role is primarily internal to the firm, rather than external in terms of developing or relating to other firms.

#### **6.4.7 A history of agricultural activity**

As described in section 6.1 agriculture has been, and remains important in Monaghan's economy. Particularly important are the mushroom and poultry industries and in this way farming remains a relatively common occupation - according to the latest census 22.5 percent of the Monaghan labour force are employed in farming and forestry (CSO, 1993).

The importance of agriculture in Monaghan has had a number of influences on the wooden furniture industry. Firstly, as agriculture declined more people looked to other professions to supplement their income and the local tradition of furniture making made this an obvious choice. In some cases this became their sole profession, in others it was combined with farming;



there are stories of employees who work through the night during the hay season on the farm and then work in the factory during the day (Ryan, 1995). Grahams, a relatively large firm in Monaghan town used to combine pig processing with furniture manufacturing on the same premises in the 1970s. Even before the agricultural decline there is evidence of some combining carpentry with other activities: in 1911 in Ballinode P. McArdle was a grocer and a carpenter (County Monaghan Yearbook and Directory, 1909-1913).

Some of the skills required for the manufacture of furniture were developed in the first instance to supply the local farming industry; Gola's origins are as a manufacturer of wooden pig troughs and chicken coops. Thus the development of the furniture industry can be closely associated with the importance of agriculture in the county.

Chapter 3 concluded that 'rather than an agricultural background itself being an important characteristic of the industrial district it is the community and social relations which it created and encouraged which are significant' (p.94). In particular the entrepreneurial nature and the business ethos which are ascribed to the region may have been affected by the agrarian background of the region combined with a history of manufacturing, primarily in the form of linen.

#### **6.4.8 Conclusion**

Having assessed the wooden furniture industry in Monaghan under the main characteristics of an industrial district can it be concluded that it constitutes an industrial district? The sector is dominated by small firms, and although there is considerable variation in terms of the size of the firms there is no clear evidence of dominance by any individual or group of firms. Inter-firm relations comprise co-operation as well as competition and while there is some evidence of a

social milieu there is clearly a professional milieu which enhances the flow of information and co-operation between firms. The significance of the family and a history of agricultural activities have contributed indirectly to the sector's development and coupled with the geographical and sectoral concentration of the industry, have aided the emergence of a professional milieu.

It is clear that the wooden furniture industry in Monaghan exhibits all of the characteristics of an industrial district outlined in chapter 3 with three modifications. Rather than a social milieu there is a professional milieu, not all firms are small (by Irish standards) and innovation levels are low to moderate. Having asserted that this district constitutes some form of an industrial district, the next section will investigate which type of industrial district it is.

### **6.5 What type of industrial district best describes the wooden furniture industry in Monaghan?**

Chapter 5 outlined five distinct types of industrial district. The table below matches the characteristics of the wooden furniture industry in Monaghan with those analysed in chapter 5.

The fact there is not clearly a social milieu in Monaghan means that it is not a *Marshallian* or *prototype* industrial district. While there are a number of large firms, making it like a *dominated* industrial district, the fact that the potential for technological capability building is only low to some due to low levels of internal resources and competence and that there is no evidence of micro characteristics mean that it is most like a *profsoc* industrial district.

Table 6.14: The wooden furniture industry in Monaghan

<i>Features that differentiate between different types of industrial district</i>	<i>Wooden furniture industry in Monaghan</i>
Relative size of firms	Similar but four large firms
Co-operation	Formal and informal
Milieu	Professional
Potential for TCB	Low to some
Location of suppliers	Internal and external
Micro/meso characteristics	Mainly meso
External intervention	Some

## CHAPTER 7: INDUSTRIAL CLUSTERS

As discussed in chapter 1 in many cases the terms industrial district and industrial cluster are used inter-changeably. This chapter provides an initial discussion and analysis of industrial clusters and on the basis of this information the dairy industry in Ireland will be assessed as an example of an industrial cluster in Ireland. Chapter 9 will show that industrial districts and industrial clusters are different types of industrial agglomeration.

Studying clusters emerges from Porter's idea that rather than explaining competitiveness at national level 'we must focus not on the economy as a whole but on *specific industries and industry segments*' (Porter 1990, p.9). Thus the primary unit of interest is no longer the national economy but particular industries. Moreover 'the focus is not on the distinction between individual industries or companies but on their mutual connections and interaction' (Yla-Anttila, 1994, p.4). This chapter will firstly outline what a cluster is and provide a brief history of the literature. This will be followed by a description of Porter's diamond which explains the success of particular industries. Finally a critique of Porter's idea of an industrial cluster is presented. Unless otherwise specified, the references come from Porter's *The Competitive Advantage of Nations* (1990) and the detailed page numbers are therein.

### **7.1 Defining a cluster**

An industrial cluster is not a clearly defined concept. Porter states that 'the systematic nature of the "diamond" [described below] promotes the *clustering* of a nation's competitive industries. A nation's successful industries are usually linked through vertical (buyer/supplier) or horizontal (common customers, technology, channels etc.) relationships' (pp.148-149). The clustering of a

nation's competitive industries, though not defined, appears to refer most often to the geographical concentration of successful industries. Thus a cluster is usually a geographically concentrated group of successful industries<sup>36</sup> (with a competitive advantage) which have vertical and horizontal relationships with each other. What constitutes a successful industry and how a cluster is identified is presented in section 7.5.

## **7.2 The history of the literature**

The origins of industrial cluster analysis have been traced as far back as the 1950s when 'Erik Dahmén initiated research on industrial growth and evolution based on the concept of industrial development blocks. His basic idea was roughly the same as Porter's' (Yla-Anttila, 1994, p.4). His concept of development blocks refers to 'a set of factors in industrial development which are closely interconnected and interdependent' (Dahmén, 1991, p.136) - thus these development blocks are similar to the corners of Porter's diamond, but unlike Porter, Dahmén develops this concept as part of 'a tool-box with analytical instruments... rather than an attempt to outline a "general theory"' (Dahmén, 1991, p.136).

The precise origin of the concept of industry clusters is uncertain. In 1986 Jørgensen, Hafsi and Kiffundu described one type of organisational form commonly found in developing countries as an industrial cluster: 'medium-size firms that develop from family enterprises are structured into clusters. In South Korea, Pakistan, and East Africa these clusters of firms resemble the *zaibatsu* industrial groupings of Meiji Japan' (1986, p.430). Later SRI International 'first used [the concept of industry clusters]... in a consulting project for a southern California utility in 1988 to

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<sup>36</sup> Collier and Mahoney (1996) note that Porter 'restricts his analysis to countries that, overall, are competitive, focusing on ten important trading nations which all either enjoy a high degree of international competitiveness or are rapidly achieving it... As a consequence, certain types of findings are less likely to emerge as important'.

help the utility segment its commercial user market in a way that would allow the utility to define technical assistance services for groups of related customers' (Anderson, 1994, p.26).

There is no doubt however that the concept of industry clusters was popularised by Michael Porter in *The Competitive Advantage of Nations*. This book is the product of four years of research, in ten countries, with the assistance of more than thirty people (Scassellati, 1991 p.160). The ideas it consists of are based upon many different theories which have emerged since the 1970s; O'Donnell says that 'their [Porter and Enright's] explanation of the competitive advantage of nations is consciously eclectic - drawing on the theory of the competitive strategy of firms, on the theory of innovation, industrial economics, economic development, economic geography, international trade, political science and industrial sociology' (1992, p.1). This view is echoed by Yla-Anttila (1994, p.4).

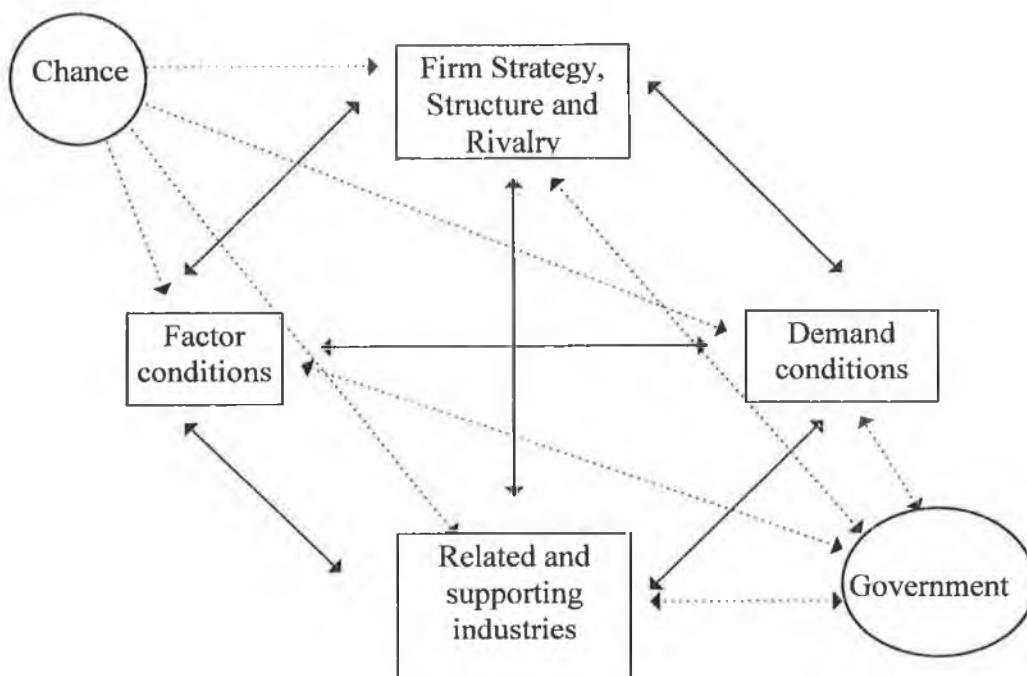
The publication of *The Competitive Advantage of Nations* in 1990 has led to the development of two streams of literature in this area. Firstly, there are those who reviewed and criticised the work for a variety of different reasons; but secondly, in general 'Porter's analysis met with an enthusiastic response, and in recent years similar studies have been conducted in many industrial countries. A multitude of regional sectoral surveys have followed as well' (Yla Anttila, 1994, p.4).

### **7.3 Porter's diamond**

The crux of this work lies in the four main determinants of national competitive advantage which Porter outlines as:

1. Factor conditions
- 2 Demand conditions
3. Related and supporting industries
4. Firm strategy, structure, and rivalry

Chart 7.1 Porter's diamond



### 7.3.1 Factor Conditions

By factor conditions Porter is referring primarily to factors of production although the categories which he specifies are somewhat more detailed than the more traditional economists' definition of land, labour capital and enterprise. He groups factors into the following categories: human resources, physical resources, knowledge resources, capital resources and infrastructure (pp.74-75).

With a relatively extensive list of factor conditions Porter discusses how it is possible to distinguish between different factors. Two distinctions are outlined: between basic and advanced factors and between generalised and specialised factors.

Basic factors include 'natural resources, climate, location, unskilled and semi-skilled labour, and debt capital... [while advanced factors] include modern digital data communications infrastructure, highly educated personnel such as graduate engineers and computer scientists, and university research institutes in sophisticated disciplines' (p.76). Advanced factors are more important in terms of competitive advantage, as basic factors have been 'undermined by either their diminished necessity, their widening availability or ready access to them by global firms through foreign activities or sourcing on international markets' (p.77).

The distinction between generalised and specialised factors rests upon the issue of applicability. If a service such as a road system or pool of highly skilled employees can be used by all industries it is classified as a generalised factor. As the name suggests specialised factors are specific to a certain industry. As in the case of basic and advanced factors, generalised factors are often readily available to many nations and 'tend to be ...easily nullified, circumvented, or sourced through global corporate networks... [and it is the specialised factors which] provide more decisive and sustainable bases for competitive advantage than generalised factors' (p.78).

In his work Enright found that factor conditions such as

natural resources, geographic position, and climate played a role in the formation of a number of geographically concentrated industries. [For example] the Carrara stone and stoneworking industry was established near one of the finest marble deposits in the



world. The Scotch whisky industry relies on underground springs and peaty soil to produce distinctive whiskies. Solingen, the centre of the German cutlery industry, is located near easily worked deposits of iron ore, forests which provided wood for furnaces, and ample sources of water power. The Basel dye industry benefited from the city's location on the Rhine which provided water, a means of transport, and a place to dispose of effluent (1990, p.3.9).

Selective factor disadvantages can encourage innovation both within firms and the agglomeration as a whole<sup>37</sup>. In general, for Porter, 'innovation to offset selective weaknesses is more likely than innovation to exploit strengths' (p.84). Porter explains how the high land costs and severe factory constraints in Japan resulted in the creation of just-in-time and other space saving production techniques. A similar example is the Dutch cut flower industry which is a world leader 'exporting more than \$1 billion of cut flowers' (p.85) despite the fact that the two most important inputs for this industry are land and climate, and Holland has little land and a 'cold grey climate' (p.85). Another example is the Swedish pulp and paper industries which are Sweden's largest net exporters in spite of relatively expensive wood and high cutting and transport costs due to climate and terrain characteristics (Sölvell et al, 1992, p.144).

'Factor disadvantages that stimulate innovation must be *selective* to motivate and not discourage, involving some but not all factors' (p.83). Stimulating innovation also depends on a number of other factors. Firms must have:

a) access to appropriate human resources to support innovation in the industry

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<sup>37</sup> It is notable that while selective factor disadvantages can encourage innovation, it is possible for an agglomeration to be a cluster without being innovative.

- b) supportive home demand conditions;
  - c) goals that lead to sustained commitment to the industry; and
  - d) the presence of active domestic rivalry
- (pp.84-85).

### **7.3.2 Demand Conditions**

Three broad attributes of home demand are significant:

- Home demand composition
- Demand size and patterns of growth
- Internationalisation of domestic demand

#### 7.3.2.1 Home demand composition

Home demand provides firms not only with a local market but can also act as an indicator of changing tastes and needs of international buyers, and encourages innovation. It is particularly useful for firms if their buyers are 'sophisticated and demanding' (p.89) and if their needs 'anticipate those of other nations' (p.91). These two factors ensure the high quality of products, and provide an early warning system for firms regarding future demands of their international buyers.

#### 7.3.2.2 Demand size and patterns of growth

Demand size and patterns of growth of home demand are most important in terms of investment decisions and levels of innovation. 'The proximity of large home demand is particularly comforting in making investment decisions ...[especially for those industries which

have] heavy R & D requirements, substantial economies of scale in production, large generational leaps in technology, or high levels of uncertainty' (p.93). Porter also notes that 'the rate of investment in an industry is as much or more a function of how rapidly the home market is growing as its size' (p.94).

The level of innovation in an industry is likely to be higher if there is a number of independent buyers rather than one or two customers dominating the market. In addition the early saturation of domestic demand 'forces firms to continue innovating and upgrading' (p.96).

#### 7.3.2.3 Internationalisation of domestic demand

Mobile or multilocational local buyers often provide a loyal customer base in foreign markets and their existence can encourage firms to internationalise their activities. 'Another way in which domestic demand conditions can pull through foreign sales is when domestic needs and desires get transmitted to or inculcated in foreign buyers' (p.98). An example of this is when individuals are trained abroad and then wish to use the same products they were trained on when they return home. Domestic needs and desires can also be transmitted via exported films and television programmes.

The Italian tile industry exemplifies the importance of domestic demand in the international competitiveness of an industry<sup>38</sup>.

- Per capita tile consumption in Italy was considerably higher than in the rest of the world
- The Italian market was also considered the most sophisticated tile market in the world

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<sup>38</sup> This industry has also been classified as an industrial district, and chapter 9 investigates this issue in more detail.

- Italian customers were generally the first to adopt new designs and features

(pp.214-216).

The industry had a large domestic demand which was sophisticated and acted as an indicator of international consumers' tastes. These features encouraged continual innovation in the industry and it is such demand conditions combined with the other determinants of national competitive advantage which gave 'Sassuolo-area firms unique advantages over their foreign competitors' (p.225).

### **7.3.3 Related and supporting industries**

'Competitive advantage in some supplier industries confers potential advantages on a nation's firms in many other industries because they produce inputs that are widely used and important to innovation or to internationalisation. Semiconductors, software, and trading, for example, are industries that have important impacts on many others' (p.100). The existence of related industries can have a similar effect; Porter (p.101) uses the example of 'Japanese leadership in facsimile [which] owes much to the Japanese strength in copiers, while Japanese dominance in electronic musical keyboards grows out of success in acoustic instruments combined with a strong position in consumer electronics. Similarly in the packaging and filling machinery industry located in Bologna 'many of the industry's early entrants had developed mechanical expertise through their activities in related industries' (Enright, 1990 p.2.37). A number of industries which grew up in New Zealand 'to supply the dairy and related industries... have become successful international competitors in their own right, including electric fences, animal identification systems, genetic improvement of livestock through artificial insemination, milking equipment and milking meters' (Crocombe et al, 1992, p.67).

#### 7.3.3.1 Competitive advantage in supplier industry

The presence of supplier industries creates advantages for downstream industries in a number of ways:

1. 'efficient, early, rapid and sometimes preferential access to most cost-effective inputs'
2. 'ongoing co-ordination' which enhances linkages between the value chains of firms and their suppliers
3. 'process of innovation and upgrading... [whereby] suppliers help firms perceive new methods and opportunities to apply new technology' (pp.102-103).

Each of these advantages is 'enhanced if suppliers are located in proximity to firms, shortening the communication lines' (p.103).

#### 7.3.3.2 Competitive advantage in related industry

'The presence of an internationally successful related industry provides the opportunity for information flow and technical interchange' (p.106). International success of one sector can 'pull-through' demand for products or services of related industry, for example the success of American computers abroad has resulted in overseas demand for American computer peripherals, American software, and American database services.

#### **7.3.4 Firm strategy, structure and rivalry**

The creation, organisation and management of firms as well as domestic rivalry, affect the national competitive advantage of an industry. Firm strategy and structure are influenced by factors including ownership structure, attitudes to debt holders, social values, attitude towards risk, sources of motivation, tax systems and wage levels. Porter also mentions the influence of

national prestige on the success of an industry and the importance of sustained company commitment to gaining and preserving competitive advantage (pp.114-116).

Domestic rivalry was also identified as having an extremely important influence upon competitive advantage: 'Among the strongest empirical findings from our research is the association between vigorous domestic rivalry and the creation and persistence of competitive advantage in an industry' (p.117). 'Among all the points on the diamond, domestic rivalry is arguably the most important because of the powerfully stimulating effect it has on all the others' (Porter 1990b p.82). This domestic rivalry is identified as being particularly beneficial for the following reasons:

1. it creates particularly visible pressures on firms involved to improve, as well as signalling to others the possibilities that exist;
2. it often goes beyond purely economic and can become emotional and even personal. Enright describes how 'owners, managers, and workers receive psychic benefits from beating local rivals... [and how in Sassuolo] tile companies are owned by the leading citizens of the same town whose place in the local pecking order is determined by the relative positions of their firms' (1990 p.3.28);
3. it creates pressure on domestic firms to sell abroad to grow. In Sweden rarely does a firm allow its major rivals to establish foreign operations without adopting a similar strategy (Sølvell et al, 1992, p.175); and

4. firms are strengthened by domestic rivalry and so are better equipped to compete internationally.

### **7.3.5 Role of Chance and Government**

Chance and government are introduced as factors which can influence or alter the diamond rather than constituting part of it.

Chance events are defined as 'occurrences that have little to do with circumstances in a nation and are often largely outside the power of firms (and often national governments) to influence' (Porter, 1990, p.124). Examples of such events are wars, acts of pure invention, significant shifts in world financial markets or exchange rates and discontinuities in input costs such as oil shocks. Porter notes that 'the nation with the most favourable "diamond" will be most likely to convert chance events into competitive advantage' (p.125).

Government can affect all of the four determinants of the diamond using among other things policies, regulations and purchasing power. 'Government, it seems, can hasten or raise the odds of gaining competitive advantage (and vice versa) but lacks the power to create advantage itself (p.128).

For an industry to be internationally competitive is it necessary for it to have advantages on every side of the diamond? The answer to this is twofold; Porter says that competitive advantage in simple or resource-intensive industries and the standardised, lower-technology segments of more advanced industries is often predominantly dependent upon factor costs. Competitive advantage in more sophisticated industries rarely results from only a single

determinant, nonetheless in many cases such industries do not exhibit advantages in all determinants either. For example the Japanese have been successful in the production of typewriters despite the fact that there is little domestic demand; the Swiss firm Cerberus is a world leader in fire detection despite the fact that it has no domestic competitors (p.145).

#### **7.4 The relationship between the facets of the diamond**

Porter lays great emphasis on the fact that 'the "diamond" is a mutually reinforcing system. The effect of one determinant is contingent on the state of others... [and] advantages in one determinant can also create or upgrade advantages in others' (p.72). Below is a summary of how each of the facets influence each other.

##### **7.4.1 Influences on Factor Conditions:**

- Domestic rivalry means that firms invest in factor creation to ensure that they remain competitive. It also encourages the development of skilled human resources, related technologies, market specific knowledge, and specialised infrastructure. Porter notes that 'factor creation is perhaps most strongly influenced by *domestic rivalry*' (p.134)

- Related and supporting industries can create or upgrade specialised factors. For example 'the educational programs, skilled personnel, and research capabilities in biology resulting from the Danish food and brewing industries, ...have been a source of advantage in Denmark's insulin, industrial enzyme, and food additives industries' (p.135).

- A particularly high and sophisticated level of demand 'tends to channel social and private investments into related factor creation' (p.135).



#### **7.4.2 Influences on Demand composition and size:**

- Domestic rivalry influences demand in three main ways.

1. It stimulates demand via product awareness and wide local availability

2. It upgrades home demand as the range and quality of products on the market is particularly high - 'in furniture and shoes, for example, Italian demand has been upgraded by the rapid pace of new product introduction in the home market by the hundreds of Italian companies. Not all Italian firms export, and those that do rarely offer their full line abroad. The net result is that Italian consumers see and learn more and become more discriminating' (p.137)

3. It enhances foreign demand as a national image is built up for the industry and the perceived risk of trading with this nation declines due to the fact that there are many suppliers.

It is notable that again it is domestic rivalry which is stated as 'perhaps the most important influence' (p.136).

- Related and supporting industries enhance the prospects of international growth in demand via reputation and the previously mentioned "pull-through" effect.

- 'A nation with sophisticated factor-creating mechanisms connected to a particular industry will attract foreign students and firms, who will learn and observe' (p.138). This may result in future demand for products, for example those who are trained on particular products are likely to want to purchase the same good when they return to their domicile residence.

#### **7.4.3 Influences on development of related and supporting industries:**

- The spillover effect of factor conditions such as skills, know-how and technology can influence the development of related and supporting industries.

- Domestic rivalry - again the most potent influence - attracts attention and thus the emergence of related and supporting industries. The example used to portray this point is the concentration of rivals in the movie industry in Hollywood which has led to a thriving and highly specialised group of supplier firms. A group of internationally successful firms also results in increased demand for supporting and related industries.

#### **7.4.4 Influences on domestic rivalry:**

- Demanding home buyers encourage domestic rivalry by seeking multiple sources and encouraging entry. Highly sophisticated consumers may also enter the market as competitors, for example many of the leading robotics competitors are major robot users.

- Related and supporting industries can increase domestic rivalry by entering into the downstream or related industries. For example 'many Japanese competitors in personal computers.... began as consumer electronics companies' (p.143). 'The skills and resources that such firms bring with them can reshape competition in the new industry' (p.142).

- Specialised factor creation mechanisms such as world-class laboratories, academic departments and educational institutions are a frequent source of new entrants into an industry.

It is notable that in each case Porter attributes the largest influence to domestic rivalry. It has a direct role in stimulating improvement and innovation, but also indirect effects: stimulating new rivals through spin-offs, creating and attracting factors, upgrading and expanding home demand, encouraging and upgrading related and supporting industries and channelling government policy in more effective directions.

Porter's theory is that the facets of the diamond and their interaction are what create and maintain a nation's competitive advantage in a particular industry.

### **7.5 Identifying an industrial cluster**

The process of identifying industrial clusters as outlined by Porter (pp.739-744) involves a step-by-step approach. The primary tool used is a cluster chart.

1. In the first instance the required data are sourced from United Nations International Trade Statistic Yearbook.
  
2. From this the industries in which the nation has achieved success in international competition are selected. This is defined as those three-, four-, and five-digit SITC industries in which 'the nation's share of the world market economy exports in the industry equalled or exceeded the nation's average share of world trade in the year (this is referred to as the nation's cut-off)' (p.739).
  
3. From this list a number of industries are eliminated.
  - a) Those industries for which the balance of trade was negative, unless the nation's share of world exports in this industry was two or more times its average share.

b) Those industries where exports are believed to be dominated by foreign companies.

c) Those industries whose trade is almost exclusively with neighbouring nations. 'A preponderance of trade with neighbours indicated that the nation's competitive advantage was not significant in international terms and trade solely reflected geographic proximity, unless we had indications of significant foreign direct investment by the nation's firms in the industry' (p.740).

4. The list is also supplemented with a number of industries.

a) Industries where it appeared that firms had made substantial foreign direct investment based on skills and strengths developed in the nation.

b) Service industries (they were added using national data on invisible trade, other published sources and interviews).

c) Industries where 'there was a clear indication of substantial competitive strength'. Available data and 'our judgement were used to classify the strength of the nation's position in the industry' (p.740).

d) Those industries whose export value was in the top fifty industries in the nation and whose trade balance was positive to modestly negative, even if the nation's share of world exports in these industries fell below the cut-off.

5. This data then forms the cluster chart. 'The cluster chart represents an effort to display all the industries in which a nation has competitive advantage in a way that highlights the pattern of competitive industries and the connections among them' (p.741). Industries are positioned in the chart as upstream industries, industrial and supporting functions and final consumption goods and services categories 'using the best judgements of the researchers..., although certain conventions were followed for positioning certain industries' (p.742). This process results in a list of the nation's firms which have had most success in international competition and according to Porter in many cases 'reveal substantial and often striking interconnections among the industries in which... [a nation] is internationally successful' (p.743).

Porter notes the difficulties and drawbacks to this technique particularly in relation to the availability of data, and the dependence upon the judgement of the researcher, but concludes 'nonetheless, I believe that the cluster chart represents an accurate and hopefully useful overall picture of the economy of the nations included in the study. Others can supplement and improve the charts in subsequent research' (p.743).

The process which Anderson (1994) documents SRI International as using differs slightly from Porter's although by his own admission 'they are similar to the methods in the case studies that Porter's book discusses' (p.29). The process he outlines is as follows:

1. Define the region to be studied. In Porter's analysis the region is taken as the nation whereas Anderson promotes use of metropolitan statistical areas<sup>39</sup>.

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<sup>39</sup> However Porter does say that his 'concepts and ideas ... can be readily applied to political or geographic units smaller than a nation' (p.29)

2. Calculate employment concentrations. Location quotients based on data on employment by industry are used as a proxy calculation because few regions have accurate data about shipments of goods and services out of the region (Anderson, 1994, p.30). These quotients are calculated using the following formula:

$$\frac{(\text{Regional industry employment}/\text{Total regional employment})}{(\text{National industry employment}/\text{Total national employment})}$$

If the ratio for a particular industry is greater than one, then it is assumed that the industry in this region is exporting some of its production to other regions. Calculation of this ratio for all industry sectors in the region facilitates ranking in terms of their probable importance as exporters and wealth generators (Anderson, 1994, p.30). Such ratios are also calculated by Mack and Jacobson (1996).

3. Group sectors into preliminary clusters. This involves grouping industry sectors into probable relationships with one another. 'No hard-and-fast rule exists. These cluster groupings will be based on general industry knowledge and general information about the region' (Anderson, 1994, p.30).

4. Validate and refine the clusters. The dominant tool at this stage is interviews with larger companies and in some cases surveys of the smaller firms.

5. Map or chart each industrial cluster. This is a visual presentation of the relationships between different industries and is similar to Porter's cluster chart.

6. Calculate the importance of clusters and analyse recent trends. This involves studying the proportion of employees in each industry sector as a percentage of total employment in the region, the personal income generated in these industry sectors and the growth trend in the industry cluster<sup>40</sup>.

The main differences between this approach and Porter's lies in the data used. In Porter's analysis emphasis is on trade statistics whereas SRI International use location quotients as indicators of export strength, but notably exporting to other regions, not necessarily other countries. In line with the fact that SRI International promote studying metropolitan statistical areas rather than nations, their technique of analysis facilitates the study of national as well as internationally successful firms (although both of these processes require the conduct of interviews within the industry to determine where the output is going - ie. another region within the country or to a different country). As Porter relies on trade data he is only interested in goods and services which are exported out of the country. Mack and Jacobson (1996) note that since the completion of the single market, there is no physical count of goods exported and imported between EU countries, so the location quotient method may be better than Porter's for these countries.

## **7.6 Criticisms of Porter's clusters analysis**

### **7.6.1 Newness of the ideas contained in Porter's work**

While there is little doubt that Porter has popularised the ideas included in *The Competitive Advantage of Nations* little of what he is saying is new. Dunning (1992) states

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<sup>40</sup> Anderson (1994, p.31) notes that it was such analysis of Silicon Valley which showed that 'semiconductor software and biotechnology had experienced significant growth and were rapidly replacing the traditional "silicon" base of the economy with a creative design base'.

in one sense, there is nothing particularly original in Porter's analysis. Throughout history, a succession of scholars have attempted to identify and evaluate the supply and demand conditions necessary for a country to be competitive in world markets. Indeed, most have been more comprehensive than Porter, who identifies only four sources of competitive advantage and who, for example, pays no attention to such variables as investment and entrepreneurship (Dunning, 1992, pp.5-6).

He goes on to point out that most of Porter's analysis can be subsumed under one or another of the factors of the ESP paradigm 'which suggests that economic prosperity rests on its environment (factor endowments) and markets (E), its economic system (S) and the economic and social policies pursued by its Government (P)' (Dunning, 1992, pp.5-6).

Referring to clusters, Yla-Anttila also asks what is new and finds the seeds of Porter's theory in Dahmén's work of the 1950s, research on network relationships between companies in the 1970s and in the 1980s concentration on the importance of national innovation and technology systems. She concludes 'Porter's great idea was to combine these thoughts and to link them with his own earlier study of companies' competitive strategies' (1994, p.5).

Some contend that Porter's book is not a theory at all - Brittain (1990) says *The Competitive Advantage of Nations* is 'more an explanatory framework than a deterministic theory'. If so, this work represents a stage in the process of developing theories and ideas relating to the importance of domestic factors in the development of industry.



The importance of Porter's work however must be set against a backdrop of the dominating issue of globalization. Within this literature the idea that local or domestic factors are important is by itself new and original.

### **7.6.2 Limited Applicability**

The concept of industrial clusters is not necessarily applicable or relevant for all economies. The case studies which Porter and his colleagues use are in industrialised economies such as the US, Germany, Italy Japan, Switzerland, Scotland, Sweden, New Zealand and Canada. These economies are all similar in terms of levels of industrialisation and are far from representative of developing countries, newly industrialised countries or even of the peripheral European economies of Portugal, Ireland, Greece and Spain.

At the outset Porter says 'my aim here is not a book about any single nation but one about a set of principles that apply more broadly' (p.xv). Although he then uses the case studies to develop or support his theory, mention is not made of economies which differ significantly from those which are included - it is not clear whether Porter believes that clusters will be and can be found in all economies or if this type of analysis requires specific conditions.

O'Donnellan (1994) argues that some economies may be too small to contain industrial clusters. He refers to the Telesis (1982) report which considers Ireland too small to enjoy more than a few regional clusters of industry. His conclusion is that as a small economy in which EU linkages and purchasing chains are more important than purely domestic linkages, Ireland should be seen as a region of the larger EU economy, and as such it may constitute part of European clusters.

Anderson (1994, pp.31-32) also broaches the issue of the size of the economic region being studied, saying 'industry clusters as a base of analysis and as a source of strategy... cannot be used where the region is too small to support the diversification inherent in the concept of an industry cluster, and it cannot be used where the region is too undeveloped and too isolated for clusters to survive'. Furthermore he states that 'crude observations suggest that if a region has a population of less than, say 500,000 people, a complete cluster is unlikely to exist... it may mean... that the net has to be wider'. This would imply that Ireland, with a population of more than three million would be a large enough region for an industrial cluster to exist contrary to what O'Donnellan surmises.

It seems that there is some type of agreement that the size of the region being studied may have implications for the relevance or appropriateness of conducting a cluster analysis. It is possible that there is a minimum area and/or population size within which an industrial cluster is likely, though there is no agreement on what that minimum size is.

### **7.6.3 The implications of analysis and findings are not fully investigated**

Porter has been credited for introducing the idea that international success and globalization can be explained by national and local factors. In fact Randall and Lewis call him the 'Economic Evangelist' and believe that 'when historians sit down to list the most powerful strategic thinkers of the post-industrial age, Michael Porter's name is sure to be on the list' (1991, pp.9-11). However in spite of such praise, perhaps in some ways Porter's work has not gone far enough. Some criticisms indicate that the full implications of identifying, analysing, creating or supporting industrial clusters have not been considered by Porter.

The concept of an industrial cluster does not provide policy makers with remedies or improvements for their economies. O'Donnell (1992, p.9) remarks that 'Porter's book... contains relatively little advice on how policy can consciously foster the development of clusters'. Having created tremendous excitement and interest in the concept of the phenomenon of industrial clusters Porter stops short of advising policy makers how they can create or encourage such agglomerations to exist. Magaziner complains that Porter 'underestimates the important role that government' can play and 'skirts the issue of how a country can create industrial clusters where the private-sector players are weak' (1990, p.189)

Jacobs and deJong (1991) believe that Porter's cluster analysis looks solely at the consumption side of a cluster, omitting the production side. The emphasis on end-use means that 'sometimes existing production clusters have to be split up between two end-use clusters. E.g. in the Netherlands glass house horticulture has two main products: vegetables and cut flowers. The first fall within the food/beverages cluster whilst the second has to be ranked in the "personal" category' (p.5). Thus Porter's technique of cluster analysis may not be particularly relevant or explanatory for an economy which has a high level of production of intermediate goods. Furthermore it may underestimate the existence or strength of clusters in certain economies.

Scassellati (1991) believes that Porter has not addressed the growing conflicts which his analysis incites. 'If corporations are increasingly sensitive to the spatially differentiated qualities of which the world's geography is composed... the active production of places with special qualities becomes an important stake in spatial competition between localities, cities, regions and nations... Such responses ...by setting cities, regions, and social groups one against the

other, are creating political and economic imbalances that have the potential of breaking nation-states from within' (pp.163-164).

Furthermore Scassellati believes that 'the new type of corporation, as even Porter acknowledges, represents a serious threat to the prosperity and stability of the nation-state' (Scassellati, 1991, p.162). This threat is the movement of high productivity jobs out of the domestic economy. 'While paying lip service to this trend, Porter nevertheless fails to examine its implications in the very conception of "domestic" industry and corporation' (Scassellati, 1991, p.162).

The possibility of transnational industrial clusters has to have implications for the structure, functioning and organisation of such clusters. Is it therefore necessary to differentiate between national and transnational industrial clusters? Although Porter does mention that a Swiss firm Wifag is part of the German printing press cluster (p.194) - thus accepting the existence of transnational clusters - he does not investigate any of the implications that this has for his analysis.

While there is justification in these criticisms, perhaps the mission of this book was to introduce issues and concepts, and it is the work of others (or indeed Porter himself at a later date) to apply these ideas and concepts in more detail, study the implications and generate suitable policies.

#### **7.6.4 Usefulness of the theory**

Porter's work has been acclaimed as bridging the gap between strategic management and international economics while contributing substantially to both (Grant, 1991 p.535), however

does it have predictive power? According to Yla-Anttila 'the Porter model looks backwards - it can admittedly explain the birth and success of existing clusters but it is unable to identify future know-how concentrations and development blocks' (1994, p.10). Similarly Grant notes 'the key weakness of the theory is in its predictive power. Ambiguity over the signs of relationships, the complexity of interactions, and dual causation renders the model unproductive in generating clear predictions' (1991, p.542-543).

The fact that this theory rests primarily on explanation and does not enhance prediction detracts from its usefulness and makes it less relevant for governments.

#### **7.6.5 Geographical area of interest is not always national**

Porter's unit of analysis when studying industrial clusters is the nation, or the nation's firms. However, Scassellati (1991) and Jacobs and deJong (1991) argue that in some cases it is regions, cities, continents or the world which are the more apt unit of observation. Scassellati states 'despite the wealth of data... these case studies do not support Porter's claim that locationally the whole nation is the relevant unit of analysis....Historically, cities or regions and local (as opposed to national) governments seem to have been *more* significant than the nation as a whole in providing a fertile environment for firms in particular industries' (1991, p.161). This is particularly well exemplified in the case study of the Sassuolo tile industry in Italy (this is discussed in more detail in chapter 9).

Jacobs and deJong take a different approach; they state that 'Porter stresses the increasing relevance of national and even sub-national specialisation patterns... [but they believe that] various geographical scopes may be relevant when studying the prospects for cluster

development' (1991, p.11). Using a matrix they show that the geographical scope differs between industries. For example the recorded discs industry is footloose and should be studied in the context of world production and a world market; by comparison the production of cut flowers and cocoa is primarily regional while the market is worldwide. This argument mirrors Kay's description of the strategic market which is 'determined by the interaction of those demand factors which influence the shape of the economic market with the supply considerations which define the boundaries of the industry' (1990, p.3). Kay also shows how sometimes the same product can be global or national: although Coca Cola would represent a classic global brand 'it is clearly possible to be successful in that industry with a regional or national product, and every country has its own domestic brands, many of them successful and profitable.... The strategic market identifies the *minimum* area in which it is necessary to compete to be successful. Soft drinks are therefore not a global market, but a series of domestic markets' (Kay, 1990, p.4). Jacobs and deJong (1991, p.16) conclude that 'the results qualify in an important way Porter's rather one-sided conclusions. Nations, and even regions, matter, but not to an equal degree for all different industries. The relevant networks and markets may be national, continental, or global'.

Porter's concentration on nations may have resulted in the omission of some regional factors which are important. For example the map he presents showing the location of the world's leading printing press producers shows a concentration in Germany (p.187). This is what Porter seeks to explain. However there is a further concentration of firms within regions in Germany. The map shows that four of the seven cities where the firms are located are in the south central region of the country - Porter observes that 'by the 1930s, the six leading German printing press producers were Heidelberg, MAN, Roland, K&B, Albert-Frankenthal, and Planeta. They were

all located in a radius of about 150 miles' (p.186). However this observation does not lead Porter to investigate why there is such a regional concentration and how this group of firms compares with the others in Germany. This argument does not seek to detract from the importance of a national study as undertaken by Porter, but it promotes additional regional studies which would present a more focused and detailed picture of the industry. Florida (1996) writes of Porter's work as one of a number of studies highlighting 'the increasing importance of globalization of markets and technology'. He contrasts this with Ohmae (1995, 1993) and others, who 'suggest that regions are increasingly important nodes of integration into the global economy' (p.23).

Grant (1991) criticises Porter for too closely linking outcomes in industry to the national situation. While competitive advantage at the firm and industry level is measured in terms of exports and outbound foreign investment, competitiveness at national level is indicated by national productivity. 'Porter presumes the existence of some invisible hand whereby firms' pursuit of competitive advantage translates into increasing national productivity and prosperity' (p.541). Grant uses the US to dispute this presumption: 'since 1985 a combination of real wage erosion and dollar depreciation has improved U.S. competitiveness in several industries... [but] these developments have not been accompanied by corresponding growth in U.S. productivity and living standards' (p.541). Furthermore Grant believes that 'the persuasiveness of his [Porter's] prescriptions is limited by doubts as to whether his analysis is adequate in explaining economic development at the national level' (p.548).

#### **7.6.6. The criteria for selecting successful industries is flawed.**

The basis upon which Porter determines international success is the nation's share of world exports in the industry. When this equals or exceeds the average share of world trade for the nation, this nation is deemed to have a cluster in this industry.

Jacobs and deJong (1991) criticise this criterion on the basis that the measure is performance on the world market. This means that 'one industry may be more competitive in one country than in another, but included in the cluster chart of the latter and not in that of the former, because of the average performance of the other industries in both countries' (p.5).

Furthermore this criterion concentrates on an industry's exports as compared to the nation's exports. They do not compare the level of exported goods to the total market they are being exported to. For example the value of exports of industries which appear in an Irish cluster chart will be significantly less than those in a German cluster chart. These industries may be relatively important in Irish terms, but their influence or importance on the world market may be negligible, whereas those industries in the German cluster may be world leaders. As Porter is primarily concerned with the competitive advantage of nations it is important that comparison of such competitive advantages can be undertaken between different countries - the cluster charts of different countries only serve to 'highlight their relative specialisation patterns' (Jacobs and deJong, 1991, p.5). Jacobs and deJong (1991, p.10) suggest the classification of all of the 400 product groups of the UN Trade Statistics into Porter's cluster chart, as 'such an abstract picture of a fully competitive economy should then provide a yardstick to measure more concretely the performance of a country in a certain cluster'.



Brittan's (1990) criticism lies in the fact that he believes

Porter's measures are too influenced by the sheer size of industries, and countries' changing share in world trade.... The possibility of a very different evaluation of the British case emerges from a study of UK manufacturing over 1979-1986 by J Haskel and J Kay in the June Economics Outlook of the London Business School. These authors define competitive advantage as "rent per unit of input". Rent here is an economists' term which means value added less wage and capital costs.

Using this evaluation results in a picture of UK competitiveness which is very different from that of Porter's.

#### **7.6.7 Relations between firms is not discussed in detail**

Although Porter defines clusters as consisting of firms which have both horizontal and vertical relations with each other, Porter does not investigate in detail the relations between the firms that make up the cluster. All firms in a cluster do not have equal power and market share, some could be leaders and some followers. Whether a firm is a leader, or dominant firm, or a follower will affect the diamond.

Dahmén (1991) developed the idea of positive and negative transformation pressure. Positive transformation is undertaken to take advantage of opportunities, while negative transformation occurs out of necessity. A firm which dominates a market is more likely to pursue positive transformation while a follower transforms out of necessity. Porter appears to assume that in a cluster all are dynamic and innovative, thus all will be positive transformers, but once there is a dominant firm other firms can get relegated to negative transformers. A cluster in which some firms are followers will be very different from one where all firms are the same.

#### 7.6.7.1 Domestic rivalry, firm structure and management

The management strategy will be distinctly different for followers and leaders. The leaders in the industry are aiming to retain their position as world leaders thus innovation and quality are priorities. For follower firms innovations undertaken by the leader firms necessitate changes; rather than aiming to be one step ahead of competitors the objective of the follower firms is to try to keep up with others in the cluster.

Domestic rivalry in such a cluster differs from that described by Porter. In this scenario not all firms are rivals to all other firms. In fact there can be two tiers of rivalry: the leaders who compete with each other in terms of innovative ideas and the followers who compete on the basis of who is the quickest to catch up with the leaders. While rivalry between the leaders promotes innovation this is not necessarily so throughout the cluster.

#### 7.6.7.2 Demand conditions

Changing demand conditions affect the market leaders first as they aim to adapt to changing requirements; it is only as they modify their production that the follower firms begin to react. Leader firms react to demand conditions and follower firms react to their reactions.

#### 7.6.7.3 Creation of factor conditions

Often it is the larger more successful firms which are most involved in the creation of factor conditions and the follower firms gain external economies from their efforts. For example the leader firms may establish connections with universities and become involved in the training of graduates in those areas in which they are most interested. It is likely however that these firms

will not employ all of the graduates of the course and instead they will find employment in follower firms<sup>41</sup>.

#### 7.6.7.4 Related and Supporting industries

Two tiers of producers of a good are likely to encourage two tiers of supplier and related industries: those who supply to the leaders and must be continually innovative and maintain competitiveness and those which must copy their actions and supply to the followers. A chain of events occurs whereby the leader firms change their production causing those firms which are related to and support them to introduce relevant changes. After a slight delay the follower firms follow suit thus inducing changes in their related and supporting industries.

For some of the firms within a cluster the most important influence on their competitiveness and success is the actions of the dominant or leader firm. Therefore the affect of the diamond conditions are indirect for some firms: they affect the dominant or leader firms and indirectly affect the follower firms.

#### **7.6.8 Addenda to the diamond**

For different reasons both Dunning and Jasinowski believe that Porter's diamond does not present a complete picture of the factors affecting the competitive advantage of nations' firms. Jasinowski (1990) believes that Porter concentrates excessively on the role of the company in improving competitiveness and consequently disregards the role of macroeconomic policy. 'The central problem with Porter's thesis is that he rejects trade performance as a litmus test for

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<sup>41</sup> This is likely to perpetuate the dominance of the more successful firms as they continually obtain the best graduates.

competitiveness, preferring to define this concept in terms of productivity' (p.196). He believes that while productivity is indeed important for long-term competitiveness, it is also necessary to observe the effects of exchange rates and fiscal policy. It is this lack of acknowledgement that 'competitiveness can be addressed at both the company and policy levels...[that dismisses] a wide body of macroeconomic theory on fiscal policy and trade' (p.196). Using examples from the US, Germany and Japan, Jasinowski shows how exchange rates have impacted on the competitiveness of industries.

He concludes 'a more balanced view of competitiveness would acknowledge a role both for improved company-level productivity and for well-formulated public policies that emphasise high savings, productivity enhancements, and realistic exchange rates' (p.198). Although Jasinowski does not direct his criticism at Porter's diamond a logical progression of his argument would involve the inclusion of government or better still macroeconomic conditions/policies as a fully fledged part of the diamond.

Dunning believes that 'while Porter provides a useful paradigm for identifying the main determinants of national competitiveness his lack of attention to the way in which such competitiveness may be affected by the ownership structure of firms and the way cross-border markets are organised weakens both the content and force of his thesis' (1992, p.165). He believes that the effect of transnational corporations (TNCs) should be considered, and proposes that transnational business activity should be included in Porter's diamond as an exogenous variable. Like government and chance, transnational business activity can affect each facet of the diamond:

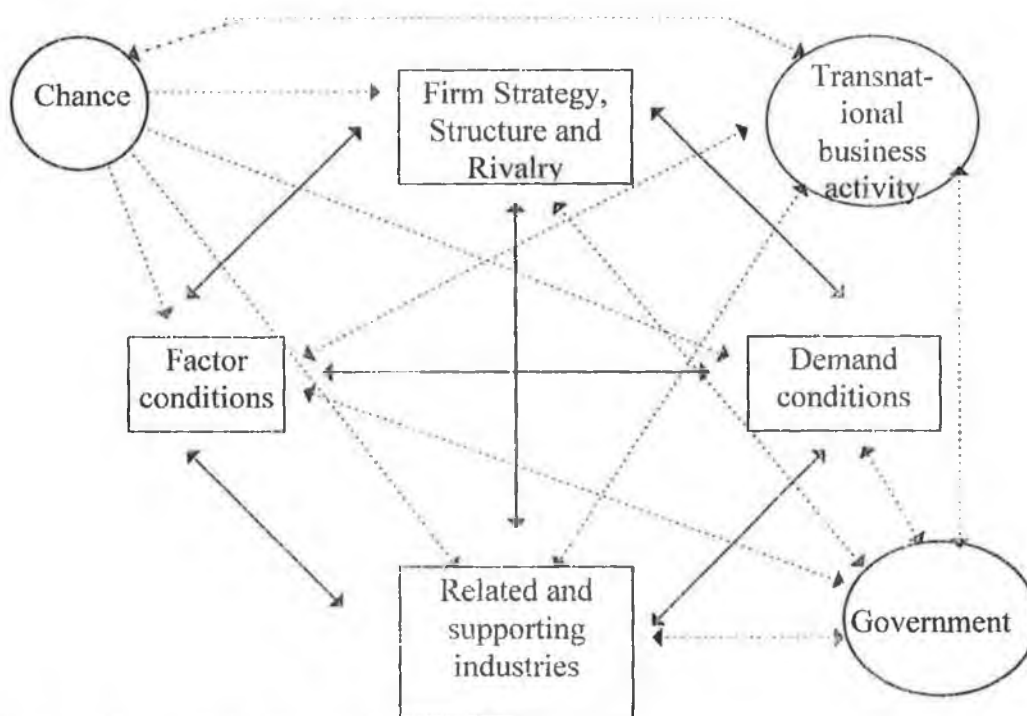
a) demand conditions: the experience and discipline of foreign demand conditions and standards may affect quality of products sold to domestic markets (Dunning, 1992, p.149).

b) factor creation: transnational business activity can stimulate more efficient asset creation or upgrading. In addition access to foreign resources is internalised within TNCs (Dunning, 1992, p.152).

c) domestic rivalry: TNCs create 'additional exposure to dynamic competition from foreign firms and/or in foreign markets' (Dunning, 1992, p.157).

d) related and supporting industries: transnational business activity facilitates improved access to foreign clusters and networks of activity' (Dunning, 1992, p.159).

Chart 7.2: The complete diamond incorporating Dunning's alterations



Source: Dunning, 1992, p.140

Dunning believes that the introduction of transnational business activity as an exogenous variable identifies 'ways in which national diamonds of competitive advantages are linked to each other by the operations of TNCs' (p.165).

However perhaps the link between countries' diamonds needs to be more explicit. Rugman (1991, 1992) outlines the double diamond approach which he and deKruze developed for the Canadian economy. This suggests that strategic decisions must be based on as thorough an understanding of the US diamond as of the Canadian diamond. Rugman believes that 'this double diamond approach is relevant to over 95 percent of the world's nations, that is all those that are not in the triad of the US, Japan or Europe' (1992, p.60). As economies become more integrated, particularly within Europe, the effect of changes in one country's diamond can have significant consequences for its trading partners.

The most apparent effect is a change in government policy. If government A increases taxation levels this affects demand conditions and factor conditions for many industries; if this results in a slump in the relevant markets domestic rivalry between firms declines as some firms go out of business, and related and supporting industries are less likely to develop in the short-term. However these implications can also have knock-on effects for Country A's trading neighbours; demand conditions change as foreign demand declines and supplier industries that are located in country B may lose contracts as a result of the domestic slump in market A.

Is it only government actions which can cross national boundaries? The answer to this is no; each factor of the diamond in one country can affect the competitive advantage of another country.

Using the Irish economy as an example it is clear that a change in the levels of **domestic rivalry** within the US computer industry would have repercussion for Ireland's diamond. The level of rivalry among these firms in the US affects demand for computers in Ireland (via price or quality differentials in the products). It also has an impact on Irish firms supplying the industry and the rivalry among those in the business here<sup>42</sup>. In the globalized economy and in particular in the more integrated economy of Europe, many firms are relatively footloose. This is not to deny the importance of their main location but to be aware of their ability to establish branches and plants with relative ease. Reich (1992, p.137) notes that 'a picture of national corporations and industries... is no longer accurate... [as] corporations are transformed into global webs'.

A change in **factor conditions** can make one country seem a more favourable location than others. It is for this reason that Porter says 'to sustain international competitive advantage, a nation's firms often must deliberately nullify or supplant today's basic factor advantages even though they still persist' (p.79). Changing factor conditions in Germany may attract firms to move from Ireland to Germany, thus reducing the level of domestic rivalry in this industry in Ireland and reducing the need for related and supporting industries. The effect of changing factor conditions in one country on another can be exhibited in the case of the software manual printing industry in Ireland (see Jacobson and O'Sullivan, 1994).

Export industries rely predominantly on foreign demand for their goods, thus a change in **domestic demand conditions** for mushrooms in the UK, has significant repercussions on the structure of the mushroom industry in Ireland, resulting in changing levels of domestic rivalry

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<sup>42</sup> For an example of the effect of computer multinationals on the software manual printing industry in Ireland see Jacobson and O'Sullivan (1994)

in Ireland as some firms fail. The consequence of this is a declining need for related and supporting industries. Changing foreign demand conditions can also be indicative of changes in taste of other consumers which will, in time, have an affect on domestic demand.

The growth or demise of **related and supporting industries** within an industrial cluster has implications for their competitors who are located elsewhere who may lose or gain business as a consequence.

It is notable that government and chance in country A only indirectly affect the diamond of country B, as they firstly alter factors within their own diamond and this then affects country B's diamond. Changes in any aspects of country A's diamond directly affect the diamond in country B.

The introduction of the issue of how the diamond of one country affects the diamond of another keeps Porter's analysis balanced. He is investigating the international competitiveness of industries and yet the diamond does not take any account of what is occurring internationally. It is similar to conducting closed economy analysis on an open economy. In emphasising the importance of domestic factors it is a mistake on Porter's part to ignore the role of international factors.

The introduction of an exogenous variable entitled "other countries' diamonds" differs from Dunning's transnational business activity inasmuch as it recognises that a country's diamond is affected by other countries' diamonds via factors such as trade, culture, communications and political arrangements (such as European Union) as well as transnational business activity.



More importantly it recognises that each facet of the diamond can directly affect the facets of another country's diamond without any intermediary. (Transnational business activity is the entity through which the effects are transmitted in Dunning's model.) In other words the diamond of an economy which has no transnational corporations may still be affected by other countries' diamonds.

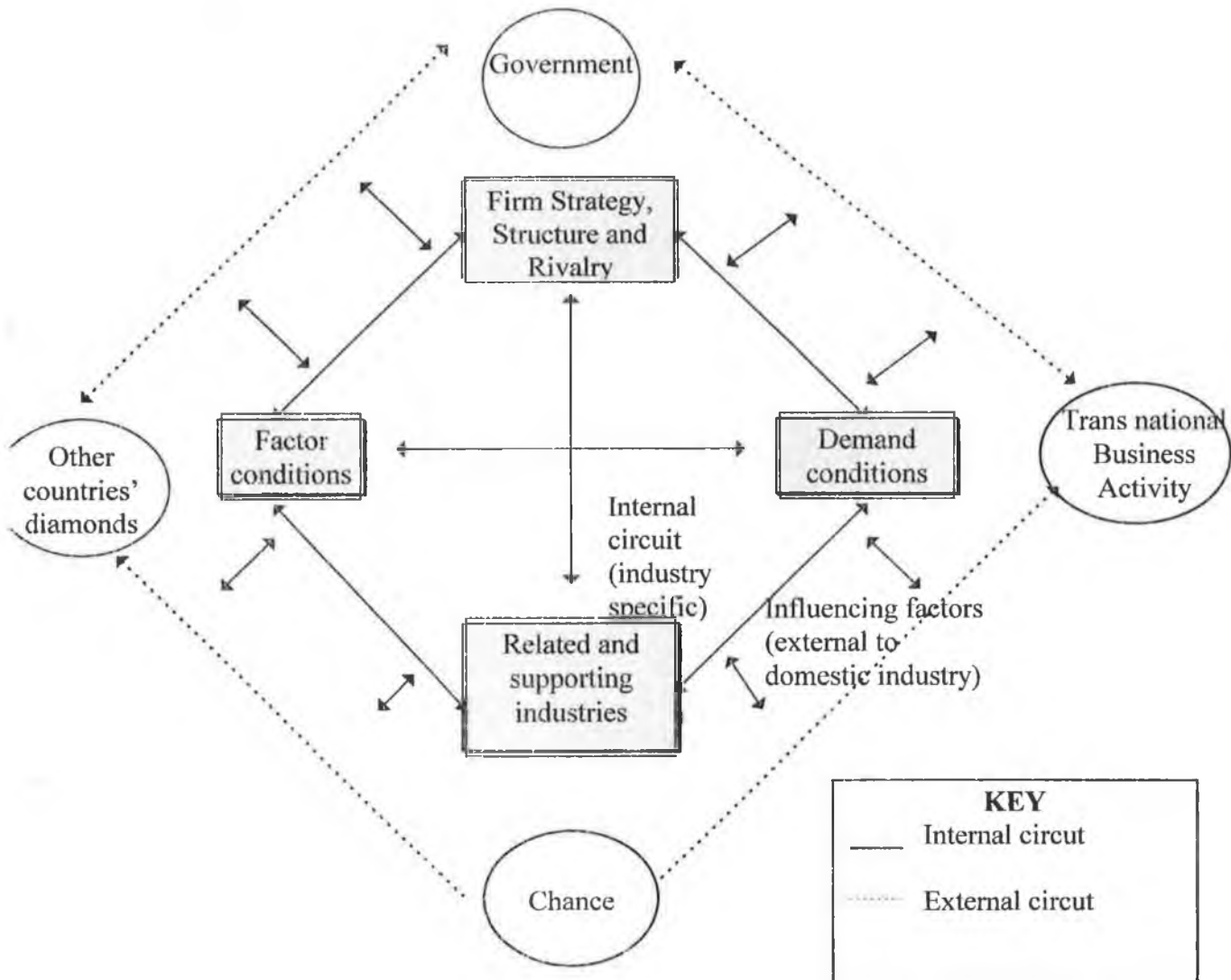
Transnational business activity is a process whereby national businesses affect their domicile country's diamond as a result of their international activities<sup>43</sup>. The actor is the nation's firms. By comparison in the case of the exogenous factor "other countries' diamonds", the actors are international; the domestic economy or firms have no role in the effect of these factors. It is these difference between transnational business activity and other countries diamonds which necessitates the inclusion of both in the now expanded, or internationalised, diamond.

This diamond model now has two different levels or circuits. There are those factors which Porter outlined which are primarily industry specific and the exogenous factors which affect them, including government and chance (introduced by Porter) and also transnational business activity (introduced by Dunning) and other countries' diamonds. This model emphasises the importance of local or domestic conditions but in so doing does not ignore the importance of the international market. Its influences are represented by transnational business activity and other countries' diamonds. The inner circuit represents the industry specific factors while the outer circuit includes factors external to the industry. Each circuit affects all of the components of the other, with the obvious exception of chance which cannot be influenced.

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<sup>43</sup> Transnational business activity also affects the host country's diamond.

Chart 7.3: The Internationalised Diamond



As in Porter's model, each of the influencing factors affect each other with the exception of chance which only affects the other factors but is not affected by them.

**Government** affects both other countries' diamonds and transnational business activity via policies relating to issues such as trade, industry and taxation.

**Transnational business activity** influences government spending as a result of taxation. Its effect on "other countries' diamonds" is via its overseas activities which can alter domestic demand, demand for related and supporting industries, factor conditions and domestic rivalry.

Changing government policies, demand conditions and factor conditions of **other countries diamonds'** can result in changes in domestic government policies to maintain industries' competitiveness. As transnational business activity is reliant upon international markets, any changes in the diamonds of the countries in which they operate will affect their activities.

The effect of other countries' diamonds will primarily depend upon the level of influence, usually determined by trade, that the country has. Thus for Ireland the UK diamond would be the most important. This process would make it possible to link all of the EU economies and assess the affect of a change in one economy on the others. It is likely that changes in the larger countries' diamonds such as those of France, Germany and the UK, would have the greatest repercussions on the diamonds of other member states. However, some countries will have an influence on another's diamond even if trading levels are not significant. A good example is the influence of French tastes in fashion which reverberate throughout the world and affect demand for textiles, the structure of the industry and supplier and related firms in countries which are far away from France and do not necessarily have high levels of trade with France.

This new diamond maintains the importance of domestic and local conditions in the international success of firms, but also incorporates the importance and influence of international conditions.

## **7.7 Conclusions**

Porter has successfully introduced the idea of location into a literature dominated by globalization. He has established the importance of domestic conditions and the industry specific factors of supplier and related industries, factor conditions, the strategy, structure and rivalry of firms, and demand conditions in the success of an industry. In spite of these significant achievements, as the criticisms of this theory have shown and as Dunning eloquently states, 'the good news is that Porter has left international business plenty of interesting research to carry out' (1992, p.165). Dunning has added transnational business activity as an exogenous variable to Porter's diamond. It has been argued here that this still does not adequately cover Rugman's point about double diamonds. A more comprehensive approach is offered in chart 7.3.

## **CHAPTER 8: THE DAIRY MANUFACTURING INDUSTRY, A POSSIBLE INDUSTRIAL CLUSTER**

This chapter tests the hypothesis that the dairy manufacturing industry in Ireland is an industrial cluster. The process of identifying an industrial cluster as outlined by Porter (1990, p.739-744) is described in chapter 7 and the primary aim of this chapter is to follow this procedure in order to test the hypothesis. In the first instance, section 8.1 outlines why this industry has been selected. Section 8.2 presents a general discussion on the sector. This is then followed by analysis of the industry using the tools and headings developed by Porter, with a brief discussion of the implications of the amendments to Porter suggested in chapter 7.

### **8.1 Why select the dairy manufacturing industry?**

There are three main reasons why the dairy manufacturing industry has been selected for study.

Firstly, it is an extremely important industry in the Irish economy:

- 14.9 percent of all manufacturing industries' gross output in Ireland is attributable to the dairy manufacturing industry (CSO, 1997).
- the dairy manufacturing industry accounts for 20 percent of Irish exports (Joint Irish-Arab Chamber of Commerce Report, 1994).
- seven of the top 20 exporters in Ireland (in terms of levels of export sales) are dairy manufacturing firms (Business and Exporting, October 1996).

- it is dominated by Irish firms and it is ranked fourth (at the three digit NACE code) in terms of employment in Irish owned firms (CSO, 1993 See Appendix C)

Secondly, the Irish dairy manufacturing industry is important in European terms:

- Ireland is the sixth largest milk producer in the EU (Eurostat Agricultural Statistics, 1996).
- six of the largest Irish dairy manufacturers are ranked in the top 50 European dairy companies in terms of dairy sales
- at a rate of 676.2 percent and 426.1 percent respectively Ireland has the highest butter and cheese self-sufficiency in the EU (Eurostat Agricultural Statistics, 1996)

Thirdly, others working in the area have suggested that the dairy industry is an industrial cluster (O'Donnellan, 1994; O'Connell et al, 1997).

## **8.2 The dairy manufacturing industry**

There are 116 firms manufacturing dairy products in Ireland; on average they employ 66 people per firm and have a combined net output of £405.24 million (CSO, 1997). The dominant product remains milk but a wider range of products including yoghurt, cheese and ice cream have become increasingly important.

As the table below shows there are many different sized firms in the industry from those employing up to five to those which employ in excess of 500. It is notable that the plant size for

the largest producer in New Zealand and Northern Europe can be between two and four times the size of the typical larger Irish dairy plant (Joint Irish-Arab Chamber of Commerce Report, 1994, p.5).

Table 8.1: Size of firms in the dairy manufacturing industry

<i>Number employees in Ireland</i>	<i>No. firms</i>
under 10	18
10-19	21
20-49	19
50-99	42
100-199	10
200+	6
Total	116

Source: CSO, 1997.

'The indigenous component of the dairy industry has ten significant dairy companies/co-operatives, five of whom process over 70 percent of the Irish milk pool. Six of the largest have turnover of more than £500 million and between them they represent the majority of Irish dairy exports' (Forbairt, 1995, p.65) (See table 8.2). The Irish Dairy Board was established by the government in 1961 as the centralised marketing co-operative (An Bord Baine, 1982) which promotes and sells Irish dairy products overseas. In 1973 it was transformed into a farmers' co-operative in line with EU competition laws. The remaining are global agri-food companies with subsidiaries and factories worldwide. There are five foreign establishments located in Ireland which are primarily involved in the production of infant formula and other milk powder based products (An Bord Baine, 1982).

Table 8.2 : The top ten dairy companies (based on annual turnover)

<i>Company</i>	<i>Turnover (late 1995/early 1996 (£m))</i>	<i>Total employment (worldwide)</i>
Avonmore	1,225.29	6,500
Kerry Group	1,199	9,200
Irish Dairy Board	1,161	2,000
Waterford Foods	788	5,000
Dairygold	635.2	2,899
Golden Vale	620	2,137
North Connacht Farmers Co-op	148	412
Lakeland	132	260
Carberry	87	155
Neenagh	75	150

Source: Dairy and Food Industries Magazine, April 1996

### 8.2.1 Co-operative structure

This industry in Ireland has long been dominated by co-operatives<sup>44</sup> Sargent (1982, p.27) describes how in 1823 Robert Owen visited Ireland and expounded his views on mutual co-operation and co-operative villages. His ideas were taken up and implemented by John Scott Vandeleur on his estate of 250 hectares, but 'it was short lived because of his addiction to

<sup>44</sup> Since the mid-1980s a number of the larger co-operatives have become public limited companies.



gambling'. It was later, in 1889, that Horace Plunkett established the first Irish co-operative creamery in Limerick. By the turn of the century there were 374 co-operative societies with a membership of 36,683. The importance of co-operatives in this industry has remained, and in 1993 the co-operatives affiliated to ICOS (Irish Co-operative Organisation Society) reported a combined turnover in excess of £6 billion, with 17,000 people employed in Ireland. Grant (1991, p.25) observed that 'a higher proportion of milk is delivered to co-operatives in the Irish Republic than in any other member state'. In 1993 97 percent of the dairy processing sector market was supplied by co-operatives (Residuary Milk and Marketing Board, 1995, p.89). In recent years a number of co-operatives have transformed into public companies; while in most cases the co-operative continues to hold the majority of shares in the new company and farmer representatives hold seats on the board, nonetheless it is feasible that the role of farmers could significantly decline as their proportion of shares and their voice on the board diminish.

The co-operative structure in the industry provides a very distinct channel of communication between milk suppliers and processors. These milk suppliers range from small family run farms to large farms with large herds of cattle and high milk quotas. Rather than sub-contractors or dependent suppliers, most are members of the dairy co-operative which they supply to. Instead of a distant vertical relationship within which money and goods change hands, the co-operative structure facilitates the development of common goals for farmers and manufacturers. However changes in the co-operative structure of processors could result in a clearer distinction between suppliers and manufacturers. Competition between the co-operatives for suppliers is intensified by farmers seeking the best possible price for their milk. Since the late 1980s farms can only switch from one co-operatives to another at the end of the milking season,

### **8.2.2 Trade**

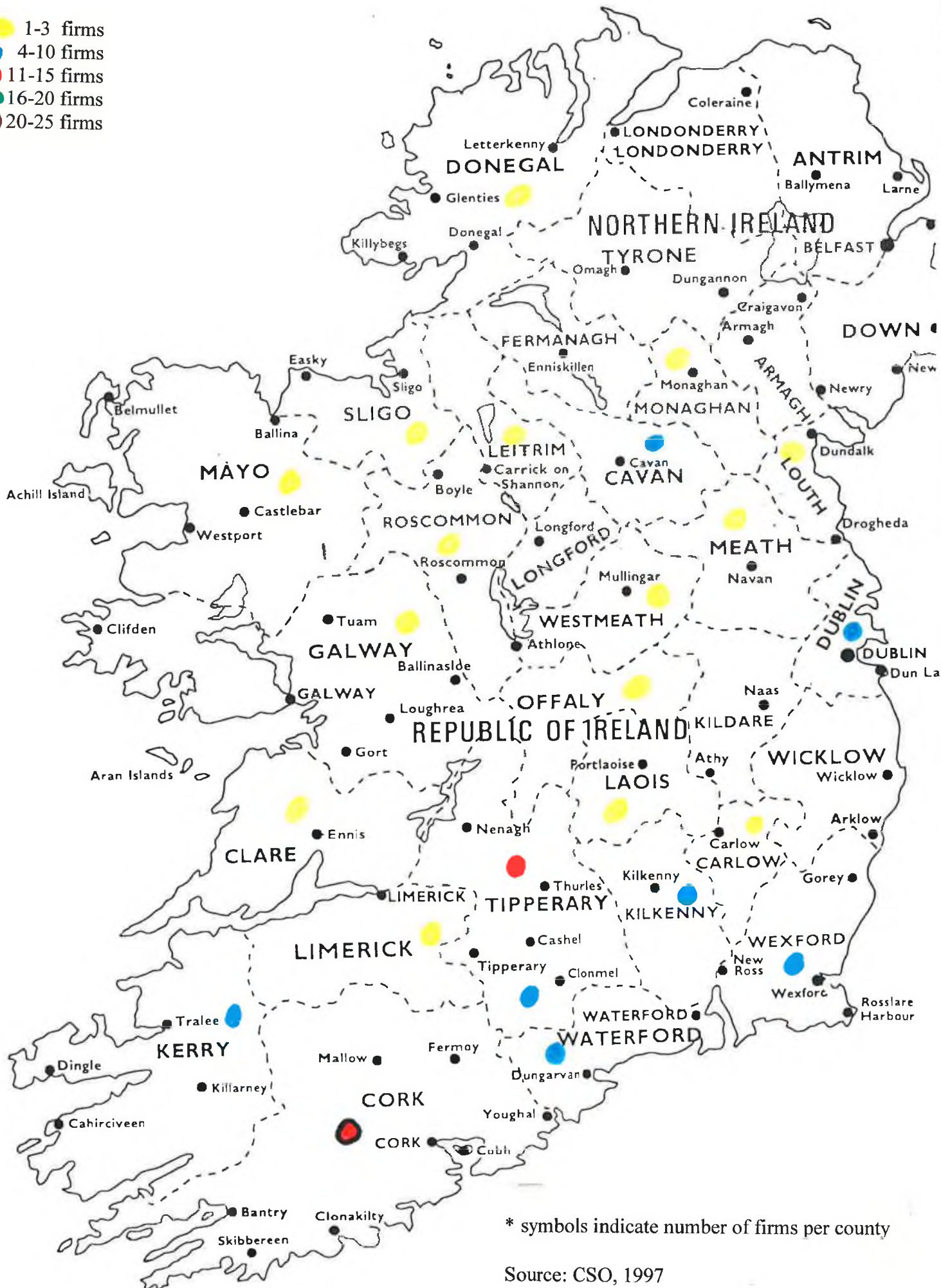
Agriculture has an historical position in the Irish economy and farming has long been one of the most important sources of income in Ireland; in 1960 farming accounted for 23.7 percent of personal income nationally; 33.7 percent outside of Dublin and more than 40 percent in nine counties (Pitts and O'Sullivan, 1973, p.12). The quality of the land coupled with intensive farming means that Ireland has long had a surplus of production which it traded. In 1988 sufficient meat and dairy products were produced for the country's population of 3.5 million and adequate exports for a further 9 million people (Department of Agriculture and Food, 1991, p.5). Even in the 17th and 18th centuries Irish beef had a worldwide reputation and there were large exports of Irish butter to Great Britain and mainland Europe (Department of Agriculture and Food, 1991, p.3).

### **8.2.3 Geographical location**

Dairy manufacturing firms are dotted around the country, all but three counties having at least one enterprise, reflecting the widespread existence of farming communities. However there is a clear concentration in the south. Of the 97 firms involved in this activity, 30 are located in the south-west and a further 22 in the south east. The single county with the highest concentration is Cork with 25 firms (see map 8.1 and appendix C). This reflects the concentration of larger, more efficient farms in this area and the climate which allows cattle to graze outside for 6-8 weeks more than in more northerly counties (Matthews, 1997). It is interesting to note that many of the foreign owned firms in the industry are also located in the south or south east: a chocolate crumb and milk powder manufacturer in Mallow, milk powder plants in Limerick, Wexford and Cork and an infant food plant in Wexford (O'Connell et al, 1997, p.10).

**Map 8.1: The location of dairy manufacturing firms in Ireland**

- 1-3 firms
- 4-10 firms
- 11-15 firms
- 16-20 firms
- 20-25 firms



\* symbols indicate number of firms per county

Source: CSO, 1997

#### **8.2.4 Restructuring**

There have been significant mergers and acquisitions in the industry, the most recent merger is between Avonmore and Waterford which creates the fourth largest agri-food group in Europe (Irish Times, 27/5/1997). This restructuring is primarily a result of increasing competition in the European and international markets; to compete effectively requires large operations which provide economies of scale. This is a strategy which has been promoted by government agencies (Department of Agriculture and Fisheries, 1969; Forbairt, 1995), specialist reports (Igoe, 1993; Dairy and Food Industry Yearbook, 1996) and the Irish Co-operative Organisation Society (ICOS) (1987) over a number of years. On a worldwide basis Irish companies have been the third most active amongst European companies in acquiring dairy related international business interests (O'Connell et al, 1997, p.1).

#### **8.2.5 Seasonality**

The good grass growth rate in Ireland has been extremely beneficial for the industry making it particularly cost-efficient as farmers can allow cattle to graze outside for longer. However during the winter period this cost advantage is partly offset by a significant decline in the level of milk output. This seasonality of production affects not only the milk output of the dairy manufacturers, but it also makes the production of value-added products such as yoghurt and ice-cream more difficult. To develop a brand name in such products necessitates a constant supply of milk in order to meet demand. The seasonality of production has encouraged reliance on products such as cheese and butter which can use milk when production is high and then be stored and distributed throughout the year. The dairies attempt to encourage farmers to produce milk out of season by offering slightly higher prices.

### 8.2.6 The EU

The EU has played a considerable role in the Irish agricultural system. As the table below shows a significant amount of funding in this sector is provided by the EU. The EU intervention price scheme assures farmers of a basic price for their products even if they are not demanded on the market. This has benefited Irish farmers significantly. It has kept many farmers in business and ensured the continued success of the dairy manufacturing industry, but on the other hand this scheme has acted as a disincentive to the development of value added products due to the guaranteed market for milk and butter which it assures. Changes in the GATT and EU agricultural schemes are likely to impinge significantly upon this sector in the future and as section 8.4 discusses, this type of external intervention, combined with the role of the national government, has affected many facets of the cluster diamond in this industry.

Table 8.3: Total EU and National Spending on Agriculture (in current terms)

<i>Year</i>	<i>EU (IR£)</i>	<i>National (IR£)</i>	<i>Total (IR£)</i>	<i>EU share of total spending</i>
1970	-	66	656	0
1973	37	68	105	35
1975	103	91	194	53
1980	413	183	596	69
1985	893	224	1,116	80
1989	963	174	1,137	85
1993	1,320	273	1,593	83

Source: Matthews, 1995

### **8.3 Is the dairy manufacturing industry in Ireland an industrial cluster?**

#### **8.3.1 The initial criteria**

The process of identifying an industrial cluster as outlined by Porter (1990, p.739-744) is described in chapter 7. The first step is to create a cluster chart consisting of those industries whose exports equal or exceed the nation's average share of world trade in the particular year of study. The required data is found in the United Nations International Trade Statistic Yearbook. Table 8.4 shows a food and beverages cluster chart for Ireland.

As shown in the cluster chart exports of milk, whey, cream, butter and cheese exceed the average Irish export rate of 0.4 percent. The next step is to ensure that there is no reason why this industry would need to be excluded from the cluster chart. There are three reasons why this may occur:

1. if the balance of trade is negative then the industry can only be included if the nation's share of world exports in this industry has two or more times its average share;

This is not relevant as Ireland does not have a negative balance of trade.

2. if the industry's exports are believed to be dominated by foreign companies;

The latest Industrial Census (1993) shows that of the 97 firms manufacturing dairy produce only five were foreign owned and they produced 11.3 percent of the industry's gross output.

3. if trade is almost exclusively with neighbouring nations.

Table 8.4: Food and Beverages Cluster chart for Ireland - cut-off point is 0.4.

<i>Primary Goods</i>	<i>Food &amp; Beverages</i>	
	00119 Live bovine species, other than for breeding (3.6)	5922 Albuminoid substances, glues (including casein ) (5.7)
	0011r Live bovine species for breeding (0.9)	0341 Fish, fresh, chilled, excluding fillet (2.1)
	0013 Live swine (0.5)	0342 Fish frozen, excluding fillets (0.6)
	001r Live animals for food except bovine, swine (2.7)	0344 Fish fillets, frozen (0.7)
	01111 Bovine meat boneless (8.8)	03505 Fish (Excluding cod) dried, salted (0.6)
	0112 Mutton etc, fresh, chilled, frozen (10.7)	035r Fish meal. Smoked fish and dried cod (0.8)
	0113 Pig meat fresh, chilled, frozen (4.8)	043 Barley unmilled (0.1)
	0121 Pig meat dried, salted, smoked (2.2)	04842 Pastry, cakes etc (1.6)
	012r Meat and edible offal nes, salted, in brine, dried or smoked (1.6)	048r Cereal etc preps excl malt and bakery products (5.0)
	014 Meat prepared, preserved nes etc (2.7)	0612 Refined sugar etc (0.8)
	02242 Milk dry, 1.5% fat or less (9.7)	0814r Meat meal fodder (3.3)
	02243 Milk dry, over 1.5% fat (3.9)	091 Margarine and shortening (1.8)
	02249 Milk (except dry) preserved, sweet (1.2)	111 Non-alcoholic beverages nes (0.9)
	0224r Whey (5.0)	29193 Gut, bladders, etc non fish (1.0)
	022r Milk and cream, fresh, not concentrated or sweetened (1.4)	291r Crude animal materials excluding gut, bladders, etc non-fish (0.6)
	023 Butter (11.9)	292r Crude veg material nes, excluding bulbs and cut flowers (1.1)
	024 Cheese and curd (3.0)	41132 Fats of bovine, sheep etc (2.8)
		4113r Animal oils and fats nes. Excl. Of bovine cattle, sheep or goats (1.8)
Machinery	695r Hand tools (e.g. spades) of a kind used in agriculture etc. (1.5)	
	721r Dairy mach. Nes (include. Milking machines); agriculture mach. Nes (0.9)	
	742r Pumps for liquid etc. excluding reciprocating and centrifugal (0.5)	
Speciality Inputs	6935 Metal fencing, guaze etc (1.4)	
	693r Barbed etc iron or steel wire used for fencing (0.5)	
Services		

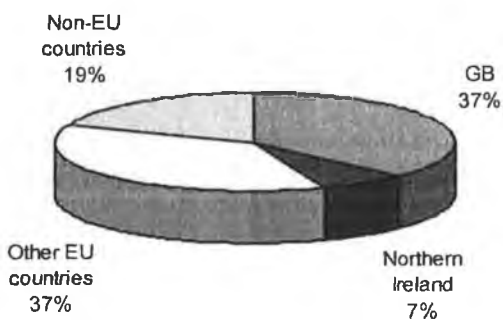
Numbers in brackets show Ireland's percentage share of world exports

SITC code precedes product names SITCr = calculated residue

Source: O'Connell et al, 1997.

'Dairy exports worth £1.75 billion annually are exported to almost one hundred countries worldwide. While the UK is still the largest destination for exports, the volume of exports to the UK is decreasing while the volume of export to other European countries and the rest of the world is growing' (Joint Irish-Arab Chamber of Commerce, 1994, p.18). The chart below shows the main destinations of Irish dairy exports in 1994.

**Chart 8.1: Main areas of export for dairy products 1996**



Source: CSO, Trade Statistics, 1997.

(See Appendix C for detailed list of destination of dairy exports)

### **8.3.2 Applying Porters diamond: factor conditions**

In chapter 7 different types of factor advantage were discussed. Table 8.5 briefly describes them. The importance of agriculture to the Irish economy is a consequence of the natural endowments which the country has and these constitute what Porter calls basic factor advantages. There is also some evidence of specific factors. As well as advantages, the industry has had a number of factor disadvantages to contend with.



Table 8.5: Types of factor advantage as outlined by Porter

<i>Type of factor</i>	<i>Brief description, examples</i>
Basic	natural resources, climate, location, unskilled and semi-skilled labour
Advanced	modern technical equipment, highly skilled workers
Generalised	can be used by firms in a variety of industries eg. roads
Specialised	are only beneficial for the particular industry eg. specific training

More than 60 percent of the land in Ireland is used for agriculture (CSO, 1996). Dairy farming is also aided by 'the Irish grass-growth pattern [which] makes it cheaper to produce beef, cattle and milk in the summer months; this low-cost production constitutes Ireland's "natural advantage"' (Department of Agriculture Food and Farming, 1993, p.5). The other factor advantage which this industry has is a pool of workers who are experienced working on the land and there is much general knowledge about farming. The soil, grass growth pattern and ready supply of semi-skilled or unskilled labour constitute what Porter (1990) calls basic factor advantages.

In addition third level courses and in particular University College Cork, provides the industry with a substantial number of agricultural graduates and doctoral researchers. These highly skilled individuals constitute an advanced factor. Although in many industries advanced factors are required to gain competitive advantage, as Porter notes 'basic factors remain important in extractive or agriculturally based industries' (p.77). Thus while the Irish dairy manufacturing industry only exhibits limited advanced factors, the fact that natural resources are so important in this sector mean that it is still possible to have a competitive advantage.

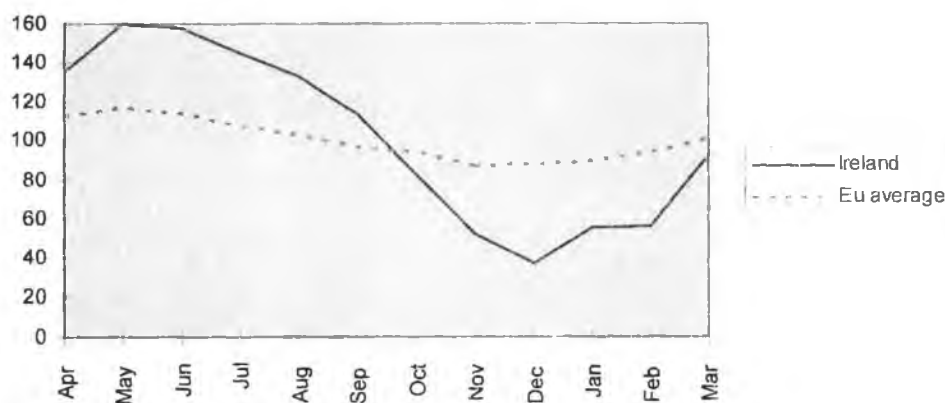
The other distinction that Porter makes in relation to factor advantages is that between generalised and specialized factors. Generalised factors can be used by many different industries and include infrastructure and a pool of well-educated workers. More specialized factors in the case of the dairy manufacturing industry include the existence of Moorepark Technology Limited, a commercial company which provides pilot plant and research services to the food processing industry. This service is not totally selective in that it serves the food industry rather than just the dairy industry, but in a small economy this represents a relatively specialized factor.

While Ireland has many natural endowments which make it particularly suitable for dairy manufacture there are also a number of selective factor disadvantages. According to Porter (1990) such disadvantages can actually enhance the prospects of success. Ireland in comparison to other EU dairying countries, has a very high proportion of land with impeded drainage. Nonetheless, 'the most difficult of our wetland regions provide 50 percent of the national milk supply. Many of the larger dairy co-operatives obtain much of their milk supplies from these regions' (Moorepark Research Centre, 1994, p.38). This is despite the fact that the costs of production in wetland regions are 10-20 percent higher than those on dry land (Moorepark Research Centre, 1994, p.4). This factor disadvantage has resulted in the introduction of many different drainage systems and modification of machinery to suit this type of land (Moorepark Research Centre, 1994, p.38).

During the four months of the summer, Ireland has a competitive advantage as grass growth patterns are particularly good but this is eliminated over the rest of the year. The only way that the competitive advantage can be maintained year-round is if the goods produced can be easily

and cheaply stored. Half of the milk produced in Ireland is produced between the months of May and August (see appendix C), and almost three-quarters of it in the six months between April and September. This is unlike other European countries which have a more even spread of production. As discussed on p.267, the seasonality of the milk supply affects the product mix in the industry and makes it difficult to develop product brands.

**Chart 8.2: Index of monthly milk deliveries to dairies 1993-1994**



Source: Residuary Milk and Marketing Board, 1995. (Detailed data by country in appendix C)

The issue of seasonality has been recognised as important in the bid to increase product diversification in the industry and a number of milk processing companies are now offering price incentives to encourage dairy farmers to produce milk during the winter months. An improvement in the seasonality of milk production, has encouraged the expansion and development of the dairy product range in the past few years. This includes 'increased production of cheese, yoghurt is now available in a huge range of varieties from flavoured to light drinks and frozen lollipops. Dairy deserts and pizza toppings are further examples of the type of product diversification which will help the industry to decrease dependence on lower

value added and seasonal dependent commodities or intervention type of trade' (Joint Irish-Arab Chamber of Commerce Report, 1994, p.15). This factor disadvantage is beginning to be addressed, but seasonality remains a problem for the industry and has stunted its development.

While the dairy manufacturing industry in Ireland has the advantages of good soil, a supply of labour and good grass growth, processes and strategies have had to be developed to overcome the difficulties of farming wetland regions and the seasonality of production. Historically it is the existence of basic factor conditions which have led to the competitiveness of Irish agriculture, but specialised factors such as highly skilled individuals and research institutions, have been required to overcome factor disadvantages and maintain this competitive advantage.

### **8.3.3 Demand Conditions**

Porter (1990) outlines three broad attributes of home demand which are significant:

1. Home demand composition
2. Demand size and patterns of growth
3. Internationalisation of domestic demand

#### **8.3.3.1 Home demand composition**

Home demand is an important competitive advantage if it provides firms with a local market and acts as an indicator of changing tastes and needs of international buyers. While Irish consumers provide the industry with a local demand, the range of products demanded is relatively narrow by European standards and these demands do not act as a barometer for European trends.

Domestic demand has in many ways had a negative rather than positive influence on this industry. Taking cheese as an example, low levels of domestic demand have resulted in relatively low levels of production. Cheese consumption progressively declined in the 18th and 19th centuries due to the more simplified diet associated with potatoes (Keane, 1981). Cheese consumption historically evolved from farmhouses and monastic bases where making cheese was an excellent means of long-term storage of perishable milk, and was particularly suited to inaccessible regions. Many of these regions developed their own local varieties of cheese (Keane, 1981). The geography of Ireland, coupled with widespread milk production, meant that the storage of milk was of little concern in most areas and cheese production was minimal.

As cheese has become more popular (consumption of cheese per head in Ireland has risen from 3.5 kg in 1980 (Department of Agriculture and Food, 1993, p.10) to 5.7 kg in 1992 (Residuary Milk and Marketing Board, 1995, p.175)<sup>45</sup> the industry has developed significantly and currently about 80,000 tonnes of cheese is produced annually - 80 per cent of which is cheddar (Moorepark, 1994). In the early 1980s some 95 percent of cheese produced was cheddar (Keane, 1981, p.27), but more recently efforts have been made to diversify: Dairygold produce an Italian type, Tipperary Co-op a Swiss type and Waterford Foods a Leerdamer. The Moorepark centre has also recently developed a totally new cheese variety 'Araglin' which is a hybrid of cheddar (Moorepark, 1994).

The lack of a strong domestic demand for cheese has limited growth in this sector, although more recent developments indicate that this disadvantage may be overcome. Increased demand for cheese and increased diversification in production indicate the potential for future growth,

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<sup>45</sup> This remains the lowest in the EU.

while the fact that Golden Vale is the largest supplier of processed cheese slices to the fast food industry in Europe and Avonmore is the largest supplier of mozzarella pizza cheese in Europe (Joint Irish-Arab Chamber of Commerce Report, 1994), exhibits current success in this sector. This success in processed cheese reflects the Irish consumer preference for processed rather than natural cheese (Keane, 1981, p.27).

A similar situation is in evidence in the fact that in Europe a considerable amount of milk is sold as UHT (Ultra High Temperature), a process which prolongs the shelf-life of the product. Its distinct flavour is not readily acceptable to the Irish palate and it is not sold on the Irish market. This makes it difficult for Irish dairy manufacturers, which predominantly supply the domestic market, to gain economies of scale in the production of this good.

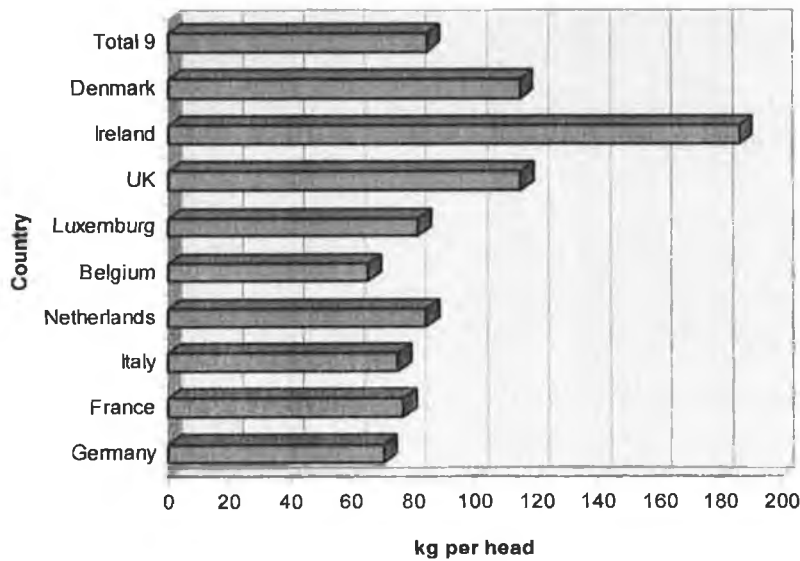
It is clear that domestic demand influences the goods which the Irish dairy industry produces. Porter speaks of this as creating or enhancing the competitive advantage of an industry if these consumers pre-empt the demands of consumers in other markets. In this case it appears that in fact the relatively restricted demands of Irish consumers have contributed to the dairy industry's slowness to develop products such as cheese, yoghurts and fromage frais which are currently the fastest growth segments in the EU dairy sector.

#### 8.3.3.2 Demand size and patterns of growth

While small in absolute size - about 116 million gallons of milk are consumed in the 26 counties each year (Dillon, 1995), per capita consumption of 186.3 kg of liquid milk in 1993 is the highest in Europe. In fact it is more than double the average for the nine EU countries for

which this information is available and the next highest consumption is 114.9 kg in the UK and 114.7 kg in Denmark (Residuary Milk and Marketing Board, 1995).

Chart 8.3: Per capita consumption of liquid milk in Europe (1993)



Source: Residuary Milk and Marketing Board, 1995

Although per capita consumption of milk is relatively high in Ireland, this is not reflected in other dairy products and the size of the market does not facilitate economies of scale or encourage large amounts of investment. Porter (p.96) points to the fact that early saturation of domestic demand ‘forces firms to continue innovating and upgrading’, but the intervention market has long provided Irish producers with a guaranteed price, thus discouraging the development of new products and entry into new markets.

The level of demand for milk among Irish consumers, and their preference for milk rather than associated dairy products, combined with the role of the EU have in many ways had negative rather than positive effects on the development of the dairy manufacturing industry.

#### 8.3.3.3 Internationalisation of demand

Internationalisation of demand for Irish dairy products is a consequence of the country's image and the location of a large number of "Irish" consumers living outside Ireland.

Many European consumers associate Ireland with dairy products and also with an image of natural and good quality products. This could perhaps be called the 'made in' effect, whereby the consumer deliberately selects products made in a particular country. Research by An Bord Baine (1995) showed that one in three EU consumers associate Ireland with dairy products. It also found that 'personal experience of Ireland is limited but there is a strong correlation between contact with Ireland, either personally or via friends and relatives, and positive perceptions of Ireland and Irish food' (p. 9)

The most positive attitude was discovered among German consumers where "made from natural ingredients" is emphasised as a key attribute in food products (An Bord Baine, 1995). Noel Cawley, Chairman of the An Bord Baine, believes that Kerrygold butter and cheese is successful due to a 'totally green and healthy approach, without the use of pesticides and the use of only Irish products' (Dairy and Food Industries Yearbook, 1996, p.37).

The association of a country with a particular product or type of product is important in many industrial clusters. For example Porter notes 'in the 1980s in consumer electronics... 'Made in



Japan' has come to signify quality and sophistication in a widening range of product lines often produced by different Japanese companies' (1990, p.138). Similarly 'Italians are known for their sophistication about clothes, food, and fast cars, all areas of Italian international success' (Porter, 1990, p.91). Ireland is associated with dairy products and this has enhanced the internationalisation of demand for these products.

In addition there is a large population of Irish emigrants located all over the world, and in particular in the US and the UK, and they constitute an almost natural customer base in foreign markets.

#### 8.3.3.4 Summary

Demand conditions have to varying degrees influenced the Irish dairy industry. While there has been a considerable amount of internationalisation of demand, the size and nature of domestic demand has in some ways restricted the development of the industry. Reliance upon intervention schemes has also made the industry less responsive to demand conditions. Changes to the CAP and GATT (or WTO) rules should change this, and as Europe becomes more integrated and the Irish economy continues growing Irish consumers' tastes may become more like their European neighbours and begin to act as a barometer for changing European tastes.

#### **8.3.4 Firm Strategy, Structure, and Rivalry**

The structure of this industry has been outlined in section 8.2. The main features are the co-operative structure, the importance of a number of larger firms and the dominance of indigenous firms.

The firms in this industry pursue a number of different strategies; they can be classified primarily as restructuring, product diversification and cost competitiveness.

#### 8.3.4.1 Strategy of restructuring

This sector is typified by regular restructuring: in the early 1880s there was rapid growth in the number of creameries (O'Grada, 1977); from the 1930s the industry was dominated by co-operatives while a rationalisation period during the 1970s resulted in a number of smaller creameries closing. In the last ten years restructuring has taken two forms - mergers and acquisitions and transformation to limited companies. The restructuring of the industry is a consequence of what is occurring in the market. 'EC food consumption is likely to show little increase... and with intervention and export refunds to be cut back under CAP reform, and under the GATT round.... Irish exports will in the main have to displace competing products rather than ride on a growing market' (Department of Agriculture and Food, 1993, p.5). The 1993 Goodbody report on the industry stated 'we believe in order to become a significant player on the international market, an Irish dairy company will need turnover in excess of £2 billion and pre-tax profits in the order of £80 million' (Igoe, 1993, p.5). Only the newly merged Avonmore and Waterford co-operative meets this level with 'a turnover of £2.5 billion' (Taylor, 1997) and expected profits of £100 million per annum (O'Keefe, 1997)

To succeed and expand this industry has to be able to compete and doing this involves two main issues: scale and diversification of production. This has encouraged the merger of a number of smaller co-operatives and the acquisition of foreign firms by the larger co-operatives. The latter has necessitated large amounts of funds which have been raised by restructuring into public limited companies.

By early 1994 this sector had spent nearly £800 million on acquisitions of which 30 percent was spent in the UK, 20 percent in the US and 50 percent in Ireland. During this period of restructuring, between 1987 and 1993, four main dairy companies increased sales by between 3 and 4.2 times (Joint Irish-Arab Chamber of Commerce Report, 1994).

For the smaller co-operatives the strategy has been to merge where possible, although competitive rivalry makes this difficult. The biggest merger occurred in 1991 when Mitchelstown and Ballyclough co-operatives merged to create Dairygold. At the time this was the largest dairy group in Ireland and it remains the largest firm remaining as a co-operative, aside from the Irish Dairy Board (An Bord Bainne). Shareholders in Avonmore and Waterford have voted on a merger which creates a company with a turnover of £2.5 billion making it one of the largest dairy companies in Europe (Irish Times, 27/5/1997). McGrath reports that 'the savings that Avonmore and Waterford believe they can generate, and the support for the price paid for milk, will put severe pressure on other processors to follow suit' (1997).

The rationalisation and increasing concentration of the industry since the late 1980s is suggested in the contrast between the 'over 80 percent of the national milk supply' processed by the twelve largest co-operatives in 1987 (ICOS, 1987, p.3), and the 'over 70 percent' of the national milk supply processed by the five largest dairy companies/co-operatives reported in 1995 (Forbairt, 1995 p.65).

#### 8.3.4.2 Product diversification strategy

The seasonal nature of Irish dairy production combined with a reliance upon producing goods for intervention has restricted the product range of this industry. As the table below shows

emphasis remains upon butter. However the significant growth in cheese production shows at least some success of a product diversification strategy.

Table 8.5: Milk output and disposal (whole milk only) 1991-1994 (%)

<i>Product</i>	<i>1970</i>	<i>1980</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>
Liquid milk	20.4	14.1	10.5	10.3	10.3
Butter	54.3	56.8	57.4	56.4	61.1
Cheese	9.3	11	16.5	18.3	15.7
Cream	2.5	2.3	4.3	4.3	4.5
Whole milk powder	-	-	5	4.9	3.9
Chocolate crumb	4.4	1.8	2.3	2.4	2.3
Dried milk	5.1	5.4			-
Farmers butter	2.1	.19			-
Miscellaneous products	1.9	8.3	4.2	3.5	2.4
Total milk output (000 gals)	656.3	4,575.6	5,109	5,184	5,190

Source: CSO, 1996

In addition to the seasonality of production, one of the main difficulties associated with diversification strategies for this industry lie in the costs involved. Such a strategy would necessitate considerable expenditure on research and development, and marketing. Currently 'R&D expenditure is relatively low for the Irish dairy companies compared with their larger overseas counterparts, even when expressed as a percentage of sales [and for the industry to pursue a differentiation strategy] research and development expenditure would need to be increased to IR£8-10 million (1-1.25 % of turnover)' (Igoe, 1993, p.85).

Regardless of the difficulties, this industry, encouraged by the impending reduction in the intervention market and increased international competition, has identified product development

and differentiation as a route to increasing competitiveness and gaining new markets. This strategy has been fulfilled in different ways by different firms: some have forged links with other food and drinks companies, for example Waterford Foods supplies the cream base to Baileys for its liqueur; others have branched into other agriculture sectors for example approximately 50 percent of Kerry Group's turnover is now meat and Avonmore 'has also become a major player in the Irish (and also UK) meat market, particularly pigmeat' (Igoe, 1993, p.87); others have made acquisitions of firms which are producing different products: having acquired Healds in 1989 Waterford has become involved in the production of pure fruit juice (Igoe, 1993, p.137) and Kerry acquired three food ingredients firms in the US.

#### 8.3.4.3 Cost competitiveness strategies

Boyle et al (1992, p.154) reported that 'as far as cash costs are concerned we have a healthy competitive status in milk and cereals production'. However if total costs, including land and family labour are taken into account our competitiveness score is much poorer as shown in Table 8.7.

Table 8.6: Total cost efficiency - costs as a percent of the value of milk output

	<b>Index I</b>	<b>Index II</b>
Germany	75.9	118.6
France	72.2	123.5
Italy	60	127.7
Belgium	54.7	99.3
Netherlands	66.9	113.6
Denmark	82.4	129.76
Ireland	59.5	130
UK	73.8	117.2

Index I - explicit costs

Index II - specific inputs plus overheads plus imputed capital, land and family labour

Source: Boyle et al, 1992, p.64

Price remains the main area of competition for the dairy industry and the difficulty for Irish manufacturers centres around scale and utilisation. The issue of scale is a problem on two fronts, firstly the average dairy herd size in Ireland is relatively low by EU standards and significantly lower than New Zealand. Secondly the firms involved in dairy manufacturing are relatively small - the average milk pool of the four largest dairy manufacturing firms in Ireland is 239 million gallons as compared to 530 million gallons for the average top 10 European co-operatives, 371 million gallons for the average top 10 European private dairy companies and 560 in the case of New Zealand's largest co-operative (Igoe, 1993, p.83). This means that the economies of scale gained in the dairy industry in Ireland are lower than those achieved by competitors. This problem is further exacerbated by the fact that there are high levels of under-utilisation of factories in the industry (ICOS, 1987; Matthews, 1997) due to the seasonality of the milk supply. It is the lack of product specialisation and a fluctuating supply of milk that makes many Irish dairy manufacturing firms less cost efficient than their counterparts elsewhere.

The industry (and larger firms in particular) has pursued a strategy of cost-competitiveness primarily by attempting to increase the scale of production. Between 1987 and 1993 on average in the quoted dairy companies 'turnover has tripled and both operating and pre-tax profits have risen more than fourfold [while] operating margins increased by almost 50 percent' (Igoe, 1993, p.86). This has mainly been achieved by considerable acquisitions.

Igoe (1993) outlines the strategies of this industry as comprising aspects of cost competitiveness, product differentiation and the development of niche products. It is interesting that in particular the issue of increasing the scale and diversifying production have long been the

advice of consultant and government reports on the industry. The methods by which these strategies are fulfilled varies from firm to firm but what is common is the belief that restructuring and change are essential elements in the growth of the industry.

#### 8.3.4.4 Rivalry between firms

There is considerable rivalry in this industry on a number of different levels. Firstly there is competition to source the milk. Farmers choose which dairy manufacturing firm to supply and although in the co-operative structure they are usually a member of one or other co-operative they can choose which manufacturer to supply from year to year. This makes the price offered to farmers for milk a continual source of competition.

At the other end of the process there is competition for market share, both domestic and international. There is little product specialisation so most firms are competing in the same sectors. Even in relatively low output products like yoghurts the larger creameries each have their own brand. Similarly most of the large firms produce cheese, although there is some distinction in terms of the new types of cheese which have been developed. Competition in dairy spreads is so great that there 'is a greater variety than anywhere else in Europe' (Retail News, 1996). Even though the larger dairies have expanded their operations in terms of markets or products and so are not all in direct competition, they still measure their success in relation to each other (Matthews, 1997).

The structure and system of production coupled with the lack of product specialism between firms creates intense rivalry, and this is evidenced in prices for milk, the range of similar products and similar strategies for development. According to Lynch (1994, p.85) 'the

fragmented industry structure in Ireland over the years has given rise to a competition and conflict over the milk supply. This has fostered a high degree of sensitivity to the demands of suppliers and engendered particular skills in the management of supplier relations'. There is no apparent evidence of co-operation between dairy manufacturing firms, although most do belong to ICOS. In general the relations between firms consist of competition or merging or acquiring each other.

The strategy and structure of this industry have changed considerably since the mid-1980s and the change has enhanced its competitive advantage. These developments have been encouraged by the rivalry which exists whereby each firm is vying for the same markets and suppliers, and producing the same goods.

### **8.3.5 Related and Supporting industries**

Competitive advantage enjoyed by related and supplier industries can 'confer potential advantages on a nation's firms in many other industries because they produce inputs that are widely used and important to innovation or internationalization' (Porter, 1990, p.100). There is sparse evidence of such related and supporting firms in the case of the Irish dairy manufacturing industry.

Related industries have developed as firms have tried to diversify their products. For example Kerry Group and Avonmore have become more involved in the meat industry; through Cuisine Foodservice, Waterford is now supplying the restaurant market (Insight, 1997), and is also heavily involved in the production of fruit juices; Avonmore now produces soup; and Kerry Group is manufacturing food ingredients. In spite of this increased diversification there has not



been a development of related industries in Ireland. Much of this new business is a consequence of international acquisitions and that which is conducted in Ireland is internalised within existing processors.

There is a range of supplier and support firms for the dairy industry in Ireland but in the main they have remained domestic firms supplying the local industry, rather than developing into the internationally successful suppliers which Porter envisaged. As the machinery used in brewing and dairy manufacturing are broadly similar, this allows some transfer of information, knowledge and technology between these industries as well as the mutual use of engineers and consulting firms. This is exemplified in the development of an engineering firm called Brewery, Chemical and Dairy Ltd (BCD) which serves a variety of industries (O'Connell et al, 1997).

### **8.3.6 Government and Chance**

The agricultural industry in Ireland and throughout Europe has been strongly affected by government activities at both national and European level. Government initiatives such as the establishment of Bord Baine, joint funding of Moorepark Research centre and many specific grants and schemes have greatly assisted the development of the industry.

The EU Common Agricultural Policy has had an even greater effect on the competitiveness of the Irish dairy industry. In 1993 EU spending on agriculture in Ireland amounted to £1,320 million (Matthews, 1995, p.329). This has been a life-line for some farmers and has provided the impetus for change and development for others. It has ensured the continued existence of this industry as an important part of the Irish economy.

However, relatively high butter intervention prices have encouraged a limited product range. While the historical importance of butter production in Ireland provided the firms here with a competitive advantage, it could be argued that the EU intervention scheme encouraged continued concentration on the production of this good after competitive advantage had been eradicated.

Thus it is clear that decisions made in the EU, and in particular CAP, have had an influencing role on the Irish dairy industry. O'Connell et al (1997) argue that 'the "favourable treatment" of Ireland in consecutive CAP negotiations was not a given, but something won. The Irish... have proved to be very effective in negotiating concessions for the Irish dairy industry'. They conclude that the Irish diamond worked in conjunction with the CAP to create a competitive industry but believe that 'the role of the CAP has been more than just "an outside influence on the four determinants" of the Irish diamond... as it has been able to influence the CAP policies and its outcomes'. This is presented as an argument against the appropriateness of Porter's diamond model in explaining the competitiveness of the dairy industry. This is not a well-founded argument as in Porter's model as well as the government (or in this case the CAP) influencing each of the four determinants, it can also be influenced by each.

What this discussion makes clear is that government (and the EU via the CAP) influence product selection, firm strategy, internationalisation and the structure of the dairy manufacturing industry. Thus the government part of Porter's diamond is extremely important for this industry.

#### **8.4 Is this a Porterian industrial cluster?**

Although the birth and success of the Irish dairy manufacturing industry can be explained by some of the factors Porter outlines in his diamond of competitive advantage, namely factor conditions and government, this model does not entirely explain the development and relative success of the industry. With an average of 326.85 percent self-sufficiency in milk, cream, butter and cheese (Eurostat, Agriculture Statistics, 1996) and increasingly global agri-food groups, the Irish dairy industry has long been influenced and affected by international occurrences. Is it inappropriate to use Porter's methodology which concentrates upon country and firm specific factors alone? Using the amended diamond model as developed in chapter 7 facilitates analysis of this sector with attention to both domestic and international, or internal and external, factors.

- International factors have affected the structure of the Irish industry encouraging firms to merge, make acquisitions or transform into public limited companies

- The factor advantage of good grass growth has been diminished somewhat due to the higher benefits which international competitors have gained from value added products which require a continual supply of milk

- A large proportion of related and supporting industries are located outside of Ireland and the industry is thus affected by international conditions via these firms. Indigenous related and supporting industries are affected by international factors directly if they sell outside of Ireland or indirectly if their buyers are exporters

- As an open economy which exports a significant amount of output, Ireland is affected by international demand conditions.

The effect of international factors on the facets of the Irish dairy manufacturing industry diamond can be transmitted by transnational business activity of the larger dairies or other countries' diamonds. The end result is an industry whose competitiveness is affected by both national and international factors.

The biggest exogenous influencing factor on the Irish dairy industry is the CAP. Using Porter's diamond system means categorising the CAP as government influencing the diamond. However this in many ways ignores the fact that the actions of government in this model affects the firms in its domain, therefore it can act as a source of competitive advantage for national firms. EU policies such as the CAP, and the GATT (now WTO) have consequences for every national diamond, and the consequences that they have on each, have further repercussions for competing national diamonds. For example as discussed on p.288, O'Connell et al (1997, p.63) believe that 'the CAP suited and reinforced particular characteristics of the Irish dairy industry ... and allowed them to achieve their corporate objective of survival'. While this is indeed a situation of government or EU affecting the Irish dairy manufacturing industry, its relative competitiveness is not affected simply as a consequence of the policy, but because the diamonds of other competing countries ensure that they did not gain as much.

The level of exports of the dairy manufacturing industry means that it meets the initial criteria of a Porterian cluster. Investigation of the industry using the diamond shows that each of these factors have been and continue to be important to varying degrees. In some cases they explain

the difficulties of the sector as much as its success. The industry can therefore be categorised as a Porterian cluster, but doing so obliterates a whole spectrum of international factors. Using what was called the internationalised diamond developed in chapter 7 provides an important international dimension to this analysis and helps to further explain the success and development of the industry.

O'Donnellan (1994) argued that when studying a sector in an economy as small as Ireland, it may be more appropriate to look at it as part of a European industrial cluster. This was based on the idea that some economies are too small to support an industrial cluster. However this approach understates the importance of local conditions and puts the emphasis back on European or international issues. Rather than questioning why the Irish dairy manufacturing industry is successful, one would be explaining the success of the European industry and how Ireland fits into this cluster. Porter's objective is to use local conditions and factors to explain international success - in fact one of the arguments of this thesis is that it would be beneficial to look at even more local factors than the national conditions that Porter concentrates on. There is no doubt that the EU has a large influence on the Irish economy and this is particularly evident in the dairy industry. As an independent national economy this is an external influence, therefore rather than the EU, its firms and market being a part of the Irish dairy industry (on the internal circuit of the internationalised diamond) it is more appropriate to represent it as an external item. This is not to say that O'Donnellan's approach would not be equally valid, but it would be using a broader geographical area as its focus of study, and thus take an approach even further removed from the argument that local conditions are important<sup>46</sup>.

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<sup>16</sup> To look at the Irish industry as part of a European cluster would be particularly appropriate if Irish firms concentrated in a particular type of dairy produce but there is no evidence of this.

To conclude, the Irish dairy industry meets Porter's criteria of regions and industries which could be industrial clusters. However using Porter's method of analysing the competitive advantage of this industry leaves some important gaps. As a small open economy EU policies and other countries' diamonds have a significant effect on this industry and together constitute important explanatory factors.

In chapter 7 although it was stated that there was no clear definition of an industrial cluster, a cluster was described as 'usually a geographically concentrated group of successful industries which have vertical and horizontal relationships with each other'. Porter's diamond then explained the determinants of the success of the industry. Clearly the dairy manufacturing industry does constitute an industrial cluster but rather than its success being attributable to industry or country specific factors alone (as in Porter's diamond), a number of external influencing factors have also played an important role, making the internationalised diamond a more appropriate tool of explanation. While this reflects the fact that Ireland is a relatively small open economy, it also provides some empirical basis for a number of the criticisms of Porter's diamond in chapter 7.

## **CHAPTER 9: INDUSTRIAL DISTRICTS VERSUS INDUSTRIAL CLUSTERS**

The concepts of industrial districts (IDs) and industrial clusters (ICs) have both similarities and differences. Chapters 3 and 7 have outlined the characteristics and attributes, and examples in Ireland were identified in chapters 6 and 8 respectively. The purpose of this chapter is to investigate in detail the relationship between these two types of agglomeration and assess whether it is appropriate to use the terms interchangeably. This chapter aims to answer questions such as: Are ICs and IDs the same thing? Do they come from the same industrial agglomeration family? Can some IDs be ICs and vice versa? The hypothesis addressed is that IDs and ICs are different types of agglomeration.

### **9.1 Comparing industrial districts and industrial clusters**

This section outlines both the differences and similarities that exist between these two industrial agglomerations. For the purpose of clarity, at this stage the ID is taken to be of the type explained in chapter 3, and called the '*prototype*' in chapter 5. Section 9.4 examines different types of industrial districts and how they relate to the industrial cluster.

#### **9.1.1 The importance of local conditions**

The main element that ICs and IDs have in common is that they both introduce the issue of location and local conditions as important and relevant factors in the study of the performance of firms, regions and nations. Before this the issue of the location of firms lay primarily under the auspices of economic geographers, with emphasis on why firms choose to locate where they do. The subject received little attention from those studying the performance and organisation of firms. Work on ICs and IDs has introduced the issue of location (or proximity) as a parameter in

the study of firms, although interestingly they are primarily placed in different subsets of economics. Porter's (1990) work, as the title would suggest is oriented towards those interested in international trade, while the industrial district literature, which is written by researchers from a variety of disciplines, fits most neatly within an industrial or regional economics framework.

### **9.1.2 The emergence of the concepts of ICs and IDs**

The concepts of an industrial district and an industrial cluster represent two ways of theorising the empirical evidence that some regions and industries seem to be particularly successful. They are both inductive in that they seek to explain empirical observations. Jacobs and deJong argue that 'the starting point of Porter's analysis was the finding that many international leaders of their industries stem from the same nation or even the same region' (1991, p.1). The re-emergence of the concept of an industrial district was a consequence of the empirical observations of some regions which had relatively high growth levels and exhibited the ability to survive recessions more successfully than other areas.

More recent research in both types of agglomeration has become deductive in nature. The researcher investigating the existence of an ID or IC follows an almost prescribed set of guidelines of criteria and characteristics. The research is formulated within the relatively narrow frameworks developed respectively by researchers of industrial districts in the 'third Italy' in the 1970s, and by Porter's book in the 1990s<sup>47</sup>

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<sup>47</sup> It is interesting to note that despite the fact that the industrial district literature was well-developed when Porter did his work, he still made no reference to it.



### 9.1.3 The importance of geographic concentration

As mentioned above, the literature on both ICs and IDs has expounded the importance of the location of firms; however the importance of, and indeed definition of, geographic concentration differs. 'Geographical and sectoral concentration in itself brings few benefits. It is, however, a major facilitating factor, if not a necessary condition, for a number of subsequent developments, which may or may not occur' (Nadvi and Schmitz, 1994, p.13). It is an essential basis upon which an industrial district could develop, but all industries that are geographically concentrated are not industrial districts. There is no definition of geographical concentration in this literature, although 'in any one of Italy's 50 or more industrial districts the population does not usually exceed 100,000' (Trigilia, 1990, p.36). All of the areas studied in industrial district literature are regions within nations, in no case is a nation defined as an industrial district and in no case does an industrial district cross national borders<sup>48</sup>.

Such clear cut remarks cannot be made about industrial clusters. Porter states that 'the influence of the individual determinants in the "diamond" and their mutual reinforcement are heightened by close geographic proximity within a nation' (1990, p.156). For example, to mention a few factors, innovation, the transfer of information, domestic rivalry and the supply of talented employees are all enhanced by geographical proximity. 'The process of clustering, and the interchange among industries in the cluster, also works best when the industries involved are geographically concentrated' (Porter, 1990, p 156). However geographical concentration is not a necessary condition. Industrial clusters can spread over more than one country, as in the case of the German printing press cluster which includes the Swiss firm Wifag. In industrial clusters

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<sup>48</sup> Although industrial districts may cross regional borders.

geographic concentration, while not necessary, is favourable; in an industrial district geographic concentration is necessary, but not sufficient.

It is also notable that as mentioned above, while most Italian industrial districts do not have a population which exceeds 100,000, Anderson's 'crude observations suggest that if a region has a population of less than, say 500,000 people a complete cluster is unlikely to exist... it may mean ...that the net has to be wider' (1994, p.32). Thus the areas which usually typify an industrial district are significantly smaller than those of an industrial cluster. The reason for this is primarily that the existence of a social milieu and close informal inter-firm relations, both important characteristics of an industrial district, can only exist in a relatively small area. Does this then imply that industrial districts are the small area variant of industrial clusters? Further study of the characteristics of both agglomerations shows that the importance of a social milieu and the nature of inter-firm relations in an industrial district provide more fundamental differences.

#### **9.1.4 Inter-firm relations**

Much of the emphasis when studying industrial districts is on the fact that firms within the district compete as well as co-operate. Porter attaches much importance to domestic rivalry: 'Among the strongest empirical findings from our research is the association between vigorous domestic rivalry and the creation and persistence of competitive advantage in an industry' (1990, p.117). Therefore it is clear that the relations between firms play an important role in the functioning of both industrial districts and industrial clusters.

There are however, clear distinctions between how these relations operate. The domestic rivalry, which Porter expounds, is in many ways the same as the competition which is identified in industrial districts although the method of description may alter slightly. It acts as a source for innovation, a stimulant to demand and attracts supplier and related industries. However the end environment in an industrial district where this competition is tempered by co-operation is different from that where such competition exists alone. In industrial clusters the sole source of innovation and development lies within domestic rivalry; in industrial districts it is the existence of high levels of competition combined with co-operation in some areas which results in competitiveness and success.

Two of the countries, Italy and Japan, which Porter identifies as clusters have long been associated with co-operative and inter-locking relations between firms, but Porter does not mention this aspect of their activities at all. At the outset inter-firm relations appear on the list of characteristics of industrial districts and also within one of the points of the cluster diamond, however the types of relations which they refer to are different. In both types of agglomeration internal industry rivalry or competition is important but of equal importance in industrial districts is inter-firm co-operation.

#### **9.1.5 A social milieu**

One of the distinguishing features of an industrial district is the overlap between business and society in a local area. The existence of a social milieu has an important influence in terms of the flow of information, levels of innovation and relations between firms. In industrial districts this social milieu is the backbone of the success of local firms. Industrial districts are made up of a society and its firms. By comparison industrial clusters as identified by Porter consist of

successful firms. Porter does not disagree with the idea of the existence of a social milieu, rather he does not discuss it, aside from a passing mention of Marshall's 'industrial atmosphere' concept. This parallels criticisms of Porter's diamond by Rugman (1991, 1992), Dunning (1992) and others who believe that it concentrates on factors internal to the firms in the industry to the exclusion of other aspects.

### **9.1.6 Geographical scope of research**

Both industrial districts and filières<sup>49</sup> are closely associated with particular countries; Italy and France respectively. The same is not true for industrial clusters, which have a broad geographical application with initial studies having been conducted in ten countries. However it must be noted that since the late 1980s industrial districts have been identified around Europe, US, Asia and Africa making the geographical scope of research of both ICs and IDs more similar.

What differs is the type of country where research is conducted. Industrial clusters have been identified primarily in developed industrial countries located in the Western world and the newly industrialised countries of the East. By comparison researchers of industrial districts have concentrated on developed economies such as Italy and the US, but also in less developed regions in Africa and Asia. This is perhaps reflective of the types of countries which are more likely to have IDs or ICs. For example regions in developing countries which are dominated by small rural enterprises are more likely to have a social milieu and the close proximity of firms is likely to enhance informal co-operation. Regions in large economies such as the US are more

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<sup>49</sup> This type of industrial agglomeration developed by Montfort (1983 as cited in Jacobson and Andréosso-O'Callaghan, 1996) among others, refers to firms which are vertically linked.

likely to have the industrial cluster characteristics of demand conditions and related and supporting industries. This said, there is no reason why a local developing country economy could not have all of the characteristics of an industrial cluster and parts of the US have the attributes to be classified as industrial districts<sup>50</sup>.

### **9.1.7 Regions versus Countries**

The objective of industrial cluster research is to explain the international competitiveness or success of a country's firms: 'Why is one nation often the home for so many of an industry's world leaders?' asks Porter (1990, p.1). Those writing on industrial districts are most often attempting to explain the relative success of one region in a country over others, for example why did some regions in Italy grow faster and survive recessions more successfully than others in the late 1970s? Why did West Jutland in Denmark gain most in industrial employment and in the number of newly established firms when expectations were that the opposite would happen?

The binoculars through which Porter looks focus on the world market and from this starting point the lens is zoomed in on particular nations. In contrast the binoculars of industrial district researchers begin firmly focused on a specific nation, until the lens zooms in on a region after a fleeting glance at the wider global picture.

The emphasis in industrial cluster analysis is the relative role of nations in the world market. In an industrial district it is the relative performance of regions within a nation.

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<sup>50</sup> In fact Silicon Valley in the US is classified as an industrial district by Saxenian (1994).

### **9.1.8 The relevance of the size of firms that comprise the agglomeration**

As mentioned in chapter 3 evidence from industrial districts has often been used to show that small firms can be just as successful as their larger counterparts. Although some regions which have more recently been identified as industrial districts have large as well as small firms, a common characteristic remains that firms in an industrial district tend to be small. In chapter 4 it was established that rather than size it is the relative size that is most important when studying agglomerations.

Porter does not discuss the issue of the size of firms, despite the fact that one of his case studies in Italy consists of predominantly small firms while all of the other clusters are dominated by larger firms. This mirrors the criticism in chapter 7 that Porter does not investigate the issue of relations between leader and follower firms. This criticism can equally be levelled at the industrial district literature, which does not address the important issue of power relations between firms.

### **9.1.9 Criteria for selecting industries and regions to study**

Porter seeks to explain international competitiveness and the emphasis is on the relative levels of exports of each industry. By comparison industrial districts are concerned with the success stories of particular regions within nations. This can be exemplified in the literature on the ceramic tile industry in Sassuolo, which is described by some authors (eg. Russo, 1989) as an industrial district and by Porter (1990) as an industrial cluster (a fuller discussion of this area is presented below). Russo (1989) describes how

in 1981 the two provinces [Modena and Reggio Emilia] were responsible for more than 70 percent of the national production of ceramic tiles. In the same year, 250 out of the

433 Italian ceramic tile firms were located in the two provinces, but - what is more relevant to our analysis - four out of ten tile factories were in the six comuni that constitute the core of the *comprensotio delle ceramiche*. (The *comune* is the smallest unit of local government in Italy. The *comprensorio* is an intermediate unit between *comune* and *regione*) (p.199).

Discussing the same region Porter emphasises its international success: 'Italian producers accounted for about 30 percent of world production and almost 60 percent of world exports' (1990, p.210). He uses the success of Sassuolo to explain the international success of the nation in this industry.

All clusters must meet the following criteria:

$$A: \frac{(X_i)_j}{\sum_{j=1}^m (X_i)_j} > \frac{(\sum_{i=1}^n X_i)_j}{\sum_{j=1}^m (\sum_{i=1}^n X_i)_j}$$

where m is the number of countries in the world, n is the number of industries and X represents exports.

Shifting the emphasis from exporting firms:

$$B: \frac{(Q_i)_j}{\sum_{i=1}^m (Q_i)_j} > \frac{(\sum_{i=1}^n Q_i)_j}{\sum_{j=1}^m (\sum_{i=1}^n Q_i)_j}$$

where Q is output.

This implies that the output of this particular industry is greater than the average output of the country's industry. E, for employment could be substituted to determine which industries create the highest national employment.

However, much of the work on industrial districts is conducted by those interested in regions which appear to be particularly successful in national terms. Rather than industries the primary focus is on geographical areas<sup>51</sup>. Here the output (or employment or any other unit of comparative analysis preferred) of one region as a proportion of the nation's output as a whole, is most important. When these regions are identified then analysis of the relevant industries and the existence of the characteristics associated with industrial districts can be undertaken.

$$C. \quad \frac{(Q_i)_a}{\sum_{a=1}^m (Q_i)_a} > \frac{(\sum_{i=1}^n Q_i)_a}{\sum_{a=1}^m (\sum_{i=1}^n Q_i)_a}$$

where  $Q_{ai}$  is output of industry  $i$  in region  $a$ .

It is clear that criteria A and B can occur simultaneously; it is quite possible that an industry which contributes a relatively high proportion of the nation's output will also be a substantial

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<sup>51</sup> If the industrial district researcher is interested in industries rather than regions there is no reason why the criteria above could not be used.



exporter. However the relationship between A and C is less apparent. The focus of A is the industry, and its relative level of exports, while in C it is the region. This implies that a clear relationship between industrial districts and clusters cannot be easily constructed in terms of the criteria for selecting industries or regions to study; as Park and Markusen (1995, p.83) state, the industrial district literature adopts a 'place-centred rather than an industry centred or firm centred approach'. But if the region being studied complies with condition C and has a concentration of firms in a particular industry then criterion B could also be satisfied. As stated above it is then feasible that the region/sector could also comply with criterion A. Similarly if the emphasis on a firm being an exporter is dropped from cluster analysis then criterion B can be used. Thus criterion B would indicate a potential IC or ID, while fulfilment of criterion A or C specifically implies an IC or ID respectively.

In this way, on the basis of the satisfaction of the initial criterion, the same industry could be selected for study as a potential industrial cluster or industrial district.

The emphasis in industrial clusters is national success within an international market, while in industrial districts it is regional success within one country, but the explaining factors are in both cases, local conditions. This indicates that in some ways the two types of agglomeration are complementary: combined they stretch the analysis to cover local, national and international perspectives.

#### **9.1.10 Comparing the IC diamond and the ID characteristics**

The best way to compare ICs and IDs is to study the diamond and see if any of the points concur with the factors which are most important in an industrial district. In the first instance it should

be noted that Porter's diamond seeks to explain the concentration of successful industries in a particular nation, whereas the characteristics of an industrial district explain the concentration of firms in a successful district. Thus in some ways they are explaining different things and this contributes to the emphasis on different factors.

**Demand conditions:** This is taken as a given in the industrial district literature; the primary objective is to explain how these firms seek to meet the demand. The structure and organisation of the firms in an industrial district allow it to be particularly responsive to changes in demand.

**Factor conditions:** These factors are important in the development of particular industries in all locations, not just industrial districts. The concern for industrial district researchers is how the environment of the industrial district (which involves a social milieu and strong inter-firm relations) and the types of firms that it comprises, facilitate the maximisation of the factor conditions that exist.

**Supplier and Related industries:** These firms also play an important part in the industrial district, aiding innovation and close inter-firm relations.

**Firm strategy structure and rivalry:** This encompasses the competition between firms in evidence in industrial districts, although it omits the other important factor of co-operation between firms. Porter pays little attention to the detail of firms' strategy and structure. This is similar to the industrial district literature where although this type of agglomeration is considered by some, as the small firm variant of the flexible specialization thesis (Asheim,

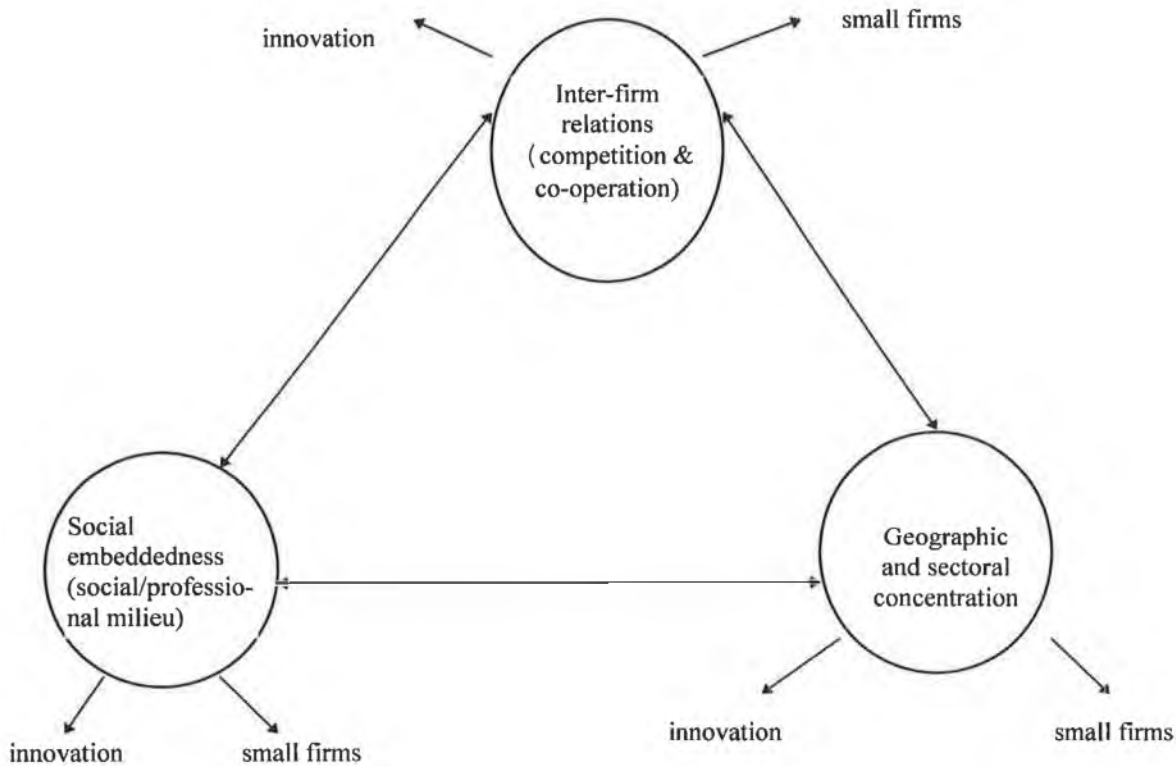
1992, p.52; Brusco, 1986, pp.186-187), there is little discussion of the way firms operate, how they select their strategies and the methods of production employed.

Chance and Government: These factors are fully incorporated into the idea of an industrial district although in some cases the role of government may be endogenous rather than exogenous. As discussed in chapter 3, the government can play a crucial role in the development and functioning of industrial districts, from providing services and encouraging co-operation between firms to encouraging the concentration of firms in the first instance. In contrast Porter outlines the role of government as one of influencing industry from an exogenous position and states 'government, it seems, can hasten or raise the odds of gaining competitive advantage (and vice versa), but lacks the power to create advantage itself' (1990, p.128)

Thus it is evident that all of the factors in Porter's diamond play a part in the industrial district, although to varying extents. But the industrial district also has a number of additional features.

Creating the equivalent of the diamond for industrial districts results in the triangle shown below. This triangle explains the operation and organisation of firms in an industrial district. Geographic and sectoral concentration, social embeddedness (created by a social or professional milieu) and inter-firm relations (incorporating competition and co-operation) are the most important factors and each relates to the other. The other characteristics which are associated with industrial districts are predominantly small firms and continual innovation both of which are by-products of these three main factors.

Chart 9.1: The industrial district triangle



Comparing the diamond and the triangle shows that domestic rivalry and supplier and related industries as outlined by Porter, constitute part of the inter-firm relations point while the other two points of the triangle have no equivalents in the diamond.

### **9.1.11 The flow of information**

Systems of continual innovation require an immense amount of freely available information. As high levels of innovation are an important aspect of both industrial districts and industrial clusters the flow of information is of concern in both. The nature of the information that flows and the process by which it is transferred differs in each case.

As a consequence of the tight relationship between society and businesses there is no automatic boundary over which information cannot or does not flow in an industrial district. A change in one firm's production process is widely known in a short space of time; in Silicon Valley it may have been discussed in 'Walker's Wagon Wheel Bar and Grill' before it had even been implemented (as described in chapter 3). In this way information about firms and their activities flows freely and quickly throughout the district.

By comparison, in an industrial cluster where the movement of information between core, downstream and upstream firms is essential to ensure the flow of ideas and innovation, the information that is passed is carefully selected. If a core firm wishes to alter its main product it may choose only to give limited information to the supplier about the new inputs it requires. In an industrial cluster the information that flows is in most cases selected and restrictively passed on. It will also only flow between firms.

The information available in an industrial district is more symmetric in that all have almost equal access to it and the information created by all is of equal interest. In an industrial cluster the information is more asymmetric - some may have more information than others.

#### **9.1.12 Globalisation versus Localisation**

While work on IDs and ICs emphasises the localisation of firms, since the 1960s the globalisation of firms with the rise of multinationals has been of primary concern to most

industrial economists. Globalisation and localisation are often set as opposites<sup>52</sup>, but ICs and IDs exhibit features of both.

While industrial districts have always had links with other regions and countries that provide markets for their products, there has been a perception (enhanced and created by some writing in the area) that they are localised centres of production with few global links. Authors such as Amin and Robins (1990a and b), Scott and Storper (1992) and Park and Markusen (1995) refute this and believe that 'the local economy can only be seen as a node within a global economic framework' (Amin and Robins, 1991 p.115). Section 3.52 discusses this issue more fully.

Globalisation of firms' activities consist primarily of two aspects, global markets and/or global production. The initial identification of groups of firms, which were later to be classified as industrial districts and industrial clusters, was a result of the fact that they were so successful on the global market. This was evidenced primarily by relatively high exports in national terms (this is a necessity in the case of an industrial cluster) and the good economic indicators that this created such as low unemployment and high growth rates. Firms in IDs and ICs are not producing for the local market alone; they are successfully competing in international markets.

The localised aspect of ID and IC activities is in the sphere of production. Most, if not all stages of production are undertaken within the district or cluster. In the case of industrial districts this is particularly localised, usually spanning a region or small area, whereas an industrial cluster can consist of a country. Regardless of the extent of localisation, it is clear that production in

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<sup>52</sup> Jacobson and Mottiar (1996) show how both global and local factor have impacted on the development of the software manual printing industry in Dublin and the wooden furniture industry in Monaghan.

both cases is localised rather than globalised. These agglomerations are not reliant on suppliers and sub-contractors located throughout the world, as global firms would be, and production activities are concentrated within a localised system.

While production is undertaken locally or nationally, in some cases the materials required for production are manufactured elsewhere. Firms may compete on the global market to gain these inputs. In most IDs and ICs inputs in the form of intermediary stages of production are also undertaken locally; what is acquired globally is most likely to be raw materials in a very basic form. Part of the success of IDs and ICs is the fact that a localised supply industry has grown up around the main industry, thus localising most stages of production.

The groups of firms in each ID or IC comprise part of a global industry as they compete globally and their competitors are global as well as national. In addition to the district or cluster being global, it is possible for individual firms to be global companies. Bosch in Baden Württemberg, Apple in Silicon Valley, Toshiba and Mitsubishi in the Japanese robotics cluster and Hewlett Packard in the US patient monitoring equipment cluster are all large corporations which have benefited from the agglomeration effect of being located in an area specialising in the production of particular products. They are evidence of the success, development and growth of particular industrial districts and industrial clusters.

Such companies may have branches and sub-contractors located outside of the IC or ID, but they are linked into the locality and will often source inputs and services from local firms. The relations that this type of firm has with other firms, the source of innovations, production processes and the internal organisation of these firms will certainly differ from the typical firm

described in the 'third Italy'. However, this does not necessarily prevent their inclusion in such industrial agglomerations.

While domestically-based multinationals can be part of IDs and ICs the same is not true of foreign owned companies. Porter's (1990) criteria for an industrial cluster precludes inclusion of foreign owned firms. While there is no such stated preclusion in the case of industrial districts, perhaps as a consequence of there being no clear definition of what constitutes an industrial district, there is little evidence of this occurring<sup>53</sup>.

The premise of both ID and IC research is that localised factors affect international or global success. It has been shown that while these types of industrial agglomeration have localised production systems, they operate in global markets to sell final products and purchase basic raw materials, and thus compete within global industries. The concepts of industrial districts and industrial clusters transcend the debate of globalisation versus localisation, showing the importance and relevance of each in the struggle for international competitiveness and local economic success.

The difference lies in the potential existence of foreign firms in both types of agglomeration. The importance of a social milieu and embeddedness in an industrial district reduces the likelihood of foreign firms. While Porter states that foreign owned companies are not included in an industrial cluster, there is no apparent reason for this, other than the wish to explain national success by referring only to national factors. Industrial clusters can be part of a globally

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<sup>53</sup> One example is in Kumi, South Korea, where there are a considerable number of joint ventures and foreign owned plants.



integrated production system, thus making production as well as the market globalised, while most industrial districts are part of a regional or nationally integrated production system which supplies the global market.

### **9.1.13 Markets vs. Hierarchies vs. Networks**

Williamson (1979) distinguished between markets and hierarchies. Developing upon the work of Coase (1937) he believes that firms exist in order to minimise transaction costs, and that when bounded rationality and opportunism exist, bureaucratic organisation or hierarchies are most efficiently able to govern firms' activities.

As evidence of collaboration between firms became apparent, some argued that 'economic changes can be arrayed in continuum-like fashion with discrete market transactions located at one end and highly centralised firms at the other. In between these poles, we find various intermediate or hybrid forms of organisation' (Powell, 1991, p.266).

Powell argues that 'by sticking to the twin pillars of market and hierarchy our attention is deflected from a diversity of organisation designs, that are neither fish nor fowl, nor some mongrel hybrid, but a distinctively different form' (p.267). He believes that when the entangling of obligation and reputation reaches a point where the actions of the partners are interdependent but there is no common ownership or legal framework, we need a new conceptual tool. That tool is network analysis (p.268).

The 'term network has acquired the character of an umbrella, catch-all term under which a variety of theoretical and methodological positions in the social sciences have sought refuge... it

has acquired the status of a metaconcept, not unlike the word “system”. It will be shown that the definition of networks used determines whether one classifies industrial districts and industrial clusters as networks.

Distinguishing between industrial districts, networks and clusters, Cooke (1996) states:

Industrial districts tend to be mono-industrial, SME dominated, highly localised production systems in which firms interact through dense networks of sub-contracting and with a highly differentiated division of labour. Enterprise support organisations can be located inside the industrial district;

Networks are more-or-less formalised, possibly contractual, agreements amongst firms to engage in joint production of a given product or product-range. Reciprocity and exchange of skills, equipment and competencies can be the subject of network agreements and firms will share an agreed business objective. Networks may be geographically circumscribed but need not be;

Clusters are voluntary arrangements in which firms may operate through markets, networks and aspects of hierarchy to assist them in their general business process. Firms will have complementary assets, probably some sectoral identity and are likely to share a common vision of what they are trying to achieve. Clusters are often regional in scale; (p.10-11).

These definitions show that clusters, industrial districts and networks are not the same thing. While networks are formalised, clusters and industrial districts comprise informal or voluntary

arrangements. Using this definition of networks, neither industrial districts nor industrial clusters are necessarily networks. Cooke (1996) pays special attention to the relationship between networks and clusters saying '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 collective goals' (p.144). However a different definition of what constitutes a network can lead us to a different conclusion.

Axelsson and Easton (1992, p.xiv) state:

In general a network is a model or metaphor which describes a number, usually a large number, of entities, which are connected. In the case of an industrial as opposed to, say, social, communication or electrical networks, the entities are actors involved in the economic processes which convert resources to finished goods and services for consumption by end users, whether they be individuals or organisations. Thus the links between actors are usually defined in terms of economic exchanges which are themselves conducted within the framework of an enduring relationship.

However, according to Araujo and Easton (1996, p.2-3) the meaning of a network can only be determined within the cognitive community that uses it. Studying the network approach in economic geography, they conclude that this approach 'seems to be emerging as a meso-level compromise to escape from the abstractness of macro-level frameworks and the theoretical barrenness of firm-centred perspectives' (p.23). Yeung (1994) invites economic geographers to use network analysis as a means to escape from the macro-level arguments of both the post-

Fordist and regulation schools of thought. To do so effectively may require a consensus on which definition of a network is the most appropriate to work with.

‘Relationships among firms are the sine qua non of an industrial network approach’ (Easton, 1992, p.8). Hakansson and Johanson (1992) show how these relations involve networks of resources, actors and activities:

actors develop and maintain relationships with each other and to understand the situation of an actor requires knowledge about the nature of the actor’s relationship with other actors as well as an idea about the wider network of relationships around. In the same way the industrial activities are related to each other in patterns which can be seen as networks. Similarly resources are related to each other in networks, and furthermore, the three networks are closely related to each other. They are interwoven in a total network.

In more recent work Hakansson and Johanson (1993) distinguished between first, second and third order functions in relationships between firms in networks. The first order function refers to reasons why, and consequences of, two firms becoming directly involved in a relationship. This forms the basis of the second order function which is the indirect effect on others in the network of the relationship between these two firms. This occurs because every firm is engaged in more than one relationship. The third order function is the role that relationships have ‘in patterning the dynamic and ever ongoing forces changing the network structure’ (p.27).

An important part of both industrial districts and industrial clusters is inter-firm relations, and while in the case of industrial clusters the dominant aspect of inter-firm relations is competition,

they both comply with Easton's definition of a network as consisting of a large number of entities which are connected. Furthermore in both types of agglomeration inter-firm relations are the source of competitive advantage and international success. They also constitute first, second and third order functions. Thus both agglomerations can be classified as types of industrial networks. However it will be argued that the nature or basis of relations in each type of agglomeration differs.

Easton and Araujo (1992) argue that relationships in networks appear to fall into two distinct categories (although the distinction is not necessarily a sharp one) - they may involve an economic exchange or they may not. 'Economic exchange relationships have dominated the theoretical and empirical work on industrial networks and direct relationships not of that kind have largely been ignored' (p.63). The relations between firms in industrial clusters most often involve the economic exchange of goods for money, making them market based. Emphasis is on vertical relations between firms as components and inputs are supplied upstream. By comparison in an industrial district relations are both economic and non-economic; inter-firm relations are multi-faceted. In the first instance many of the firms' relations were instigated as a result of the personal relationship between individuals. In addition to goods being exchanged between firms, in an industrial district exchanges involve information, ideas, technical knowledge, friendship and social and familial factors. The non-economic exchanges in an industrial district form an important part of this type of network.

It may thus be appropriate to classify industrial districts as a type of clan network. Ouchi (1991) uses Durkheim's meaning of a clan as 'an organic association which resembles a kin network but may not include blood relations' (1933, p.175 as cited in Ouchi) to distinguish between three

mechanisms of mediation or control: markets, bureaucracies and clans. In a clan socialisation is the principal mechanism employed; individuals become socialised to accept the company or community goal as their own. Such goal congruence inhibits opportunism.

He shows that 'a clan is the obverse of the market relation since it achieves efficiency under the opposite conditions: high performance ambiguity and low opportunism' (Ouchi, 1991, p.251). As the table below shows, the informational requirements for a clan are traditions rather than prices and rules. Such traditions are relatively implicit. In a clan rather than an explicit auditing and evaluation system, performance evaluation takes place 'through a kind of subtle reading of signals that is possible among intimate co-workers, but which cannot be translated into explicitly, verifiable measures' (p.252). Any tendency towards opportunism is destructive because the close auditing and hard contracting necessary to combat it are not possible in a clan.

Table 9.1: An organisational failures framework

<i>Mode of control</i>	<i>Normative requirements</i>	<i>Informational requirements</i>
Market	Reciprocity	Prices
Bureaucracy	Reciprocity Legitimate Authority	Rules
Clan	Reciprocity Legitimate Authority Common values and beliefs	Tradition

Source: Ouchi 1991, p.253

This description of a clan type of network tallies closely with some types of industrial district where the final good is produced as a consequence of many individuals and small firms producing small parts and components, and where the business, social and family life are so entwined that goal congruence and reputation are strong restraints upon opportunism. The regions which seem most like a clan are those in the 'third Italy'.

It should be noted that a clan is a type of network where the relations between the actors are dominated by kinship and descent relations, in the broadest sense. While this represents some industrial districts these types of relations are not apparent in all industrial districts.

Networks is a term used in many different disciplines and often to describe very different situations. What distinguishes the use of networks in economic geography, or in the study of industrial agglomerations, is that the primary reason the network exists is because of the geographical concentration of firms. It is this proximity which has encouraged and fostered the relations between the firms and makes exchanges particularly beneficial in terms of cost and efficiency. Van Hayek (1991) distinguishes between spontaneous ('grown') order and organised ('made') order. Organised order is deliberately introduced, often exogenously, and is facilitated by commands. By contrast spontaneous order does not consist of a specific aim or intention, it is endogenous and rather than commands is based on rules, often tacit, which guide rather than instruct the actors. The geographical proximity of firms in industrial agglomerations enhances the possibility of spontaneous or grown order, particularly if there is an industrial history.

The argument presented above is that industrial districts and clusters do not have the same governance structures as the network Cooke (1996) describes. In the former, reciprocity, shared norms and open membership form a governance system, while in the network described it is formal rules and membership requirements that are important. Thus both industrial districts and clusters differ from this type of network. However they are similar to networks as defined by Axelsson and Easton (1992) as linkages and connections between firms; exchanges between firms and enduring relationships are a vital part of the functioning of these industrial agglomerations. Using this definition it is possible to conclude that both industrial districts and clusters are types of networks. Nonetheless they are not the same type of network, as

relationships between firms are primarily economic in clusters, but also include non-economic exchanges in industrial districts.

#### **9.1.14 The New Competition**

Best (1990) describes what he calls the New Competition, which can be distinguished from the old in four dimensions:

- a) The firm: The collective entrepreneur
- b) The production chain: Consultative co-ordination
- c) The sector: Competition and co-operation
- d) The government: Strategic industrial policy.

Comparison between industrial districts and industrial clusters in terms of each of these dimensions shows that both exhibit a number of the characteristics of the New Competition. In both types of agglomeration, the firm or group of firms, is seen as centre stage choosing the terrain on which to compete. Consultative relations between firms along the production chain are important, and government industrial policy which is strategic and shapes the market can have positive implications for the success of firms.

Some features of the New Competition are not so apparent in industrial districts and clusters. As in the Old Competition, relations between firms in industrial clusters are just competitive. An important part of the New Competition is the flexible organisation of firms, which gain strategic advantage by continuous improvement in process and product. In the case of industrial districts this is alluded to by some (Asheim, 1992; Brusco, 1986), where the industrial district is cited as



the small-firm variant of flexible production, but little empirical evidence is provided in the case-studies. Porter (1990) in his description of the strategy and structure of firms in an industrial cluster, pays most attention to the managerial systems and the goals that firms seek to achieve and consequently pays little heed to the details of the organisation of firms or processes of improvement. Both types of agglomeration encompass a number of the dimensions of the New Competition.

Table 9.2: New competition and industrial districts and industrial clusters

<i>Characteristic of new competition</i>	<i>Industrial district</i>	<i>Industrial cluster</i>
The firm	Yes	Sometimes
The production chain	Sometimes	Not discussed
The sector	Yes	No
The government	Yes	Yes

#### **9.1.15 Method of Research**

The method of research and therefore presentation of results differ substantially between the industrial district and industrial cluster literature.

Porter (1990) has developed a very clear and concise way of initiating an investigation of an industrial cluster, primarily using a cluster chart and calculating export ratios. This is a methodology that is easily replicated for many industries and countries. By comparison, the industrial district literature - although it is larger and more widespread than that on industrial

clusters - does not have as clear a set of criteria and framework within which its researchers work. There is no clear definition of what constitutes an industrial district and no criteria upon which researchers select industries or regions to study. This can also create difficulties in making direct comparisons or generalisations between regions which have been identified as industrial districts by different researchers.

Porter's work on industrial clusters is firmly rooted within the economic and management disciplines, whereas researchers on industrial districts come from disciplines as diverse as geography, sociology, economics and development studies. As a consequence of this wide spectrum of backgrounds, the literature on industrial districts is not as firmly embedded in any discipline. This may explain the apparent lack of awareness of researchers in each type of agglomeration of the work of their counterparts. While industrial districts are certainly of interest to geographers and social scientists (just as industrial clusters may be) the most natural place for literature on industrial districts is in the broad field of industrial economics, which would encompass all of its other discipline attributes. Part of the reason that this has not occurred is that the approach and methods employed by those writing in this area do not comply with traditional economic research. There is a distinct lack of any type of mathematical proof or analysis, no model is developed and some of the basic assumptions usually attributed to the behaviour of firms are cast aside. There is a clear need for research by economists into the concept of industrial districts and how they fit in with economic theory, something along the lines of Krugman's (1991) efforts to make Marshall more readily applicable to mainstream economics.

### **9.1.16 The industrial district or industrial cluster as models**

Models, often using symbols or diagrams, represent the most important points encompassed in a theory. As such Porter's diamond is a model of his theory that local conditions play an important role in the international success of a nation's firms. It emphasises the importance of the four factors that make up the diamond and visually exhibits the important inter-relationship between the factors. Furthermore the theory of an industrial cluster has detailed steps to conducting research in this area, the criteria for selecting industries to study and the headings (the points of the diamond) under which they should be analysed are outlined. It could be argued that it is the use of the diamond which gives Porter's ideas the structure of a model, when in fact the points on the diamond are little more than headings under which local conditions can be analysed.

The industrial district concept does not have such an apparent structure. Park and Markusen (1995) state that researchers work within a framework rather than to a model. This framework consists of common characteristics of industrial districts, but many studies have added or omitted some characteristics in order to match the area which they are studying and conclude that they have identified another industrial district. As has been mentioned, this makes comparison between industrial districts difficult and also detracts from the possibility of establishing a clear model or definition of what constitutes an industrial district. Both section 9.1.9 and chapters 3 and 4 have attempted to go some way towards correcting this deficiency.

### **9.2 Can an industrial district be an industrial cluster and vice versa.**

One way of investigating the possibility of an ID and an IC being the same entity is to see if the regions classified as IDs could also be categorised as ICs and vice versa. It is important to note that the approaches taken by researchers in both fields mean that case-studies of particular

regions focused on particular issues. Studies of industrial clusters searched for the existence of the diamond factors, while those of industrial districts sought to discover the existence of the characteristics of a typical ID. This makes the study of whether a region could be both an ID and an IC more difficult. However in each case there is at least one particular fact which prevents most IDs from also being ICs and most ICs from being IDs.

### **9.2.1 Can an industrial district be an industrial cluster?**

Industrial clusters comprise those industries which produce a level of exports greater than the nation's share of world exports. This premise excludes many of the regions and industries which are classified as industrial districts.

There are some industrial districts which have significant exports and would comply with Porter's criteria. It is notable however that rather than the region it would be the nation as a whole that would constitute the cluster. Cluster analysis would identify particularly high levels of exports of tiles from Italy, leather shoes from Brazil and electronics products from the US. This encompasses the regions of Emilia Romagna, Sinos Valley and Silicon Valley respectively, but may also involve firms located outside of these regions yet within the boundaries of the nation. In this way it is extremely unlikely that any industrial district will alone constitute an industrial cluster; once there is one firm in the country producing the same good as those in the industrial district, then the IC becomes the ID plus that one firm.

Most industrial districts identified do not have exports sizeable enough to meet Porter's criteria. Thus while some industrial districts can conceivably be industrial clusters most would not fall into this category.

### **9.2.2 Can an industrial cluster be an industrial district?**

At the outset it may seem that industrial clusters could be industrial districts as there are no criteria similar to that discussed above which would prevent them being categorised as such. However industrial districts have very clear characteristics and while some of these are mirrored in Porter's diamond others are notably absent. 'The central feature of the "industrial district" is the balance between competition and co-operation among firms' (You et al, 1994, p.259). As discussed above domestic rivalry is an essential feature in the diamond but Porter's analysis excludes co-operation. In addition the industrial district literature attaches much importance to the existence of a social milieu.

Thus according to Porter's descriptions of clusters, none of his case studies would be classified as industrial districts. However that is not to say that if industrial district researchers were to investigate the region they would not find indications of a social milieu and evidence of co-operation as well as rivalry between firms, and classify it as an industrial district. As discussed in chapter 2, when researchers are studying regions from a particular perspective they may find what they are looking for but miss other factors. Thus it may be possible for some identified ICs also to be IDs.

Rather than any of these features detracting from Porter's model of an industrial cluster they would provide additional angles to the diamond. It is possible that a region could have all of the features of an industrial cluster plus more, making it an industrial district as well. An example of this may be the ceramic tile industry in the 'third Italy' which certainly has each of the four

characteristics outlined by Porter, but in addition is reported to have a social milieu and aspects of inter-firm co-operation.

It is possible for some industrial clusters to also be industrial districts if they exhibit signs of co-operation as well as domestic rivalry between firms and a social or professional milieu in addition to the features of the diamond.

### **9.2.3 Is it possible to be an ID and an IC simultaneously? The case of the ceramic tile industry in Sassuolo, Italy**

These two literature's have developed independently of each other and there is little if any interaction between authors. Reflective of this is the fact that the ceramic tile industry in Sassuolo, Italy is categorised as both an industrial district and an industrial cluster by different pieces of research with little or no cross-references.

Researchers on both sides agree that this industry is successful: Porter observes that 'Italian firms were by far the world leaders in the production and export of ceramic tiles, a \$10 billion industry, in 1987. Italian producers accounted for about 30 percent of world production and almost 60 percent of world exports' (1990, p.210). Russo, writing about industrial districts, reports on the importance of Modena and Reggio Emilia to the Italian ceramic tile industry: 'in 1981 the two provinces were responsible for more than 70 per cent of the national production of ceramic tiles' (1989, p.199)<sup>54</sup>.

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<sup>54</sup> Again this emphasises the different approaches - Porter sets the industry in an international context while Russo looks at the most important regions within Italy.

There are many common observations in the case studies of this industry by both Porter and Russo. It is agreed that what Porter calls factor conditions played a significant role in the development of this industry. Easy access to different types of clays in the mountains of the locality and an abundant labour force, many of whom were technically trained, enhanced the prospects of this industry. In addition, both point to the advantages created by high levels of domestic demand - Russo: 'a crucial factor in the development of production has been the increase in both domestic and international demand for tiles' (1989, p.199); Porter: 'the Italian market was also considered the most sophisticated tile market in the world' (1990, p.214).

Throughout his work Porter emphasises the importance of domestic rivalry and in the case of Sassuolo he states 'rivalry among Italian ceramic tile companies was intense ... [furthermore] it was intensely personal' (p.216). While this fact is not mentioned by Russo, she discusses how a financial crisis in the late 1970s resulted in a concentration of firms within "groups" which were based either on reciprocal shareholdings or trading bonds. While not a completely new phenomenon - in 1973 approximately 15 percent of the ceramic tile firms in the provinces of Modena and Reggio Emilia were operating in five groups - by 1979 almost 50 percent of the firms were linked to twelve groups. Such developments must have changed the level of domestic rivalry that existed but they are not discussed by Porter. Porter also discusses the role of Assopiastrelle, the ceramic tile industry association, which gradually began offering services in areas of common interest including bulk purchasing, foreign market research, and consulting on fiscal and legal matters. This would imply the existence of some level of co-operative relations between firms although it is not classified as such, and such relations are not part of Porter's diamond.

It is interesting that Russo (1989) attributes a number of innovative developments in the industry as means of overcoming or adapting to market problems. For example in response to the demand crisis at the end of the 1970s,

aware that the market was almost saturated and that the opening of new markets would require very big efforts, many firms responded to the crisis by reducing labour costs, increasing labour productivity and rationalising the whole process of production. At factory level this was done by reducing the dead loss time and the time of firing, and by introducing new machines so as to allow for greater flexibility in running production and a decrease in unit costs. Here we see for the first time the use of machines for the automatic piling of pressed material; automatic cleaning of the die of the press and of the serigraphic machines; the semi-automatic and later completely automated loading and unloading of the production lines (both for selection and glazing), and the mechanized transport of materials through the various stages of the production process. (Russo, 1989, p.206).

Porter's interpretation of the changes that occurred is that they were primarily a result of domestic rivalry:

intense rivalry powered continuous and important innovation in the industry. The first rapid single-firing and the first continuous production process were the most important in a stream of new ideas. Italian process innovations were triggered by visible selective factor disadvantages. Under competitive pressure, Italian firms struggled early and hard with local problems that signalled fruitful directions of innovation' (Porter,1990, p.224).



Related and supporting industries have also had an important role in the development of the industry. As Modena was the home to industries such as Ferrari, Maserati and Lamborghini, the tile sector gained from a ready supply of mechanically trained workers (Porter, 1990, p.212). Russo exhibits the importance of supplier industries in the innovation process and the existence of co-operation between firms:

with few exceptions, the ceramic tile firms have not been the ones to invent new machines or new methods of production ... For a long time now the machine producers have had daily contact with the tile producers so that they constitute a sort of external technical staff of the tile firms. This allows the latter to avoid the cost of an internal technical staff. On the other hand, the engineering firms, instead of having laboratories for testing prototypes, *use* the ceramic firms to test how the new machinery actually works' (pp. 202-203)

It is clear that the Italian ceramic industry could be classified as either an ID or an IC. The reason why an ID may not also be an IC is the level of exports, but this is not an issue in this case. Looking at it the other way around, the main reasons why an IC may not also be an ID is the absence of a social milieu and some form of co-operative relations between firms. It appears that the latter does exist, even if only to a slight degree as outlined by Porter. Interestingly a social milieu is not mentioned by Russo as an important factor in the development of the ceramic tile industry although others (eg. Capecchi, 1989; Brusco, 1982; Bigarelli and Crestanello, 1994; Best, 1990) who have studied the Modena and Reggio Emilian regions have treated it as a relevant consideration.

This analysis shows that it is at least possible for some industrial agglomerations to be both an industrial district and industrial clusters.

#### **9.2.4 Using the wooden furniture industry in Monaghan and the dairy manufacturing industry in Ireland to test the hypotheses**

Chapters 6 and 8 have shown respectively that the wooden furniture industry in Monaghan is an example of an industrial district and that the dairy manufacturing industry is an example of an industrial cluster. This section investigates if either industry is both an industrial district and an industrial cluster.

##### 9.2.4.1 Is the dairy manufacturing industry an example of an industrial district?

Traditionally an area is identified as an industrial district if it fulfills the common characteristics of those industrial districts that have been identified elsewhere. This analysis will take the same form, but will indicate room for further research which may ultimately return more conclusive and broad-ranging results.

There are some 97 firms in the dairy manufacturing industry throughout the 26 counties in Ireland, eight of which employ more than 200 people, and in the main producing the same or similar products. At the outset this is not the picture of a typical industrial district.

##### *9.2.4.1.1 Mostly small firms*

Firms in this industry range from those employing less than nine to those employing thousands worldwide. The five largest control some 70 percent of the milk-pool, the eight largest account for 53 percent of net output and employ 45 percent of those employed by the

industry (CSO, 1993). The industry is dominated by these firms, which are among the largest in Ireland.

Clearly this industry is not consistent with the concept of an industrial district as consisting of many small firms whose external economies of scale and scope among other externalities facilitate their international competitiveness.

#### *9.2.4.1.2 Geographical and sectoral concentration*

The food and dairy industries are the most important of the Irish economy. Consequently it is not surprising that this industry is spread throughout the country - aside from Laois, Longford and Kildare, each county has at least one dairy manufacturing firm. The typical industrial district consists of a geographical concentration of firms of the same industry. While all of the firms in this industry are not located in the same area, there is evidence of a certain amount of concentration, particularly in the south-east of the country (see map 8.1). Thus in terms of geographical concentration, some of the dairy manufacturing industry fulfills this criterion but not the industry as a whole.

There is no evidence of sectoral concentration in this industry. No firm specializes in just one product and even Goldenvale, which was established in 1948 by a number of co-operatives in Limerick and north Cork to provide a processed cheese facility, now has a wide range of other products including butter, spreads, liquid milk and powders and although cheese remains a core product (the firm holds a 40 percent market share in Ireland) it only represents 10 percent of milk processed (Igoe, 1993). Each firm is involved in all stages of production, and unlike most industrial districts where many services are provided centrally by an association

or sourced from other firms in the locality, in this industry all activities apart from milk production are internalized.

#### *9.2.4.1.3 Social milieu*

Schmitz (1993, p.26) describes an industrial district as a strong community of individuals, families and firms which is bound together by a 'socio cultural identity and trust'. As discussed in chapter 3 the long-term relations that exist in the district are enhanced if not created by the close proximity of firms and the flow of information. The cultural identity usually reflects 'specific sub-cultures'.

None of these features are readily apparent in the dairy manufacturing industry in Ireland. The geographical spread of firms throughout the country makes it difficult to identify any specific sub-cultures or cultural identities other than those that would be reflected throughout society as a whole. Similarly, the close knit relationship between the 'three Fs - family, friends and firms' (Yoram, 1980) is usually a consequence of small, family run firms, where the different families are neighbours and friends and where the distinction between family, friendship and work is blurred. The dairy manufacturing industry consists of many firms which are geographically spread, on average employ more than 79 people and few remain family firms.

While the industry as a whole does not appear to constitute a social milieu, O'Connell et al (1997, p.59) reported that 'meetings at the Irish Co-operative Organisation Society, the Irish Dairy Board (AGM) and golf, among others, were seen as important for the creation of a valuable social network'. This indicates that there may be a professional milieu in the industry.

While there is the possibility of a professional milieu it is unlikely to be as intense as that in Silicon Valley for example where 330,000 high tech workers, including 6,000 PhDs in engineering and science are located within a 40 mile by 10 mile strip, people change jobs continually and there is constant contact and transference of information (Castells and Hall, 1994, p.12). That is not to say that there are not a number of professional and indeed social milieux in operation in different regions among dairy manufacturers. Furthermore the milk-suppliers, or farmers, are quite likely to constitute a variety of different social and professional milieux.

Thus the existence of a social or professional milieu is possible in the dairy industry in Ireland, and indeed there is some evidence of it. But rather than the whole industry exhibiting this feature, it is more likely that such milieux are found in some regions or counties or among particular groups of suppliers or manufacturers. It may be possible that more narrow research of the industry, in particular counties for example, may exhibit regions that comprise industrial districts.

#### *9.2.4.1.4 Strong inter-firm relations*

Inter-firm relations in this industry are dominated by competition between firms which use the same pool of suppliers and in most cases sell to the same customers. A feature of industrial districts is the co-existence of horizontal competition and co-operation but there is little evidence of co-operation in the Irish dairy manufacturing industry. O'Connell et al (1997, p.59) reported finding 'informal co-operation, mostly linked to problem solving.

Managers regularly consult each other on issues regarding production processes, equipment, engineering and will help with inventory shortages'. It is not clear how widespread this is.

#### *9.2.4.1.5 High levels of innovation*

Continual innovation in an industrial district is a result of frequent face-to-face contact between owners of firms, continual movement of employees between jobs and a social or professional milieu. Each of these factors encourages the process Marshall described whereby an idea started by one person is taken up by others and combined with suggestions of their own; thus becoming the source of further new ideas (1898, p.350). In this way innovation is an external economy, which takes place within the environment rather than within specific firms. Innovation in the dairy manufacturing industry is most often internal to the firms within R&D departments, rather than external to the firm and internal to the district as in industrial districts.

#### *9.2.4.1.6 Conclusions*

To determine whether some of the firms or regions of the dairy manufacturing industry constitute an industrial district requires detailed micro research particularly in the south of the country, which is beyond the scope of this thesis, but would add considerably to both the industrial district and Irish industrial literature. What can be concluded from this analysis is that the dairy manufacturing industry in Ireland as a whole is not an industrial district.

#### 9.2.4.2 Is the wooden furniture industry in Monaghan an industrial cluster?

The first stage in assessing whether the wooden furniture industry in Monaghan constitutes an industrial cluster is to see if the proportion of exports from this industry is greater than the

national average. The cut-off point for Ireland is 0.4 and the wooden furniture industry is well below this at 0.26 (UN, 1995). Thus this industry cannot be an industrial cluster.

Aside from not meeting the initial criteria, there are a number of other factors that would indicate that this sector would not be classified as an industrial cluster. While there is evidence of factor conditions they are primarily basic, (location and availability of unskilled and semi-skilled labour), rather than advanced factors which are outlined as more important in terms of competitive advantage.

The limited market in Ireland would make it difficult for any sector to have the demand conditions which Porter outlines as a source of competitiveness. In addition there is no evidence that Irish consumers are indicative of European tastes, or so demanding that the industry is continually developing new products (as is the case in the tile industry in Italy). In fact the style of furniture manufactured by these firms is extremely different from the more modern and light furniture produced by many European firms to supply the European market.

While there are local supporting and related industries to the furniture industry, primarily in the manufacture of furniture components, they do not match the related and supporting industries that Porter outlines. None of the suppliers or related industries have become 'competitors in their own right' (Crocombe et al, 1992, p.67), nor is there any evidence of the 'pull through' effect described in chapter 7 p.219.

Domestic rivalry is an important attribute of the furniture industrial district in Monaghan but this alone does not describe inter-firm relations as discussed in chapter 6. It is clear that this

industry does not meet the initial criteria of an industrial cluster, but moreover analysing this sector under the headings which Porter has developed excludes many of the important features of this sector, such as strong inter-firm relations and a professional milieu.

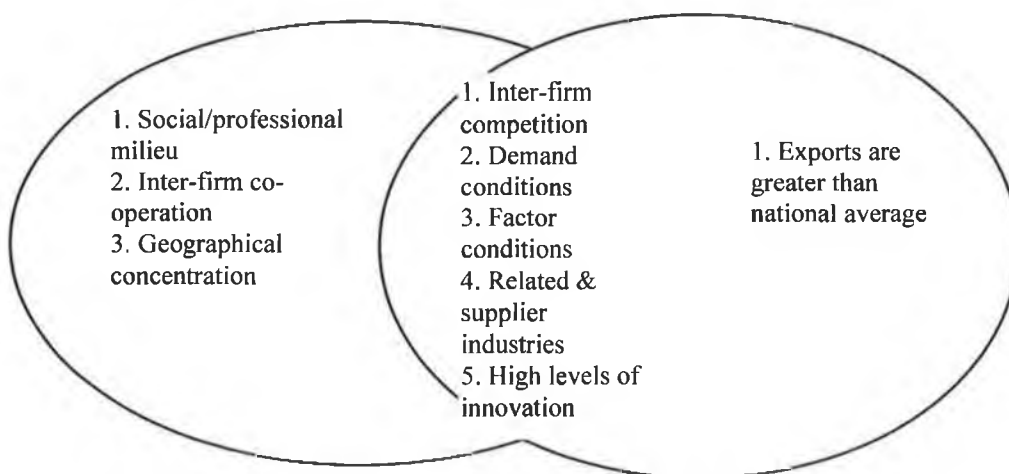
### **9.3 Relating industrial districts and industrial clusters**

We have established that all industrial districts are not industrial clusters, and that all industrial clusters are not industrial districts. However, it is possible that some groups of firms could be classified as both industrial districts and clusters. In this section the relationship between the two categories of agglomeration are discussed.

#### **9.3.1 The overlap**

As the diagram below shows industrial clusters and industrial districts overlap to a certain extent but they are not interchangeable. Some characteristics are only evident in industrial clusters, others are only apparent in industrial districts and some (which are listed in the intersection) are in both.

**Chart 9.2: The characteristics of IDs and ICs compared**



The most obvious differences between industrial districts and industrial clusters are:



- a) the issue of co-operation between firms (in IDs)
- b) the existence of a social milieu (in IDs) and
- c) the criterion of firms having relatively high levels of exports (in ICs)

All of the features described in Porter's diamond are present in industrial districts although perhaps to varying degrees. As has been mentioned above, industrial districts have additional characteristics to industrial clusters, so they could be called extensions of the industrial cluster model.

$ID = (IC - \text{levels of exports criterion}) + \text{co-operation between firms} + \text{social or professional milieu} + \text{geographic concentration}$

$IC = (ID - \text{co-operation between firms} - \text{social/professional milieu}) + \text{significant levels of exports}$

### **9.3.2 The starting point and the end conclusions of industrial district and industrial cluster research are almost the same.**

As the chart below shows, industrial district and industrial cluster research begin at a similar starting point and result in similar conclusions. Where they differ is how they explain what they have found and the geographic scope of their conclusions.

Both are trying to explain the success of certain industries, firms or regions; in the case of industrial clusters this is international success while in industrial districts it is more often regional success within countries. The explanations for this success differ, but the end conclusions have much in common. Both show that local conditions affect success - in industrial districts national success and in industrial clusters success is determined in

international terms. Jointly these analyses show the importance of local factors in both the national and international success of firms.

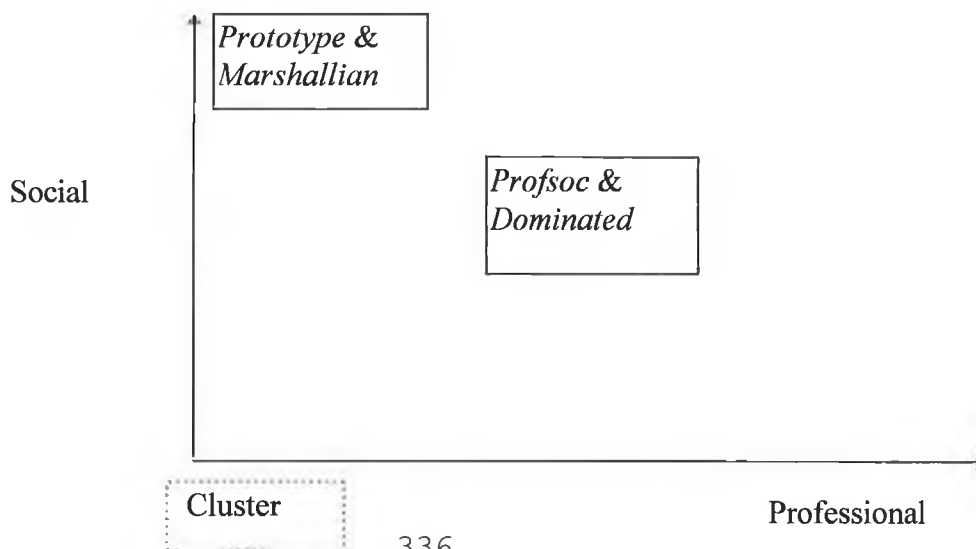
Table 9.3: Process of research on IDs and ICs

<i>Type of Analysis</i>	<i>Objective</i>	<i>Type of success</i>	<i>What determines success</i>	<i>Message</i>
IC	Explain success of industries	International	Diamond conditions	Local conditions affect international industry success
ID	Explain success of regions	National	Triangle conditions	Local conditions affect national industry success
IC + ID	Explain success of industries and regions	National and International	Diamond and Triangle conditions	Local conditions affect national and international industry success

**9.4 Are some types of industrial districts more likely to be industrial clusters than others?**

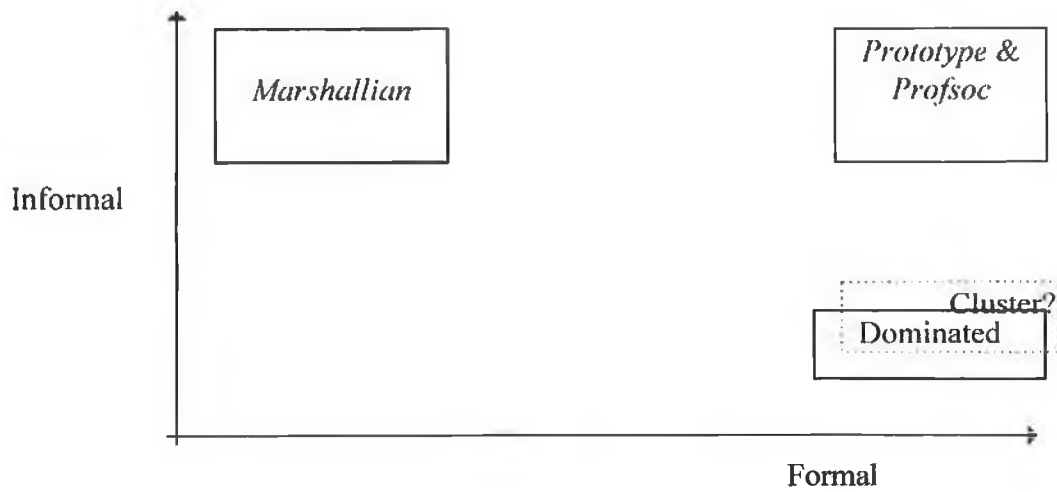
Of the industrial districts outlined in chapter 5, no particular one is more likely than any other to meet the export criterion, which has to be met to be identified as an industrial cluster. Placing industrial clusters on the charts developed in chapter 5 shows how this type of agglomeration compares with the types of industrial districts. It differs from all in terms of the existence of a social or professional milieu.

Chart 9.3: Type of milieu



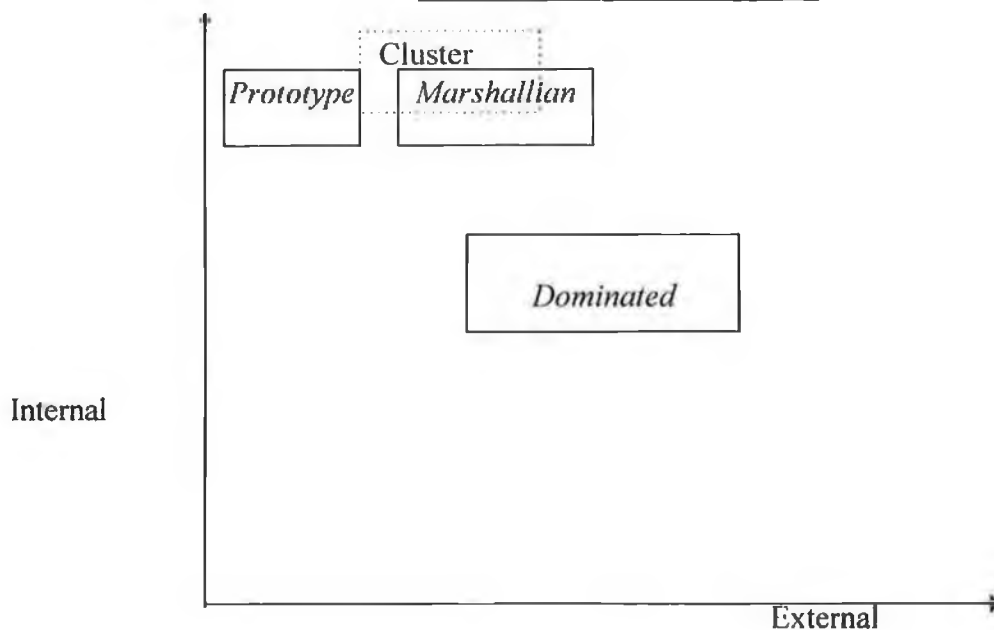
Co-operation is not described as a feature of an industrial cluster. If it exists, as a consequence of the lack of any type of milieu, it is likely to be formal, similar to the dominated industrial district.

Chart 9.4: Co-operation between firms - formal vs informal



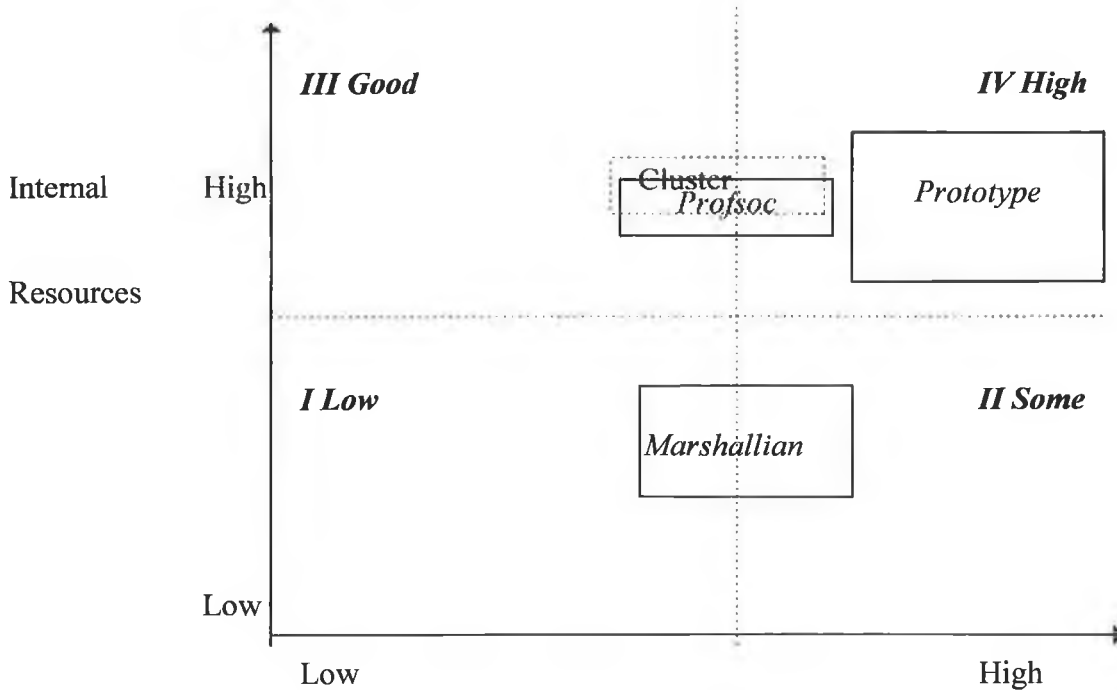
One of the greatest strengths of an industrial cluster is the proximity of suppliers. Most are within the confines of the region.

Chart 9.5: Location of suppliers



Firms in industrial clusters usually have high levels of internal resources and have different levels of external support depending on the region. It is most like the *profsoc* in this regard.

Chart 9.6: The potential for technological capability building



The relationship between all types of IDs and ICs are much the same. No category is, by definition any more like an IC than the other, although different aspects provide basis for similarities in each. In the *Marshallian*, it is the location of suppliers within the district, in the *profsoc* it is similar capacities for technological capability building and in the *dominated* it is formal inter-firm relations which are common. While similarities exist between industrial clusters and each of the types of industrial districts it is clear that no one type is any more likely than the others to be an industrial cluster. Each type of industrial district can be clearly identified as different from that of an industrial cluster.

## **9.5 Conclusion**

Industrial districts and industrial clusters describe two types of industrial agglomeration, which although different have a number of similarities. The differences are large enough to necessitate distinguishing between them, but the similarities ensure a link. They could be classified as being part of the same industrial agglomeration family.

Although at the outset it may appear that an industrial district is a type of industrial cluster, it has also been shown that in fact an industrial district is more than the small region variant of an industrial cluster, exhibiting inter-firm co-operation and a social or professional milieu. Perhaps the most appropriate way to describe the relationship between industrial districts and industrial clusters is as different but intersecting categories of industrial agglomeration which expound the importance of local factors.

## **CHAPTER 10: CONCLUSIONS**

### **10.1 Contribution to the literature**

This thesis has contributed to and developed the literature in a number of different ways. Firstly working within the methodological framework used by most researchers in the area, an industrial district has been identified in the wooden furniture industry in Monaghan. This research is the first of its kind in Ireland and as well as providing detailed information about one sector in one region it has broader implications as it shows the applicability of this type of research to this country and also re-affirms the importance of more localized or regional analysis.

Secondly the theoretical underpinnings of the concept of an industrial district have been developed. Chapter 3 has clearly shown that all industrial districts are not the same. Much of the work in this area has concentrated on particular case studies or groups of studies. In this work, in depth analysis of the characteristics has been undertaken (primarily in chapter 4); co-operation can be formal or informal, all firms in an industrial district do not have to be small, suppliers can be located either within or externally to the district, and levels of innovation can vary considerably. Each of these distinctions affect the functioning of the industrial district. This analysis strengthens the literature as it does not take the characteristics as definitive, it delves below identifying the existence of co-operation and social milieu to discover why a social milieu might exist, why a firm would not cheat rather than co-operate and what creates trust which is deemed to be so important. Chapters 3 and 4 are the foundation

for the taxonomy which was developed later but they also provide a clear and detailed analysis of the characteristics that are associated with industrial districts.

In addition the importance and relevance of new economic theories of the firm in explaining why and how firms function in an industrial district have been outlined. Economists have much to contribute to the theoretical development of the concept of industrial districts, and further work in this regard would add not only to the industrial district literature but also more broadly to industrial economics.

The third contribution to the literature is the development of a taxonomy in chapter 5 which allows industrial districts to be differentiated from each other. It has been shown that there are many similarities between these districts but to classify them as the same phenomenon is inappropriate. Amin and Robins (1990, p.186) argue that 'the significance of the new industrial agglomerations is overstated by the orthodoxy as a result of its tendency to collapse very diverse processes and areas into one category'; in fact disaggregating industrial districts strengthens both the idea and its application. Different categories of industrial district may reduce the quantitative impact of so many of the same type of agglomeration being located all over the world, but in another way it makes the concept more believable. To classify Silicon Valley with its high levels of innovation and concentration in the computer industry as the same type of industrial agglomeration as Santiago in Mexico where sweat shops are commonplace in the textile industry and innovation levels are low is clearly stretching the imagination. That is not to discount the fact that many of the other characteristics of both are very similar (both exhibit geographical and sectoral concentration, some

type of milieu and there are strong inter-firm relations) but to address the fact that the environment, growth, industrial structure and operations are quite different. Differentiating between these two types of industrial districts adds credibility to the whole concept of an industrial district.

The fourth contribution to the literature is to broaden the analysis of industrial districts into the wider spectrum of research on agglomerations. Industrial districts have long been studied independently from other types of industrial agglomeration, and indeed separately from much of the location, regional or industrial research in economics. The lack of interaction between researchers in the fields of industrial clusters and industrial districts was identified in chapter 9. It has been shown that it is inappropriate to use the terms industrial district and industrial cluster interchangeably. At its most basic the definition that Porter uses for an industrial cluster - a group of firms which are linked through vertical and horizontal relationships (1990, pp.148-149) - could be used to describe an industrial district, but as outlined in chapter 9 the omission of the whole issue of inter-firm co-operation and the importance of high levels of exports in Porter's industrial cluster, coupled with the importance of a social milieu and geographical concentration in industrial districts, make these clearly different types of agglomeration which must be treated as such. There is certainly room for more analysis in this area, for example introducing the idea of a *filière* would further develop the research on relations between different types of agglomeration. In addition industrial district type research on the dairy industry in Cork or the South would provide the foundations for a debate on whether an industrial district can constitute part of an industrial cluster.



## **10.2 Testing the hypotheses**

This research has pursued a structured path of research; each finding led to another question. As an Irish researcher the first question that had to be addressed was are industrial districts a 'third Italy' phenomena, a view that was forwarded by some researchers in the field. A perusal of the literature as outlined in chapter 3 made it clear that this was not the case. However it also showed that there were differences between industrial districts, not all had social milieux, not all were dominated by small firms and not all exhibited sectoral concentration. This led to investigation of the hypothesis all industrial districts are not the same. This was apparent from the literature review in chapter 3 but required some further analysis and disaggregation to differentiate between districts that on paper appeared extremely similar. Chapter 4 showed that even if districts had inter-firm co-operation they could differ according to whether this co-operation was formal or informal, while a milieu could be identified, it can be a social or professional milieu, levels of innovation could range from low to high. Each of these variations resulted in a district which operated in a different way. The view that different combinations of characteristics result in quite different local economies and relations, and consequently paths of development and growth and policy support, led to the next step; a taxonomy of industrial districts which is presented in chapter 5.

The empirical work in Chapters 6 and 8, while important in their own right particularly in terms of literature on Irish industry, are used in the broader picture of the thesis to address or support a number of hypotheses that were posed elsewhere.

The wooden furniture industry is shown to be an industrial district in chapter 6 and using the taxonomy facilitates its classification as a *profsoc* industrial district. The textbook or *prototype* industrial district (which is most like some districts in the ‘third Italy’) is quite different from that in Monaghan in a number of ways: rather than a social milieu there is a professional milieu, suppliers are located outside of the district and there are some large firms. Each of these factors have implications for the way the district functions and for policy makers. In addition the fact that it is a *profsoc* industrial district aligns it most closely with those identified in Western Europe rather than the high-tech. districts or those in developing countries, thus perhaps indicating a development or growth path. Using the taxonomy aids analysis of the region, the choice of appropriate policies and may indicate its future development.

In chapter 8 the dairy industry is shown to be influenced by the four corners of the diamond but the analysis of this sector supports many of the criticisms of Porter’s industrial cluster outlined in chapter 7. The internationalized diamond is proved useful and relevant in researching an open economy with a sector which is strongly influenced by both international markets and support policies.

Chapter 9 links chapter 7 and 8 with the others and compares industrial districts and industrial clusters. The research undertaken in chapter 6 and 8 is also useful here as empirical evidence. The conclusion is that industrial districts and industrial clusters are different types of agglomeration.

The conclusions of this thesis can be summarised as follows:

- Industrial districts are not just a ‘third Italy’ phenomenon;
- All industrial districts are not the same;
- Industrial districts can be categorized into four different types *prototype*, *Marshallian*, *profsoc* and *dominated*;
- The wooden furniture industrial is an example of an industrial district in Ireland;
- The dairy industry in Ireland is an example of an industrial cluster;
- The internationalised diamond is more appropriate for study of clusters in open international economies which are influenced by other countries;
- Industrial districts and industrial clusters are different types of industrial agglomeration.

### **10.3 Conclusion**

This research is in itself a starting point, for future regional, local and industrial research in Ireland, and within the broader industrial district literature it marks a new starting point for theoretical development. The taxonomy that is developed herein is not simply a tool for re-grouping; the objective is not to neatly categorize industrial districts for easy reference, but to incite researchers to study regions with yet more vigor, to address more questions and to develop a theory which will explain both the differences and similarities among these successful regions. As discussed in chapter 3 some believe industrial districts to be a temporary phenomenon and hail their end as nigh; differentiating between types of industrial districts allows us to see if there are some types which are more capable of long-term growth than others.

Geographical concentration of firms remains an important and relevant issue in this globalised world. This is not to argue that localisation or industrial districts are the future or that mass production is in a state of crisis. The world economy is made up of many types of industrial organisation of which industrial districts is one. This type of organisation is particularly interesting as it seems to result in high success rates and high levels of economic growth and there is a particular role for small firms. Future research in this area has to firmly develop a place for industrial districts along the continuum of industrial organizations, not as a worldwide alternative to mass production nor as a protagonist of flexible specialisation, but as an independent type of regional production system of which there are many forms. Case study analyses have raised interest in the concept of industrial districts, but to maintain and develop this interest researchers in the area need to develop the associated theory and links with other types of agglomerations and industrial organizations. This thesis has posed some potential starting points.

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**APPENDIX A: Questionnaire used to investigate if the wooden furniture industry in Monaghan exemplified an industrial district.**

## QUESTIONNAIRE

- This questionnaire is the basis of thesis research and all information supplied will be treated as strictly confidential and used for research purposes only
- Pilot studies indicate that it should take approximately 30 minutes to complete
- Most questions involve circling or ticking the most appropriate answer. The signs +, = and -, mean increase, no change and decrease respectively.
- Please return the completed questionnaire in enclosed self addressed envelope by Tuesday 14th May
- If you wish to receive a report of my findings please tick here

*Thank you for taking part in this study*

## General Information

1.1 Name of Enterprise \_\_\_\_\_ 1.2 Tel. \_\_\_\_\_

1.3 Name of Respondent \_\_\_\_\_ 1.4 Age \_\_\_\_\_

1.5 Position in Enterprise (circle as appropriate)

a) Owner      Yes    No      b) Manager      Yes    No

1.6 Main products (as % of total output)

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

1.7 If the enterprise does not produce an entire product, in what process has it specialised? \_\_\_\_\_  
\_\_\_\_\_

## 2. History of Enterprise

2.1 When was the firm established? \_\_\_\_\_ 2.2 By whom? \_\_\_\_\_

2.3 What is your relationship to the founder? \_\_\_\_\_

2.4 Previous job: a) Name of enterprise where you worked \_\_\_\_\_

b) Size of enterprise (No. employees) \_\_\_\_\_

c) Position \_\_\_\_\_

## 3. Labour Force

3.1 Number of workers: Total \_\_\_\_\_ Female \_\_\_\_\_

a) Non-family \_\_\_\_\_ b) Family \_\_\_\_\_

3.2 Change in number of workers over last 5 years (circle as appropriate):

a) increased      b) remained the same      c) decreased

3.3 Number of workers who have left in the last 12 months? \_\_\_\_\_

3.4 Number of workers who have joined in the last 12 months? \_\_\_\_\_

3.5 Labour turnover in the last 5 years (circle as appropriate):

a) increased      b) remained the same      c) decreased

3.6 Do you have any difficulty in finding

a) Skilled workers?      Yes    No      b) Unskilled workers?    Yes    No

## 4. Performance

### 4.1

<i>Performance Data</i>	<i>For 1995 (average)</i>	<i>Trend over last 5 years (circle as appropriate)</i>
Output (£)		+ = -
Highest priced product (£)		+ = -
Lowest priced product (£)		+ = -
Average size of orders (in units of output)		+ = -
% Exported		+ = -
Capacity utilisation		+ = -

### 4.2 Trend of net profit over last 5 years:

- a) increased                      b) remained the same                      c) decreased

## 5. Finance

### 5.1 How many days after receipt of invoice do you normally pay for your inputs?

- a) up to 15 days    b) up to 30 days    c) up to 60 days    d) over 60 days

### 5.2 In 1995, what percentage of your output was sold:

- a) for cash \_\_\_\_\_                      b) on credit (deferred payment) \_\_\_\_\_  
If b) on average for how many days \_\_\_\_\_

### 5.3 What percentage of the capital invested in your enterprise comes from:

- a) your own sources? \_\_\_\_\_                      b) loans? \_\_\_\_\_

### 5.4 Has the percentage of borrowed capital over the past 5 years:

- a) increased                      b) remained the same                      c) decreased

### 5.5 Of the current loans, what percentage comes from:

- a) private banks or building societies \_\_\_\_\_  
b) special Government sponsored credit loans \_\_\_\_\_  
c) informal money lenders \_\_\_\_\_  
d) loans from friends or relatives \_\_\_\_\_  
e) credit unions \_\_\_\_\_  
f) other sources (please specify) \_\_\_\_\_

**5.6 Investment Strategies: In what areas have you invested over the last 5 years?**

<i>Areas of investment</i>	<i>Large Amount</i>	<i>Small Amount</i>	<i>Nil</i>	<i>Future intentions for investment</i>
Capacity expansion in local area				+ = -
Capacity expansion outside local area				+ = -
Product development				+ = -
Better machines & equipment				+ = -
Marketing (fairs, advertising etc.)				+ = -
Shops				+ = -
Supplier firms				+ = -
Real estate				+ = -
Savings				+ = -
Other				+ = -

**6. Subcontracting**

**6.1** Indicate to what extent each stage of production is put out to other enterprises. Give number of subcontractors that you use and indicate whether that number is chosen from among few or many subcontractors.

<i>Stages of Production</i>	<i>Percentage</i>			<i>Subcontractors</i>		
	<i>Internal</i>	<i>External</i>	<i>N/A.</i>	<i>Number</i>	<i>Choice of many</i>	<i>Choice of few</i>
Breaking out						
Machining						
Veneering						
Carving						
Inlaying						
Marquetry						
Turning						
Upholstery						
Chairs						
Finishing						
Other (please specify)						

**6.2** In the last 5 years, have you worked as a subcontractor for other enterprises?

Yes No

If No then answer only 6.4 a) and 6.5 a) and 6.6 in this section.

**6.3** Has this subcontracting work been for a) one particular firm b) many different firms

**6.4**

a) Do you provide any of the following to your subcontractors?				b) Do the enterprises you subcontract for supply any of the following?		
<i>Type of assistance</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>
a) advance payment						
b) lending of machines or equipment						
c) repair/maintenance of machines						
d) training of workers						
e) transport of parts or products						
f) other (please specify)						

**6.5**

a) What do you do if your subcontractor breaks your agreement (for example, late delivery, poor quality)?				b) What do the firms you subcontract for do if you break your agreement (eg. late delivery, poor quality)?		
<i>Action</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>
a) request that job be re-done						
b) deduct some of their payment						
c) change subcontractor						
d) offer supervision to avoid further problems						
e) other (please specify)						

**6.6 Why do you subcontract?**

- |  |     |    |
|--|-----|----|
| a) irregular demand                    | Yes | No |
| b) savings on premises and machinery   | Yes | No |
| c) greater efficiency of subcontractor | Yes | No |
| d) lower wages of subcontractor        | Yes | No |
| e) to avoid social security payments   | Yes | No |



## 7. Relationship with Suppliers

### 7.1 Location of suppliers:

What percentage of inputs do you buy in the following locations?

Type of input	Local (in Co. Monaghan)	Elsewhere in Ireland	Abroad
Raw Materials			
a)			
b)			
Components			
c)			
d)			
e)			
Machines			
f) new			
g) second hand			

### 7.2 Have your suppliers approached you to:

a) offer assistance with problems arising from their products?

Yes                      No

b) ask for suggestions on how to improve their products?

Yes                      No

c) explain the characteristics of their products?

Yes                      No

d) other purposes (please specify)?

Yes                      No

### 7.3 Who carries out the following service functions?

Type of service	Own workers	Others in Monaghan	Others outside Co. Monaghan
a) repair of machinery			
b) accountancy			
c) costing products			
d) selection of new personnel			

## 8. Market

8.1 Specify to whom you sell your products as a percentage of total sales:

	<i>% of sales</i>
a) direct to the consumer	
b) direct to the retailer	
c) direct to the wholesaler	
d) through an independent sale representative	
e) to an export agent	
f) through a consortium with other manufacturers	
e) other (please specify)	

8.2 In 1995 approximately what percentage of products sold were sold

	<i>% of sales</i>
a) in Monaghan	
b) elsewhere in Ireland	
c) Northern Ireland	
d) Great Britain	
e) elsewhere in Europe	
f) other countries	

## 9. Process Innovation

9.1 Was most of your machinery:                      a) bought new?                      b) second hand?

9.2 Over the past 5 years, has the standard of your equipment improved:  
a) a lot?                      b) a little?                      c) not at all?

9.3 Generally, are technical innovations  
a) bought ready-made in the national market  
b) bought ready-made in the international market  
c) developed internally  
d) adapted internally  
e) developed in co-operation with the repair shop  
f) developed in co-operation with the machinery supplier  
g) developed in co-operation with other local manufacturers  
h) developed in co-operation with client firms  
i) other (please specify)

---

9.4 In the past 5 years have you changed the way in which production is organised and controlled?                      Yes                      No

**9.5**

	<i>Do you have?</i>		<i>Over the next 5 years do you intend to have?</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Multitasking/multiskilling of employees				
Team-based production				
Concurrent engineering				
World Class Manufacturing				

**9.6** What are your sources of information for process innovation, ie. for machinery or organisation of production?

<i>Source of information</i>	<i>Often</i>	<i>Occasionally</i>	<i>Never</i>
a) social occasions (bar, club, sports)			
b) export agents			
c) machinery supplier			
d) exhibitions/fairs			
e) repair workshops			
f) client firms			
g) specialised publications			
h) visits to other enterprises in the local area			
i) visits to other enterprises in other regions			
j) workers previously employed in other firms			
k) consultants from the local area			
l) consultants from outside the local area			
m) libraries or information services			

**10. Product Innovation and Quality**

**10.1** Where do your ideas for new designs come from?

- a) Visiting local trade fairs
- b) Visiting trade fairs in other parts of the country
- c) Visiting trade fairs abroad
- d) Catalogues and magazines
- e) Specifications of clients
- f) Hired designer
- g) Other (please specify)

**10.2** In the last 5 years, has the quality of your product:

- a) declined?
- b) remained the same?
- c) improved a little?
- d) improved a lot?

10.3 Have you introduced any of the following quality control procedures?

	<i>Yes</i>	<i>No</i>
a) Final inspection		
b) Quality awareness training for workers		
c) Statistical Process control(SPC)		
d) Quality cards		
e) Quality control circles		
f) Total quality control		
g) Total quality management		
g) Cost of quality reporting		
h) Other (please specify)		

10.4 Were these procedures enforced by your clients?

Yes

No

10.5 Have you attained any quality standards (eg. ISO9000)? Please specify.

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## 11. Inter-firm Competition

11.1 Where are your main competitors located?

- a) in the local area - Monaghan
- b) in other parts of the country
- c) abroad

11.2 Are your main competitors:

- a) large enterprises (employing more than 100 people)
- b) medium enterprises (employing between 50 and 100 people)
- c) small enterprises (employing up to 50 people)

11.3 In order to out-compete your rivals, what are the four main factors (in order of importance, 1-4 )?

- a) Price \_\_\_\_\_
- b) Quality \_\_\_\_\_
- c) New designs \_\_\_\_\_
- d) Speed and punctual delivery \_\_\_\_\_

## 12. Inter-firm Co-operation

12.1 Do you have any formal arrangements with other firms?

Yes

No

If Yes please specify \_\_\_\_\_

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12.2 Do other furniture firms own any equity share in your firm?

Yes

No

**12.3** Do you have an equity share in other furniture firms?

Yes No

**12.4** Do you co-operate with other local producers in your industry in the following ways:

a) lending machinery	Often	Occasionally	Never
b) product development	Often	Occasionally	Never
c) marketing	Often	Occasionally	Never
d) training of workers	Often	Occasionally	Never
e) purchase of inputs	Often	Occasionally	Never
f) other (please specify)	Often	Occasionally	Never

---

**12.5** Do you exchange ideas or discuss problems or strategies with other local furniture producers?

a) often b) occasionally c) never

**12.6** Do you visit production sites of other local furniture firms?

a) often b) occasionally c) never

**12.7** Do other entrepreneurs come and look around your factory/workshop?

a) often b) occasionally c) never

**12.8** How do your informal relations with other firms usually come about?

a) Family ties	Yes	No
b) Neighbours or spatial proximity	Yes	No
c) Friends or former colleagues from courses or work	Yes	No
d) Other (Please specify)	Yes	No

### **13. Associations**

**13.1** Does your firm belong to an association? Yes No

If Yes, please specify

---

### **14. Views on Clustering**

**14.1** Could you obtain the same results as you now get if you were not located in the local area/cluster? Yes No

**14.2** What are the advantages of being located in this area/cluster?

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**14.3** What are the disadvantages of being located in this area/cluster?

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**14.4** How do you think the local furniture industry will develop over the next 5 years?

Local furniture industry	Trend in next 5 years		
	Increase	Decrease	Stay the same
a) Number of large enterprises (more than 100 employees)			
b) Number of medium enterprises (between 50 and 100 employees)			
c) Number of small enterprises (up to 50 employees)			

**15. Social groupings**

This study is concerned with the interaction of community and business life in Monaghan. I would like to identify any social, religious or sporting groups that enhance business relations. For that reason I would appreciate it if you would answer the questions below.

**15.1** Where are you from? \_\_\_\_\_ (Town) \_\_\_\_\_ (County)  
 \_\_\_\_\_ (Country, if outside Ireland)

**15.2** In order to succeed as an entrepreneur in the local industry, is it  
**Important**

	<i>Helpful/Useful</i>		<i>Important</i>	
	Yes	No	Yes	No
a) to be from Monaghan?	Yes	No	Yes	No
b) to belong to the GAA?	Yes	No	Yes	No
c) to belong to any other local sporting club?	Yes	No	Yes	No
d) to be Catholic?	Yes	No	Yes	No
e) to be Protestant?	Yes	No	Yes	No
f) to be related to other entrepreneurs in the area?	Yes	No	Yes	No
g) to have worked previously for another furniture firm in the area	Yes	No	Yes	No
h) other (please specify)	Yes	No	Yes	No

**15.3** What social group do you belong to (eg. religious, kin group)?  
 \_\_\_\_\_

**15.4** Do the majority of workers in your firm come from  
 a) the local area Yes No  
 b) any particular social group, religious group, club or association (please specify) Yes No

**THANK YOU FOR YOUR ASSISTANCE**

## APPENDIX B

Table B.1: Compilation of features that differentiate between types of industrial districts (Tables 5.2-5.5)

<i>Features that differentiate between types of industrial district</i>	<i>Prototype</i>	<i>Marshallian</i>	<i>Profsoc</i>	<i>Dominated</i>
<i>Size of firms</i>	Similar-small	Similar - small	Similar	Different
<i>Co-operation</i>	Formal and informal	Informal	Informal and/or Formal	Informal and/or formal
<i>Milieu</i>	Social	Social	Social or professional	Social or professional
<i>Potential for TCB</i>	Good to high	Low to some	Low to some	Good to high
<i>Location of suppliers</i>	Internal to district	Internal and external to district	Internal and external to district	Internal and external to district
<i>Micro and/or meso characteristics</i>	Both	Meso	Meso	Either or both
<i>External intervention</i>	Often	Sometimes	Sometimes	Sometimes

Table B.2: Compilation of characteristics and features attributable to each type of industrial district

Industrial district	Type of milieu		Characteristics		Horizontal co-operation		Location of suppliers		Potential for innovating				Size firms	Extenal intervention	
	<i>Social</i>	<i>Professi- onal</i>	<i>Meso</i>	<i>Micro</i>	<i>Forma- l</i>	<i>Infor- mal</i>	<i>Internal to district</i>	<i>External to district</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>Similar</i>	<i>Often</i>	<i>Someti- mos</i>
Prototype	X		X	X	X	X	X				X	X	X	X	
Marshallian	X		X			X	X	X	X	X			X		X
Profsoc	X	X	X			X	X	X	X	X			X		X
Dominated	X	X	X	X	X	X	X	X			X	X			X

X - present in this industrial district

Potential for innovating: I - Low

II - Some

III - Good

IV - High



## APPENDIX C: The Dairy Industry

Table C.1: Nationality of firms by sector

<i>Sector</i>	<i>No. firms</i>	<i>No. Irish owned firms</i>	<i>Employment of Irish owned firms</i>
24 Manufacture of non-metallic mineral products	306	264	7,613
25-26 Chemicals	217	117	3,186
251 Basic industrial chemicals	34	25	1,293
257 Pharmaceuticals	74	26	848
255-256, 258-260 Chemicals remainder	109	66	1,045
22, 31-37 Metals & Engineering	1,468	1,124	26,745
22 Production and preliminary processing of metals	45	37	1,562
31 Manufacture of metal articles	597	537	9,150
32 Mechanical Engineering	278	223	3,755
33 Office & Data processing machinery	56	25	527
34 Electrical Engineering	291	163	5,005
35 Manufacture & Assembly of motor vehicles (include. Parts & accessories)	82	73	2,408
36 Manufacture of other means of transport	38	32	3,939
37 Instrument Engineering	81	34	399
411-423 Food	765	702	29,650
412 Slaughtering, preparing and preserving of meat	133	118	9,236
<b>413 Manufacture of dairy products</b>	<b>97</b>	<b>92</b>	<b>7,024</b>
420-421 Sugar; cocoa; chocolate and sugar confectionery	39	28	1,611
411, 414-5, 417-8, 423 Other food	151	125	3,808
424-429 Drink & Tobacco	70	38	1,364
43 Textile industry	167	114	3,430
431 Wool industry	29	21	647
436 Knitting industry	75	62	1,834
432-434, 437-439 Other textiles	63	31	949
44-45 Clothing, Footwear and Leather	371	330	9,017
44-451 Leather and Footwear	52	47	1,114
453-456 Clothing (include. Furs & household textiles)	319	283	7,903
46 Timber and wooden furniture industries	435	429	6,965
47 Paper and paper products, printing and publishing	434	407	12,589
471-472 Paper and paper products	87	71	2,512
473-474 Printing and publishing	347	336	10,077
14, 48-49 Miscellaneous Industries	369	280	5,325
481-482 Manufacture of Rubber products (include. Retreading of tyres)	42	23	310
483 Processing of plastics	218	166	3,628
14, 49 Other manufacturing industries	109	91	1,387
<b>Total</b>	<b>4,602</b>	<b>3,805</b>	<b>105,884</b>

Source: CSO, 1993.

Table C.2: Number of dairy manufacturing establishments by county

<i>County</i>	<i>No. Dairy manufacturing establishments</i>
Dublin	8
Kildare	0
Meath	2
Wicklow	0
<b>East</b>	<b>10</b>
Cavan	6
Louth	2
Monaghan	2
<b>North-east</b>	<b>10</b>
Carlow	1
Kilkenny	7
Waterford	9
Wexford	5
<b>South-east</b>	<b>22</b>
Galway	3
Mayo	1
<b>West</b>	<b>4</b>
Cork	25
Kerry	5
<b>South-west</b>	<b>30</b>
Clare	3
Limerick	3
Tipperary South	7
Tipperary North	14
<b>Mid-west</b>	<b>27</b>
Donegal	3
Leitrim	1
Sligo	3
<b>Donegal &amp; North-west</b>	<b>7</b>
Laois	1
Longford	0
Offaly	2
Roscommon	1
Westmeath	2
<b>Midlands</b>	<b>4</b>
<b>State</b>	<b>114</b>

Source: CSO, 1997.

Table C.3: The destination of Irish dairy exports (1996)

<i>Country</i>	<i>£000</i>
EU countries	615,916
France	49,891
Belgium & Luxembourg	46,174
Netherlands	61,987
Germany	93,783
Italy	8,879
Great Britain	283,267
Greece	13,560
Northern Ireland	50,878
Egypt	8,689
Nigeria	4,980
South Africa	3,641
USA	7,761
Mexico	18,025
Trinidad & Tobago	6,850
Venezuela	5,274
Peru	5,372
Thailand	7,074
Indonesia	5,569
Malaysia	5,713
Japan	4,838
Taiwan	12,660
Hong Kong	5,771
Other countries	48,046
Total	758,680

Source: CSO, Trade Statistics, 1997

Table C.4: Index of monthly milk deliveries to dairies 1993-1994

Month	Germany	France	Italy	Netherlands	Belgium	Luxembourg	UK	Ireland	Denmark	Greece	Spain	Portugal	Average
Apr	108	117	113	107	112	110	103	135	106	102	113	117	111.9167
May	112	117	110	109	121	116	108	160	110	109	118	117	117.25
Jun	108	105	107	110	118	115	99	158	106	108	117	113	113.6667
Jul	104	94	100	106	111	107	99	145	103	107	112	106	107.8333
Aug	100	85	95	98	104	107	101	133	101	105	107	96	102.6667
Sep	97	84	96	95	94	96	101	114	98	94	101	90	96.6667
Oct	93	89	90	92	86	93	98	82	94	121	95	84	93.08333
Nov	90	92	91	92	83	86	96	52	93	87	91	85	86.5
Dec	93	96	91	94	84	88	98	37	95	91	89	90	87.16667
Jan	96	102	99	98	88	88	100	35	97	93	82	93	89.25
Feb	97	107	102	98	96	92	99	56	97	93	85	101	93.58333
Mar	102	111	108	101	103	102	97	92	99	89	91	108	100.25

Source: Residuary Milk Marketing Board, 1993.