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Small Enterprises in the Wood Products Sector of Eight European Countries

Ashley Selby
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VANTAAN TUTKIMUSKESKUS – VANTAA RECEARCH CENTRE

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PREFACE

This report concludes the project 'Success factors of forest- and woodworking SMEs in Europe' which has been conducted at the Finnish Forest Research Institute. The project formed part of a wider series of projects which included studies of enterprise in three branches of the Finnish forest sector – forest tree nurseries, sawmills and builders' components, as well as a comparison of the forest industries and employment in Finland, the U.K. and Austria. These Finnish-language reports have been published elsewhere. These projects also formed part of the Institute's research programme 'Public sector support and competition in the forest sector' (1998–2002).

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Ashley Selby & Leena Petäjistö
Helsinki

1. INTRODUCTION

1.1. Background – an employment perspective

The present investigation examines the position of small and medium-sized wood working enterprises in the forest sectors of eight EU countries. At the outset, the project was stimulated by record high unemployment in Finland in the mid-1990s, and the public debate on the need for an increasing use of domestic wood in value-added production in small enterprises. Both the public and political debate at that time suggested that the environment for small- and medium enterprises in Finland was less favourable than in other countries (e.g. Palo & Elovirta 1995, Petäjistö et al. 1997, Kanniainen 1998). Similarly, the public debate also suggested that enterprise and entrepreneurship was lacking in Finland. The debate on woodworking SMEs in the 1990s also included the opinion that Finland's strength and comparative advantage was embodied in the paper sector (e.g. Lammi 1996, Eskelinen & Lautanen 1996), and that there was little place for small, high value added woodworking artisans in this industrial environment (e.g. Kärkkäinen 1996).

Forests and forest industries have long been considered to play a significant role in creating employment in the forested regions of Finland, and much of the regional development liturgy is still based on the illusion that the forest sector can or will create jobs in rural areas (e.g. Palo & Elovirta 1995, National Forest Programme 2000). However, a comparison of the labour input intensity coefficients (LIIC[1]) of the forest sectors in Finland, Austria and the United Kingdom (Petäjistö et al. 1997) demonstrated that this was not the case. In 1994, 1000 m^3WRME of raw material input in Finland created 2.12 jobs in the forest sector (including forestry input), whereas in Austria the figure was 5.66 jobs, and 27 jobs in the United Kingdom. Finland, as an exporter of semi-finished wooden products (sawn wood, wood-based panels, pulp & paper), has thus failed to create jobs in the secondary manufacturing branches (wooden goods, paper products) and so its LIIC for the forest sector as a whole is low. Finland also has

[1] LIIC's are discused in more detail in section 5.2.2.

a very efficient, capital-intensive forestry sector, which again shows as a low LIIC (0.45). Austria's higher LIIC for forestry (1.04) reflects its policy of very small clear cuts and the mountainous terrain which makes labour-intensive harvesting essential. The UK has a high LIIC in forestry (2.89) largely because it is still involved in an extensive forest establishment programme, which is labour intensive.

1.2. Low technology industries in a new perspective

The woodworking industry as a whole, and its SMEs in particular, can be considered to be low technology (low-tech) industries. The term *low-tech* is currently used in industrial economics and industrial sociology to define industries on the basis of the intensity of their research and development (R&D) investments (OECD 1995, Maskell 1998b). *High-tech industries* include aerospace and electronics, *medium-high tech industries* include electronic machinery, motor vehicles and chemicals, *medium low-tech industries* include shipbuilding, fabricated metal products and non-ferrous metals, while *low-tech industries* include petroleum refining, ferrous metals, paper & printing, textiles & clothing, food & beverages, and *wood & wooden products.*

Low-technological industries are being subjected to increasing academic attention as their important position in industrial society is beginning to be (re)recognised: A recent example of this attention is the Low-tech Innovation Research Network based at the Chair of Technology and Society at the University of Dortmund (UniDor 1999). The UniDor Network Project's aim is to get an overview of "low-tech"-industries in Western Europe and to analyse their situation in several disciplinary perspectives such as economics, sociology, geography and the engineering sciences. The problem of low-tech industries is defined as follows:

> "Manufacturers of "low-tech"-products are often subject to high competition and cost pressure that frequently forces them to relocate production facilities to countries with low wage-levels. Over the past years this relocation trend has increased notably in all industrialised countries, enhancing in turn the pressure on those companies within "mature" industries. In spite of undoubtedly growing difficulties in recent years, there are a number of convincing examples of companies - and regions - that are successful in manufacturing "low-tech"-products in countries such as Germany or Sweden. In order to maintain this success and to

retain these production facilities a deeper understanding of the conditions for "mature" industries in a global economy is necessary.

In contrast to the current high-tech biased debates on the future of industrial development, the following assumptions can be formulated: i) The conditions found in high wage countries/regions do not only carry restrictions, but also offer opportunities for flourishing industrial activities. This applies not only to the skills and knowledge deriving from traditional industrial sectors are indispensable prerequisites for the innovation-orientated performance of industry as a whole."

Following the OECD (1995) classification of the technological level of industries, low-tech industries are defined by their R&D intensity (R&D expenditure/total sales) of less than approx. 1 percent (industries with a R&D intensity of 1–2 percent may be classified as medium-to low-tech). Examples of low-tech industries are branches such as wooden products, furniture, food, beverages, tobacco, textile, clothing, parts of the chemical industry, paper and glass. Low-tech industries usually produce "simple" products; "simple", because they are of a low technical and functional complexity and show a high degree of standardisation. The products are easily adaptable to mass-production and easy to imitate.

"Low-tech" does not mean "insignificant" (as the term may appear to infer). Thus, Maskell (1999;38, citing COM-DGIII 1993) has shown just how important the wooden furniture industry is to the European (EU12) industrial structure. In 1991, according to (COM-DGIII, 1993), EU's 65 000 wooden furniture firms had an annual production of 39 billion Euro, an annual growth rate of 4.8% and employed 480 000 people. Out of the 85 sub-sectors of ISIC2 the wooden furniture industry ranked 7th in the EU(12), surpassed only by the automotive industry (1.07 mill. employees), telecommunications equipment (890 000 employees), tools (810 000), plastics and clothing (both with 790 000 employees) and basic industrial chemicals (490 000). But as (Maskell 1998b;38) points out, not only is the wooden furniture industry large and economically important, it is also, following the OECD (1995) definition, a low-tech industry, but one in which a great deal of incremental product innovation has taken place.

Conversely, it has been argued (e.g. Kärkkäinen 1996;69) that the excessive capacity in the European wooden furniture industry makes for gloomy possibilities for entry into the sector. It has been argued that with the possible exceptions of Italy, Denmark and Germany, furniture manufacturing SMEs are obliged to compete with huge

western trading houses who increasingly deal with manufacturers in former Eastern Bloc countries. This school of thought considers that the most suitable forest industries for west European countries are capital-intensive units benefiting from economies of scale (e.g. large-scale paper producers with integrated sawmills) (Kärkkäinen 1996;70).

This viewpoint nevertheless runs counter to the post-Fordian production ethic, which is clearly seen to be re-structuring production in many sectors in western Europe, and which is examined in Chapter 2 of this paper. By way of an example, a recent research project addressing "collective efficiency" (Institute of Development Studies www.ids.ac.uk), concluded that clustering was essential for assisting SMEs to overcome well-known growth constraints and compete in distant markets, both national and international. Such clustering depends upon the joint action of local firms in an environment where trust sustains inter-firm relations and traders connect these SME-clusters to sizeable markets. With clusters, greater co-operation is positively correlated with improved performance" (Institute of Development Studies www.ids.ac.uk). By inference, arguments of economies of scale, whilst valid for certain bulky, low-value primary manufactured products, such as sawn timber, wood-based panels, pulp & paper, they do not directly hold for secondary, higher value added manufactured goods where design, high-quality, market orientation, just-in-time, and other factors become important.

1.3. Aim of the study

During the 1990s, various studies have also addressed the problem of enterprise and the potential for enterprise offered by the forest sector. Hetemäki (1997) outlined the long-term global development trends in the forest sector and how these trends may affect the Finnish forest sector. The recently completed FORWARD – project sought to compared the contribution of forestry and the forest industries to rural and regional employment in several peripheral areas of the EU (Hyttinen et al. 1999) while Hazley (2000) has produced a thorough description of the European Forest Cluster. Hetemäki (1997) and Seppälä (2000) have examined the future of the Forest industries and Forest Cluster in Finland in the face of changing environmental, technical and commercial pressures. None of these studies has specifically examined the role of small and medium-sized enterprise and the institutional environments in which each country's forest industries operate. The present investigation seeks to partially fill this gap.

The FORWARD study (Hyttinen et al. 1999) produced detailed forest-based descriptions of the regions under examination. With respect to the institutional and economic environment for the development of SMEs, Hyttinen et al. (1999) contend that forest-based economic activities in a given region largely reflect its general economic situation. In other words, the degree of socio-economic development of a region is likely to affect the level of enterprise. It might therefore be expected that countries with advanced economic and social conditions *and* abundant forest resources, such as Finland, would be more oriented to the manufacture of high value-added products rather than bulk semi-finished goods such as sawn timber and paper. The lack of a theoretical frame reduced the FORWARD-project's opportunities for making meaningful comparisons between the regions in question.

Hazley (2000) has produced a great deal of information on the scale and distribution of the various branches involved in the forest cluster in EU countries, but no causal analysis for these scales and spatial distributions. Extracts from the literature on forest industries also outline some of the user-production relations that have occurred and that seem to aid the success of particular branches in particular countries. In this latter respect, Hazley's study and the present investigation cover common ground. Meristö (in Seppälä 2000) while drawing several forest sector development scenarios, does not address the role of SMEs in the forest sector.

Aspects of the contemporary economic literature concerning the future of SMEs are outlined in Chapter 2.) Trends towards downsizing and out-sourcing by large producers, and the concomitant adoption of flexible smaller-scale production networks, cast some doubts on the hypothesis that closeness to markets is the primary explanatory factor in the greater development of woodworking SMEs in central Europe than in Finland. Socio-political and institutional factors would also seem to be at work. In particular, the role of the creation of an industrial and social infrastructure supportive of value-added production (in innovative networks small-scale firms) cannot be ignored.

The principal aims of the investigation are therefore:

a) *to examine the structures of the forest sectors of the case countries from the standpoint of wood consumption, production structure, employment and the role of small businesses in value added, secondary manufacturing of wooden products;*
b) *to identify factors which encourage the success and development of forest- and woodworking small businesses in selected European countries.*

c) *to assess trends and developments in the Finnish wood products SME-sector in the light of a) and b).*

2. FRAME OF REFERENCE : PRODUCTION ORGANISATION – GLOBAL, NATIONAL, REGIONAL AND LOCAL

2.1. Post-Fordist production

The changing international markets for goods, and the rapidity of the capital markets, have led to a weakening of traditional location constraints and traditional divisions between capital, R&D, manufacturing and sales (Rodríguez-Pose 1994). These developments have changed the international small business environment over the past two decades, as large corporations and the manufactures of standard mass-production have downsized their operations and increasingly employ networks of sub-contractors. Consequently, the share of employment in SMEs (under 100 employees), which had been shrinking all round the world until the 1970s, is growing in all sectors (Howard 1990, Sengenberger et al. 1990). Industrial production is increasingly concentrated in SMEs that are re-emerging in a post-Fordian industrial regime based on innovative technology, skilled labour and high value-added products. In this context, a country's capacity to build strong production networks constitutes a new kind of competitive advantage (Porter 1990). Nevertheless, research has suggested that traditional location constraints, while losing their relevance, are nonetheless still pertinent to regional growth (Rodríguez-Pose 1994).

The spatial consequences of the post-Fordian era have led to a socio-economic restructuring of economic activity in which "growth-promoting" service centres have tended to become concentrated in core areas, while production units and research and development complexes have tended to disperse to intermediate and peripheral regions (Gertler 1988 & 1992, Storper & Scott 1989, Rodríguez-Pose 1994). Consequently, core countries in Europe have experience industrial decline in recent decades whereas some rural areas have experienced a growth of employment and income (Stöhr 1990). Industrial districts, some of them fairly recently developed, are an expression of this latter development.

Research into restructuring has largely concentrated on economic indicators, and yet it is the ability of social and political regimes to adopt or invent new procedures and conditions for industry, i.e. the creation of an innovative industrial space, that decides the development of a region or a nation. The pre-existing social and economic conditions of a nation, region or locality, i.e. the "start-off" conditions, are also significant in the creation of a dialogue between innovation and spatial growth (e.g. Massey 1984, Urry 1985).

2.2. The production context

2.2.1. The revitalisation of mature industrial regions

Several solutions have been proposed to offset the problem of *divergence*. Each of these have been based on a similar approach, i.e. the promotion of specialised export clusters, proactive diffusion or "soft transfer", socio-economic restructuring and especially innovative firm behaviour, which derive from localisation economies. Localisation economies are externalities associated with the presence in the locale of many other producers in the same industrial branch (e.g. Marshall 1920, Harrison et al. 1996, Parc 1996, Markusen 1996, Lorenzen 1998a). The benefits partly arise from the increased likelihood that firms will learn from each other. To what extent the benefits are accessible are, however, dependent upon the organisation of local industries. A firm is likely to benefit more from within a *network* than a firm that relies on proximity effects. The presence of one or several "lead firms" in the same branch may also significantly influence the diffusion of innovations in a locale, especially where lead firms in the same sector subcontract through local backward linkages (Porter 1990, Saxenian 1994, Harrison et al. 1996, Jacobson & Mottiar 1998).

This "learning process" is not without its problems. Notwithstanding questions of "geographical inertia" and the self-reinforcing effects of particular patterns of industrial development over time and space, *some firms will not learn* (Selby & Petäjistö 1992, Nelson 1995). Such firms are likely to decline and exit the branch altogether, leaving room for younger firms with better production and organisational skills (Florida 1996), i.e. a process of creative destruction. Schumpeter (1942;83) argues that creative destruction "incessantly revolutionises the economic structure *from within*, incessantly destroying the old one, incessantly creating a new one". Florida (1996;315) points out that in the Schumpeterian process the destruc-

tion extends not only across industrial structure – creating *new* industries through technological and organisation innovations – but also it effects the *transformation* of existing industries. Florida (*ibid.*) also argues that creative destruction extends to regional phenomena, as innovative technology and production organisation "inform and shape the reconstitution and revitalisation of existing regions".

Accordingly, many mature industrial regions throughout the would can be expected to suffer from dis-investment and de-industrialisation, while the emergence of new industrial spaces will be expected to occur in areas where preconditions are more favourable (e.g. Scott's (1988) *new industrial spaces*). This view of industrial development trends has, for many, gained the status of "received wisdom" (e.g. Bluestone & Harrison 1982, Olson 1982, Crandall 1983), or as Florida (1996;316) calls it, "an article of faith". Nonetheless, there is increasing evidence that new forms of (post-Fordian) production organisation are not limited to these *new spaces*, and that new industrial processes can also flourish *in old mature industrial regions* and so play a key role in the revitalisation of such regions (Florida 1996;331). The main impediments to revitalisation are, according to Florida (*ibid.*) institutional. For example, governmental (Fordist) policies can be responsible for creating market failures, and therefore act as barriers to the adoption and diffusion of new forms of production organisation. Direct government assistance programmes in marketing, site development and technological transfer have been found to be the *least effective* functions of government. Establishments that have adopted new forms of production organisation are often highly critical of government policies in this respect.

On the basis of empirical studies in the Midwest mature industrial region of the USA, Ettlinger (1994;158) and Florida (1996;331–2,) are convinced that economic restructuring and the emergence of new forms of industrial production organisation can occur in mature regions. The development of a dynamic, SME sector in an old Massachusetts industrial region suffering from Taylorism (Doering & Terkla 1990) is compared by Ettlinger (*op cit.*) to the development of Third Italy. A stable economy was developed in a volatile national industrial climate through the achievement of competitiveness in mature. The reconstruction was based on *how* production was being achieved rather than on *what* was being produced – e.g. flexible production methods and co-operative relations between small, specialised firms.

Local policies which assist the reconstruction of mature industrial areas are considered to be "indirect", such as factor-creating policies to promote incentives and nurture established, specialised firms,

recruitment programmes tailored to suit the needs of local firms, incentives and support for constructive labour relations and flexible job scheduling, increased awareness in the public schooling system of the skills required by local firms; and the development of a business- and government-supported apprentice system to fuel the growth of customised firms.

2.2.2. Localisation of industrial development and human resources

The importance of *production context* has been overlooked in the literature concerning firm behaviour. Economic development is increasingly a local, bottom-up phenomenon in the context of global restructuring, and neither the public nor private sectors of the economy alone can adequately plan for change (Ettlinger 1994;144). Government and business must therefore enter into a partnership to achieve local development (see e.g. Barrett et al. 1996); even if the efficacy of this arrangement for achieving local economic development can be questioned (e.g. Bradley & Taylor 1996). Localities are not fully autonomous and that they have to operate in the context of the parameters which define the national production systems within which firms and workers operate (Ettlinger 1994;145):

> A nation typically is characterised by a particular mode of production (allowing for internal variations with that mode) which encompasses a tradition of public-private relations, a system of industrial finance, and institutionalised labour relations. Indeed, profound differences among national modes of production have rendered plans for inter-national, *regional* integration complex and difficult...
>
> ...variations in the degree to which local economies change is in part a function of the character of social relations in locales, defined in terms of the degree to which sense of community and co-operativeness through kin or non-kin (social, economic, political) relations are achieved (or not achieved).

Some national contexts are more conducive than others for effective strategies of local development, e.g. U.S., British, German and Italian contexts. Ettlinger finds strong parallels in the U.S. and British contexts, where because of a strong element of Taylorist[2] work

[2] Taylorist work organisation: extensive division of labour, narrowly defined jobs with low skill content, the separation of planning and execution of work and a related gulf between blue- and white-collar work, an extensive managerial apparatus organised along hierachical lines, bureaucratic administration and close supervision (Loveman & Sengenberger 1990:2)

organisation, which supports a "class structure" and a large niche for unskilled workers, labour-management relations are generally hostile. In contrast, German has, for example, developed an industry-related educational system to complement an apprenticeship system financed jointly by corporations and the state.

In Italy, on the other hand, a weak central state after the Second World War had led to the domination of the economy by large corporations. In seeking to restrict the power of these organisations, measures were introduced that favoured small firms (15 employees or less). In this context, small-scale industries developed in north-central Italy in the 1970s to become what is now called "Third Italy" (e.g. Capecchi 1989, Poire & Sabel 1983). One of the most important factors assisting small scale industry in Third Italy was its development in the context of *small-scale society*. This society was characterised by strong kin-related networks and artisan traditions (see also Merlo & Fodde 1996). Ettlinger (1994; 156 , citing Nanetti 1988) refers to this as a *collaborative environment*, in which local governments and political culture have evolved differently from that of the national government:

> ... local governments have been open to participating in industrial change, more as a partner than as an opponent. This socio-political environment flourished as crises eventually prompted formal decentralisation and regionalisation of Italy's growth policies during the 1970s, thus providing the institutional foundation for local-level public-private initiatives.

Ettlinger (1994; 161) concludes that despite the trend for globalised production, national boundaries are still significant when dealing with modes of industrial production. Different nations have differing modes of production that have resulted from variations in labour-management relations, production strategies, systems of industrial financing, and public-private sector relations. Uncompetitive national models of production may be slow to change. Consequently, local economic development becomes a question of how to overcome the national structural constraints by the development of small-scale co-operative networks at the local community level.

Ettlinger (1994;158) considers that the positive experiences of the reconstruction of mature industrial region of Massachusetts and the growth of production networks in "Third Italy" may be replicable elsewhere. The preconditions for such a process being that the region in question should have a history of interconnected social relations through community organisation, labour relations and/or kinship:

> ...the smaller the geographic scale of a ... community and the greater the

> solidarity and pre-existing co-operativeness of social relations, the better the prospects for successful public-private partnerships and localised development...The prospects of a highly competitive, small-firm sector in an old industrial, non-metropolitan region...with a population of about 200 000 may be better than in a metropolitan area ... with a population of over one million.

This is because a firm's performance is tied to the performance of the system of firms to which it belongs. As Ettlinger & Patton (1996;287) have observed:

> Performance is ... conceptualised as a shared phenomenon - not as an option, but as a matter of principle.....Moreover, if inter-firm relations are regionally or locally concentrated, the failure of performance to spread throughout the system may have negative consequences for local development.

The principal tool for achieving increased performance of firms, and systems of firms, is contended to be investments in human resources. Thus, while Ettlinger & Patton (1996;299) admit that technological change is an important part of the process or reconstruction and increased competitiveness, their empirical research demonstrates the need for a dynamic system that values workers and human relations. Technology's effective implementation requires that existing resources, and especially human resources, are fully and constructively utilised. This process of *performance sharing* depends upon the development of training schemes for the labour force.

The localisation process brings further advantages in the form of social commitment to the given locality, as well as commitment to the learning processes upon which the locality's industrial specialisation depends. These commitments are sometimes referred to as *embeddedness*, or shared performance (e.g. Ettlinger & Patton 1996). An important behaviour aspect of this increased social commitment is the building of trust, or at least "negotiated loyalty", between the actors in the production system (Sabel 1992;218, Malmberg 1996;395–7). Without this trust, the synergy between the competitive ethic and the co-operative ethic, which are so important for the building of local knowledge bases and local milieu supportive of enterprise, fails to develop. A business environment in which small firms merely compete, rather than co-operate and compete, is doomed to failure.

Lorenzen (1998b;149) claims that trust is an institutional precondition for co-operation. Trust is based as much on "know-who" as "know-how". Lorenzen outlines two principal forms of trust, personal trust which can be seen as the basis for trust between particular partners and social trust which, following Coleman (1984), is seen as

the circumstance within a group of actors in which all expect the other members to behave without opportunism, even if not all of them have personal experience of co-operation with each other. Maskell (1998;115), in a study of the Danish wooden furniture industry, is unequivocal on this issue:

> "A vital lubricant in ... local knowledge-exchange is the existence of mutual trust, related to proximity in a social and cultural sense. Where shared trust is present, knowledge of importance for the functioning of the industry tends to become embedded, not only in individual skills, and the routines and procedures of firms, but also in the milieu as such".

2.2.3. Industrial districts and agglomerations of firms

Regional concentration or localisation can lead to a considerable stimulus to factor creation, and to the upgrading of existing factors. There are however a number of structural variations in such industrial clusters or districts, while the concept of "new industrial space" referred to above, essentially addresses the question of whether or not the mutually supporting determinants for industrial competitiveness as outlined by Porter (1990) can be formed or not. The implication being that mature industrial districts no longer contain the ability to innovate and constantly renew their factors of production. The "new industrial space" concept explicitly requires the development of SMEs, and a number of studies, e.g. Markusen (1996) examines industrial space from the standpoint of industrial production structure.

The basic industrial district is *Marshallian* in form (Marshall 1920), and Markusen (1996) demonstrates that the industrial districts of the Third Italy, for example, are simply a modification of this form (Table 2.1). Markusen (1996) also identifies other types of industrial districts: Hub-and-spoke districts, satellite industrial platforms and state-anchored industrial districts. The first three are relevant to the development of value-added secondary manufacturing, whereas the state-anchored system is oriented towards large-scale industry.

The essential elements of the Marshallian industrial district revolve around small, locally owned firms that make their own production and investment decisions. Scale economies are limited, while trade is often based on long-term commitments. Markusen (1996) notes the importance of the nature and quality of the local labour market in the Marshallian district, as it is internal and highly flexible. "Individuals move from firm to firm, while owners as well as workers live in the same community where they benefit from the fact that "the secrets of industry are in the air" (i.e. the process of embeddedness). Such districts lead to the development of relatively specialised servic-

Table 2.1. Characteristics of Marshallian, Italian and Hub-and-spoke types of industrial districts (Markusen 1996:298–9)

Marshallian industrial districts

- Business structure dominated by small, locally own firms
- Scale economies relatively low
- Substantial intra-district trade among buyers and suppliers
- Key investment decisions made locally
- Long-term contracts and commitments between local buyers and suppliers
- Low degrees of co-operation or linkages with firms external to the district
- Labour market internal to the district, highly flexible
- Workers committed to district, rather than to firms
- Evolution of unique local cultural identity bonds
- Specialised sources of finance, technical expertise, business services available in district
- Existence of "patient capital"[1] within district
- Some instability, but good long-term prospects for growth and employment

Italian variant (in addition to the above)

- High incidence of exchange of employees between customers and suppliers
- High degree of co-operation among competitor firms to share risk, stabilise market and share innovation
- Disproportionate shares of workers engaged in design and innovation
- Strong trade associations that provide a shared infrastructure - management, training, marketing, technical or financial help, i.e. mechanisms for risk sharing and stabilisation
- Strong local government role in regulating and promoting core industries

Hub- and -spoke districts

- Business structure dominated by one or several large, vertically integrated firms surrounded by suppliers
- Core firms embedded non-locally, with substantial links to suppliers and competitors outside the district
- Scale economies relatively high
- Substantial intra-district trade among dominant firms and suppliers
- Key investment decisions made locally, but spread out globally
- Long-term contracts and commitments between dominant firms and suppliers
- High degrees of co-operation, linkages with external firms both locally and externally
- Moderate incidence of exchange of personnel between customers and suppliers
- Low degree of co-operation among large competitor firms to share risk, stabilise market, share innovation
- Labour market internal to the district, less flexible
- Disproportionate share of blue-collar workers
- Workers committed to large firms first, then to district, then to small firms
- Evolution of unique local cultural identity, bonds
- Specialised sources of finance, technical expertise, business services dominated by large firms
- Little "patient capital" within district outside of large firms
- Absence of trade associations that provide shared infrastructure- management, training, marketing, technical or financial help, i.e. mechanisms for risk sharing and stabilisation
- Strong local government role in regulating and promoting core industries in and local and provincial and national government
- High degree of public involvement in providing infrastructure
- Long-term growth prospects dependent upon prospects for the industry and strategies of dominant firms

[1] "Patient capital" - Capital provided by local financial institutions willing to take longer-term risks because they have both inside information and trust in the entrepreneurs of local firms (Markusen 1996:300).

es that are tailored to the industries of the district. Such services include financial institutions that are willing to take longer-term risks because they have "inside information" and trust the local firms" (Markusen 1996;300).

This process of sustaining and encouraging local industry is also a characteristic of the Porter competitive advantage model. In order to maintain or develop competitive advantage, local firms must perceive the need to constantly upgrade the pool of factors of production and to work actively to stimulate investments in them (Porter 1990;135). A group of domestic rivals is also far superior to the dominance of a single, large firm for the encouragement and upgrading of domestically-based supporting industries (Porter 1990;140).

Particularly important with respect to the domestic industry structure is the role of determinants affecting the number, skills, and strategies of domestic rivals. Demand conditions enhance domestic rivalry when buyers seek multiple sources, which in turn encourages entry into the industrial branch in question. New entries into an industry are also directly or indirectly encouraged by strong national positions in *related or supporting industries*. The entry of suppliers to downstream industries provides a means for transmitting information and skills and thus supports the vertical interchange of innovations so important for competitive advantage. Employees of supplier firms often become entrepreneurs in the industry they serve when an opportunity is seen to transfer skills or to better exploit technology. Such entrants possess skills and relationships that can be important advantages (Porter 1990 140–143). Similarly, rivalry plays a direct role in stimulating improvements and innovations in the production system (*ibid.*). Domestic rivalry spills over to benefit the nation, by means of:

- simulating new rivals through spin-offs
- creating and attracting factors
- upgrading and expanding home demand
- encouraging and upgrading related and supporting industries channelling government policy in more effective directions

Small nations face many of the same problems as regions in terms of factor creation and the lack of domestic rivalry. Missing domestic rivalry may sometimes be offset by openness to international competition, or global strategies in which the nation's firms meet foreign rivals in many countries (e.g. IKEA's arrival in Finland stimulated the whole furniture branch). Competitive advantage is sustained because the country's or region's resources are widened and upgraded.

2.3. Regional divergence or convergence? – Myrdal revisited

2.3.1. Divergence or convergence?

The previous section outlined some of the key processes which are effecting SME development in the global economy. The concentration of factors of production and human resources were shown to be determinants of SMEs' success in coping with the post-Fordian restructuring of production. The formation of branch-specific industrial agglomerations, and the social-institutional process of localisation and embeddedness, were found to be associated with regions in which historical, cultural or political factors have enabled these processes to become established.

Regional specialisation has it problems, however. Under the conditions of the Single Market and EMU, such regions could be *unstable* in the absence of a portfolio of industries that might elevate the risk of economics shocks that would occur should a branch or sector of industry suddenly fail (e.g. Martin & Sundley 1996;278–279).

External economies are associated with market-size effects, and that the peripheral economies of the E.U. have been considered to be in a *divergent* position with respect to the core areas of Europe (e.g. Oscarsson 1989). On the other hand, it is also argued that post-Fordian production factors have become extremely mobile and that as a result of the development of intra-industrial trade, regions and nations are in fact economically *converging*, i.e., becoming increasing similar over time (Commission of the European Communities 1991). In such circumstances a country's capacity to build strong production networks is of critical importance.

In the post-Fordian era, innovation and technology are considered to allow growth to occur almost anywhere as development factors have become extremely mobile and are know no national or legal borders (O'Brien 1992;73). To achieve such convergence, beneficial market-size effects need to be created (Krugman 1993, Martin & Sundley 1996;282–3). Regional and local clusters, as described in section 2.2.3, are considered to provide empirical proof of the importance of external economies. Further, it is considered that *clusters define what industries should be supported by policy*. Indeed, according to Krugman (Martin & Sundley 1996;282–3) *the only justifiable industrial (trade) policy is in fact a regional industrial development policy*.

The allocation of economic activity (whether public or private) is

very much a question of political organisation (Urry 1984;53). Regionally-based, or sector-oriented, organisations can therefore play an important role in the process of economic change. Social circumstances, with their ability to reveal persistent forces, and start-off conditions, have largely been ignored in the convergence-divergence discussion. Existing start-off conditions, which are part of a historical process, may play an essential role in an area's receptivity to and assimilation of foreign trends and process (Rodríguez-Pose 1994;329). Innovation not only relies on the capacities of a few individuals and companies to invent new procedures and compile masses of information, but also on the capacity of new industrial production structures to supersede old ones and their ability to respond to challenges. The current development of a nation, region or a locality is the outcome of how different production systems, social and political regimes, and cultures have been successfully combined spatially (Rodríguez-Pose 1994;329).

2.3.2. Cumulative causation

The processes of divergence or convergence summarised above call to mind the theory of circular and cumulative causation (Myrdal 1957), which denies any equilibrium effects in regional dynamics. According to equilibrium theory, every disturbance in an economic system provokes a reaction directed towards restoring a new equilibrium. An economic system which is not at rest is considered to be moving towards equilibrium. Myrdal (1957;13) argues that there is no such tendency towards self-stabilisation in a normal socio-economic system, but that in reality the system moves away from such a situation. A change does not produce counter-balancing changes, but rather produces supporting changes that move the system further in the direction of the initial change – a cumulative process, which produces regional divergence.

The theory permits the cumulative process to be stopped or even reversed, but only by exogenous forces which must have the strength and direction to first bring the system to rest. The resulting system is unstable and any new exogenous change again starts a cumulative process away from the position of rest and in the direction of the new change. Exogenous changes that may bring a system to rest include policies, planned and applied with the intention of stopping the original direction of movement (Myrdal 1957;13).

The theory of circular and cumulative causation proposes that the accumulation of economic activities in prosperous, *growth regions* influences the less prosperous ones through centrifugal effects of

economic expansion. In this process, the demand for goods and services spread outwards to adjacent regions. Regions close to the growth centres frequently receive these *spread effects*, while regions in more distant locations may also benefit if favourable conditions exist for the production of goods for the growth areas. Such areas may attract sufficient economic activity to become new growth centres. Distant regions which are not able to supply goods for the growth centres suffer from *backwash effects*. The net movement of population, capital and goods is outwards, in favour of the growing regions. These movements are " the media through which the cumulative process evolves – upwards in the lucky regions and downwards in the unlucky ones" (Myrdal 1957;27–29).

Predicting the modern discussion on localisation, embeddedness and a society's self-fulfilling expectations, Myrdal (1957;30–31) argued that non-economic factors, e.g. social factor, are also important in the cumulative process towards regional inequality. All relevant adverse changes which originate outside of a region occur via migration, capital movements and trade, and so effect the whole spectrum of social relations.

Myrdal's theory, despite a few criticisms (e.g. Bronfenbrenner 1966), has been widely applied in Finnish regional investigations over the past three decades (e.g. Riihinen 1965, Hahtola 1973, Selby 1980), and has proved highly serviceable. Indeed, it is still clearly recognisable in current rural policy making (*Ihmisten maaseutu*... 2000;15)

2.4. Competitive advantage

Many of the issues so far raised in this chapter could, or do, find support from Porter's theory of competitive advantage of nations (Porter1990). This theory also provides an elegant conceptual frame (directly or indirectly) for any comparative investigation of industrial activity. The theory's particular strength, and relevance to the current problem, is that it explains why a nation without a strong home base in an industrial branch or segment will have difficulties in creating factor competitive advantage.

As Porter observes, much of the world's trade takes place between advanced industrial nations with similar factor endowments. At the same time, researchers have documented the large and growing volume of trade in products whose production involves similar factor proportions (i.e. convergence). Most world trade in fact takes place among advanced nations with broadly similar endowments of factors

(Porter 1990;14).

Competition in many industries has internationalised as firms form alliances with other firms from other nations to gain access to their strengths. The globalisation of industrial production acts to de-couple the firm from the factor endowment of a single nation. Similarly, improvements in logistics have lowered the cost of exchanging factors or factor dependent goods among nations. Nevertheless, while many factors are increasingly mobile, trade still persists (Porter 1990;14).

Competitive advantage is created and sustained through a highly *localised process* (compare e.g. Marshall 1920, Pyke & Sengenberger 1992, Lorenzen 1998a). Differences in national economic structures, values, cultures, institutions, and histories contribute profoundly to competitive success. Instead of deploying a fixed pool of factors of production, a more important issue is how firms and nations improve the *quality* of factors, raise the productivity with which they are utilised. Following this, it is pertinent to ask *why firms based in particular nations achieve international success in distinct segments and industries*? *Indeed, this is a question which is fundamental to the investigation in hand.*

The answer, according to Porter (1990;71), lies in four broad attributes of a nation that shape the environment in which firms compete. *This environment promotes or impedes the creation of competitive advantage.*

1. *Factor conditions* – the nation's position in factors of production, e.g. skilled labour or infrastructure, necessary to compete in a given industry.
2. *Demand conditions* – the nature of home demand for the industry's product or service.
3. *Related and supporting industries* – The presence or absence in the nation of supplier industries and related industries that are internationally competitive
4. *Firm strategy, structure and rivalry* – The conditions in the nation governing how companies are created, organised, and managed, and the nature of domestic rivalry
5. Two addition variables in the national system are *Chance* and *Government*. Government at all levels can improve or detract from the national advantage.

Factors may be inherited by a nation, or they may be created. The factors most important in achieving sustainable competitive advantage are the more advanced and specialised ones – and they are *created* (Porter 1990;80).

Nations succeed in industries where they are particularly good at

creating and upgrading the needed factors. Thus, nations will be competitive where they possess unusually high quality institutional mechanisms for specialised factor creation. The factor-creating mechanisms in a nation are more important to competitive advantage than the nation's current factor pool. Government efforts to create advanced specialised factors often fail unless the are closely coupled to industry, because government entities are slow or unable to identify new fields or the specialised needs of particular industries (Porter 1990;80). For this reason, government investments in factor creation usually concentrate on the more basic factors. Porter (1990;165) also stresses that competitive advantage of a nation is not dependent simply upon the factors of production, but on the ability to create and apply knowledge and technology to industrial competition.

2.5. Country-wise business cultures: some observations

Business culture is the sum of the attitudes, values and norms which underpin commercial activities and help shape the behaviour of companies in a given country (Randlesome et al. 1995;*xi*). Similarly, Randlesome (*ibid.*) claims that "there is no such thing as a single, homogenous European business culture. Europe contains as many business cultures as it does countries. Although the similarities between business cultures in Europe are legion, so are the differences". These individual cultures are particularly relevant when seen in the context of the concept of competitive advantage.

The business culture of any country will have evolved over time to arrive a set of norms, attitudes, behaviours and institutional structures (e.g. business legislation, taxation) which encourage, regulate or even restrict business activities (e.g. Porter 1990). Further, a business culture does not change quickly, but the business environment from which is derived, and with which it constantly interacts, may change rather quickly (Randlesome et al. 1995; *xiii*): the unification of Germany is a case in point. The advent of the EU and the Single Market has created the need for the business environments of many European countries to "adjust" – fairly rapidly in the case of the newer members of the European Union, e.g. Austria, Finland and Sweden. The United Kingdom, on the other hand, has become well known for its resistance to many of the (institutional) changes to the business environment adopted by the EU.

In Porter's model of competitive advantage, the role of govern-

ment is seen to be ancillary to the core business environment, which is based on factor conditions, supplier and customer conditions, as well upon sectoral and firm strategies. Government can and does effect these relations indirectly by improving or detracting from the national advantage by maintaining policies which influence each of the determinants of competitive advantage in a positive or negative way (Porter 1990;73, 126–9). Nations succeed in industries where they are particularly good at creating and upgrading the necessary factors. Thus, nations will be competitive where they possess unusually high quality institutional mechanisms for specialised factor creation. A particularly good example of this process is the Finnish paper industry (Lammi 1996, Hazley 2000). That said, it was the lack of functioning institutional mechanisms in post-war Italy which led to strongly localised, SME-oriented "industrial policies", which in turn led to the strong social embeddedness, and so encouraged the formation of the industrial districts for which Italy is now renown.

Porter (1990;73, 126–9).) warns that "government efforts to create advanced specialised factors often fail unless they are closely coupled to industry, because government entities are slow or unable to identify new fields or the specialised needs of particular industries". This warning can be seen to be particularly relevant to SMEs and VSEs, *which rarely have the political or institutional clout to advance their interests*. The formation of advanced factors of production consequently tend to evolve in favour of large scale industries (LSEs) because they have the necessary economic and political power to affect government policies in their favour.

3. MATERIAL AND METHOD

3.1. Choice of countries

Eight European countries were intuitively selected for inclusion in the investigation: Austria, Denmark, Finland, Germany, Ireland, Italy, Sweden and the United Kingdom. The selection of these countries was guided by prior knowledge of the structures of their forestry and forest industry branches. The aim was to include countries with considerable forest resources (Austria, Finland, Germany, Sweden) and countries poor in forest resources (Denmark, Ireland, the U.K.). Additionally, the aim was to include countries with a well-developed woodworking industrial sectors (Denmark, Germany, Italy, U.K.) but with different market structures (domestically oriented in the case of U.K., strongly export oriented in the case of Denmark). Ireland was included when it became known that it had a thriving woodworking industry with incipient Marshallian-type industrial districts are forming within it (e.g. Jacobson & Morttiar 1998). Italy and Denmark also have well-developed woodworking industrial districts (Merlo & Fodde 1996, Kristensen 1992, Lorenzen 1998b). Austria, Germany and Italy have special legislation supporting small (artisan) businesses. Forestry and forest industries in Sweden and Finland have many common features. Their social institutions are also very similar.

Key forest and forestry statistics for each case country are shown in Table 3.1. The considerable variation in each countries forest resource is readily observable. This variation is not simply a function of land surface area (e.g. Sweden is the largest country, Austria is the most mountainous). Each country has its own history of forest exploitation and especially the removal of forests for agricultural, industrial or urban purposes (e.g. Finland has the smallest proportion of non-forest land, Ireland the greatest). These histories are not the topic of this investigation.

The variations in the forest land areas of the selected countries are accentuated further when the forest areas *per inhabitant* are calculated. Finland is by far the most endowed nation in the investigation, with nearly 4 ha of forest per inhabitant. Sweden is next, with 2.5 ha/inhabitant, while in third place is Austria, but with less than 0.5 ha per inhabitant. Denmark, Italy and the U.K. have the lowest endowments of forest area per inhabitant: 0.09, 0.08 and 0.04 ha respectively.

Table 3.1. Background statistics of the case countries, 1990s

	Austria	Denmark	Finland	Germany	Ireland	Italy	Sweden	United Kingdom
Population 1998, mill.	8.1	5.3	5.2	82.1	3.7	57.4	8.9	58.6
Area, mill.ha	8.1	4.3	33.8	35.7	7.0	30.1	44.9	24.4
Forest area, mill.ha	3.9	0.4	23.4	10.7	0.6	8.6	28.0	2.4
Forest area/inh. (ha)	0.48	0.09	3.6	0.12	0.11	0.08	2.58	0.04
Vol. of growing stock, mill.m^3	953	54	1679	2674	30	743	2471	203
Net increment of growing stock, mill.m^3/yr	22	3.5	69.7	57.6	3.3	17.8	91.0	11
Roundwood production, mill.m^3/yr	14.4	2.2	46.5	39.3	2.2	9.1	56.3	7.2
Removals as % of annual increment	65.4	65.1	66.8	68.2	69.0	51.2	61.8	66.1
MVA/capita 1996, current USD	5636	5656	5488	6790	6314	4269	5888	4197
Share of MVA in GDP % at current prices	19.8	16.1	22.5	23.8	31.9	20.2	20.7	18.1

Sources: Suomen tilastollinen vuosikirja 1995, Österreichischer Waldbericht 1994, Metsätilastollinen vuosikirja 1996, 1997 Metsäntutkimuslaitos. FAO, Forest resources assessment 1990, Eurostat, Forest Statistics 1992-1996, Wirtschafts- und sozialstatistisches Taschenbuch 1997. UNIDO 1998

The employment structures of the case countries at the outset of the investigation (1996) are shown in Table 3.2. The importance of the primary sector in Ireland is particularly noticeable: this despite considerable structural changes in the Irish economy during the past decade. Germany, Italy and Austria have the largest manufacturing sectors, while Sweden has the smallest proportion of its labour force employed in the manufacturing sector. Denmark, Finland, Ireland and the U.K. each have 27% of their labour force employed in the manufacturing sector. Sweden, followed by the U.K. and Denmark, have the largest proportion of the labour force employed in the service sector, while Italy has the lowest. Public sector employment is proportionally the greatest in Sweden and smallest in Austria.

3.2. Material

Material for the investigation was collected in two ways. First, avail-

Table 3.2. Employment structure in case countries in 1996

	Total employment	Primary sector	Manufacturing sector	Service sector	Share in public sector (1995)
	(1000)	%	%	%*	%
Austria	3 710	7	31	62	17.7
Denmark	2 602	4	27	69	28.5
Finland	2 123	7	27	66	27.1
Germany	35 982	3	35	62	19.0
Ireland	1 317	11	27	62	20.6
Italy*	19 942	7	32	60	18.3
Sweden	3 963	3	26	71	32.9
U.K.	26 219	2	27	70	19.0

*1995

Sources: StatisticalYearbook of Finland 1998, Tilastokeskus Eurooppa-raportti: Toimialat ja työllisyys 1997.

able statistics concerning the production structure, wood consumption, employment, and economy of the forest sector were obtained from FAO, Eurostat, United Nation Industrial Develment Organisation (UNIDO) and national official statistics. This material was nonetheless insufficient to explain the institutional and social framework of small business developments, and to address this weakness a separate questionnaire investigation was conducted.

In the event, a number of difficulties were found in the available statistical data. These difficulties have also been reported elsewhere, e.g. Hyttinen et al. (1999), Hazley (2000). These include problems with different industrial classification systems (ISIC, SIC, NACE2, etc.), the internal comparability (lack of standardisation) in EUROSTAT, different definitions of small and medium sized enterprises, and the accessibility of national official statistics and their compatibility problems, as well as the fact that many national statistics are reported only in the domestic language! Each of these problems was met in the present investigation. Trying to solve these problems invariably led to a level of aggregation in the statistics which was higher than the ideal. In the end, it was decided to employ the highly aggregated statistics published by UNIDO (www.unido.org). The disadvantage of this solution was the loss of branch information, as the forest industry statistics are highly aggregated into four branches only (331 – wood products, 332 – furniture (non-metal), 341 – paper & paper products, and 342 – printing & publishing). The advantages of the UNIDO statistics, on the other hand, were their consistency

from country to country, and the fact that many aspects of manufacturing value added (MVA), employment, labour productivity and labour costs, were readily available.

Information on the business cultures of the case countries was acquired from selected literature. The most robust information for comparative purposes was provided *by The Global Competitiveness Report 1996* (WEF 1996). This report provided country-wise indices, scores and rankings for a wide range of indicators and questions concerning the business climate in each of main developed or developing countries (n=49) in the global economy.

3.3. Qualitative survey

From the outset, it was clear that the problems of definition and compatibility between industrial classifications, statistical definitions, etc., would compromise any examination of woodworking enterprise. Further, the theoretical frame gave indications that quantitative data alone would not suffice to demonstrate how SMEs operate in their industrial-institutional environment. Porter (1990), it was noted, was not alone in requiring qualitative observations to support more direct empirical (quantitative) observations. Further, earlier studies have indicated that the behaviour of small-scale entrepreneurs is often at best boundedly rational, and often satisficing (see section 2.6). Partly for this reason, and for reasons of the benefits of external economies, the often low level of inter-firm organisation of SMEs can be off-set by the reported benefits of networking, or other formal and informal groupings. The learning process in firms, especially small firms, has also received considerable attention in recent literature, and in many countries, extension and advisory bodies exist to assist small firms, and to develop the industrial branches in question.

To acquire this material, a questionnaire was administered to the associations and other organisations that represent the enterprises in the branches of the forest industry sector. In this way, an informed aggregate view of the workings of the branches in question and the role of small businesses in those branches was obtained. The branches were as follows:

0202	Forestry related services
201	Sawmilling, planing & impregnation
202	Veneer & wood-based panels
2030	Builders' carpentry and joinery
20301	Wooden house manufacture
204	Wooden packaging and containers
205	Other wooden goods (fencing, woodturning, wooden craft products, etc)
361	Wooden furniture

In the Finnish part of the present investigation, qualitative data was also collected at the entrepreneurial level (e.g. Petäjistö & Mäkinen 1999, Petäjistö *et al.* 2000, 2001).

The survey questionnaire (Appendix 1) was initially constructed on the basis of the theoretical frame, and then developed in conjunction with the project's contacts in each country. The two main problems to be solved were a) adjusting the theoretically oriented questions to the reality on the ground in each country, and b) compatibility of the questions after translation into the domestic language. These were significant problems, and many iterations were required to solve them. First to iron out theoretical idealism and obtain real world practicality – e.g. questions which might applied in, say, a British context were not necessarily understandable in an Austrian or Italian context, and so on. Then came the problem of ensuring the translations maintained the spirit and the letter of each question. This process was time consuming, but it also became part of the learning process, as it illustrated the problems of cross-cultural and multilingual studies.

The questionnaire was sent to some 65 organisations representing woodworking industrial branches in eight European countries: Austria, Denmark, Finland, Germany, Ireland, Italy, Sweden and the United Kingdom. A wide range of organisational structures was represented, ranging from single, centralised organisations, often representing more than one industrial branch, e.g. as found in Finland, Denmark, and Sweden, to countries with a plethora of organisations representing every branch or craft, at national. Regional or even local levels. Italy was the nest example of this type, Germany naturally has a strongly provincial organisation, while the U.K. has many branch organisations, some of them being very small ("one man and his wife") and rather passive, with others being very active and corporate in their thinking.

In each country, the participants were telephoned in advance to acquire their willingness to participate in the investigation. Only willing participants were sent the questionnaire. Unfortunately, this

was not sufficient to secure 100% returns, and even after several follow-up telephone calls, some organisations failed to respond. In a number of cases in Italy, the questionnaire was completed at an interview.

Fifty-six usable questionnaire returns were returned. Several organisations were too small to be able to answer many of the questions, and where the omitted questions were too plentiful, the questionnaire was omitted from the survey. In the U.K. in particular, a number of small branch organisations declined to take part in the survey. The Italian woodworking industry had the greatest number of organisations, and they answered the questionnaire very thoroughly. Danish associations proved to be the most reluctant participants, and only three returns out of ten were secured.

3.4. Method

The limited number of cases (organisations: n=56) and countries (n=8) restricted the choice of methodologies. The structure of the variables also limited the applicability of non-parametric statistics (which can sometimes be used where the number of observations is low). The country-wise analysis based on the UNIDO and other statistics therefore consisted mainly of cross tabulation and grouping analyses, in order to examine the data by countries, or by specific attributes.

The method employed for the initial analysis of the questionnaire-based data reported here was cross-tabulation, followed by factor analysis. The software used was SYSTAT 6.0 for Windows. The theory of factor analysis will not be discussed in detail here, suffice it to say that that it is multivariate method which enables the identification of groups of inter-correlated variables. The advantage of the method is that it can reduce a large number of variables or attributes to a smaller number.

An additional advantage of the method is that these reduced "factors" or "components" have less error and are more reliable measures than the original variables from which they are constructed. The principal components (PCA) method of factor analysis was employed in this investigation because of the ability of the method in SYSTAT to compute component scores.

To achieve theoretically ideal factors or components as possible, the data set can be rotated in the factor space to optimise the factor structure. Normally, an orthogonal rotation is employed (*varimax*), which maintains the constraint of zero correlation between factors.

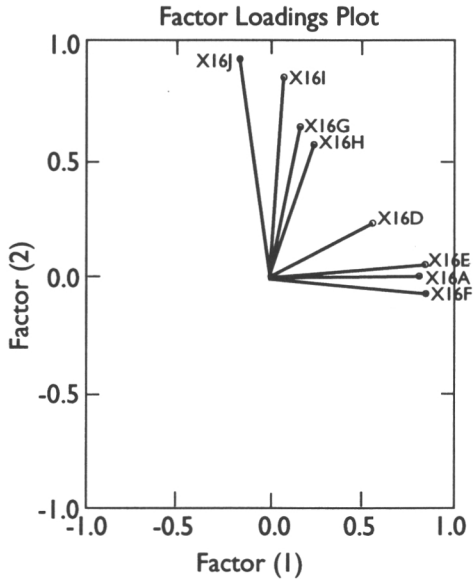

Figure 3.1. Demonstration of varimax solution (oblique rotation) of Principle Components PC161 and PC162

However, this solution does not always optimise the identification of groups of inter-related variables. Where this is the top priority, *oblique* rotations can be used to highlight such groups of variables. Both types of rotation are used here, the choice being made on the basis of inspections of the factor vectors (i.e. the way in which each variable contributes to the structure of the factor). The figure below shows the oblique rotation used in the principal component solution for question 16 of the questionnaire (*How does your organisation perceive other organisations' attitudes towards small woodworking businesses?*).

The figure shows how the two components were formed: variables *x16h, g, i* and *j* forming one component, the other being formed by *x16a, d, e* and *f*. The varimax rotation resulted in a more even "fan" of vectors with a less clear break between variable *x16d* and *x16h*.

Scores can be computed for each component and used as variables for further analysis. The scores are *standardised measures*, the mean for each factor being zero, and in the case of the *varimax* rotation solution, the factors have zero correlation, which can be very useful when they are used in further analyses.

The country-wise average scores in Chapter 7 are based on the scores gained by each organisation. As the mean score for each component in any given PC solution is zero, the averaged scores for each country shows the relative strength or weakness of that country

with respect to the component (attributes) in question. These strengths or weaknesses are, in fact, demonstrate any given country's comparative advantage or disadvantage with respect to the eight countries as a whole.

The country-wise scores were also subjected to cluster analysis (SYSTAT 6 for Windows). However, this did not provide any significant additional information, as the results simply confirmed the patterns observable in the country-wise average component score figures.

The small number of countries (observations) meant that many statistical analyses were either unreliable or impossible. Non-parametric Spearman rank correlation was employed for the limited testing of certain relationships.

4. FORESTRY AND THE PRIMARY FOREST INDUSTRIES IN THE CASE COUNTRIES

4.1. Forest resources and their use

4.1.1. Forest resources

Hazley (2000;41–49, based on Eurostat) and Hyttinen et al (1999;32–41) present a detailed summary of the key forestry statistics of countries in the European Union. With such fresh reports to hand, the present chapter will only briefly describe some of the key aspects of the case-countries' forest resources and their consumption.

It would seem self-evident that in any examination of forest-based industries the quantity of wood available on the domestic market would be of paramount importance. In the case of large-scale, primary wood processing industries (sawn wood, wood-based panels, pulp & paper) the supply of industrial roundwood is clearly of paramount importance. However, as demonstrated by Petäjistö et al (1997), this is not necessary so in the case of secondary, value-added wood-based manufacturing industries (wooden products, furniture, paper products and publishing and printing).

Considerable variations exist in the forest cover, and state of forestry, in the EU countries as a whole, and the case studies in this investigation demonstrate this clearly. First, the area under forest in the case countries varies considerable (Figure 4.1). Finland and Sweden are by far the most forested countries of the EU, with over 70% of the land area under forests in both cases. Austria, too, has nearly 50% of its land area under forests. Denmark, the U.K. and Ireland have the least forests, c. 10% of their land area. These figures are also reflected in the area of forests per inhabitant, with Finland have c. 4.5 ha of forest per inhabitant, while the U.K. has c. 0.04ha/inhabitant; not that this figure has any major significance with respect to the formation of forest and wood-based industries.

Forest ownership is predominantly private in all the case countries, Figure 4.2. Germany and Ireland have the highest proportion of public (state) owned forests, Sweden, Austria and Finland the lowest.

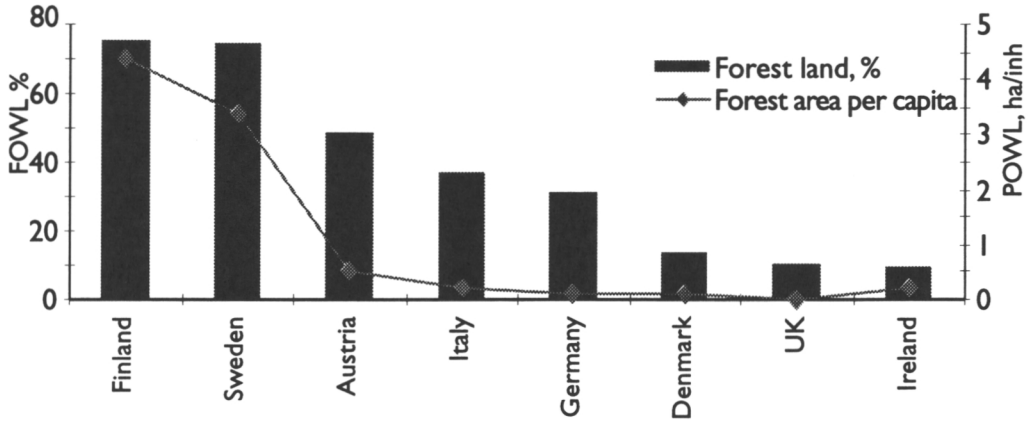

Figure 4.1. Forest area and forest area per inhabitant in the case countries

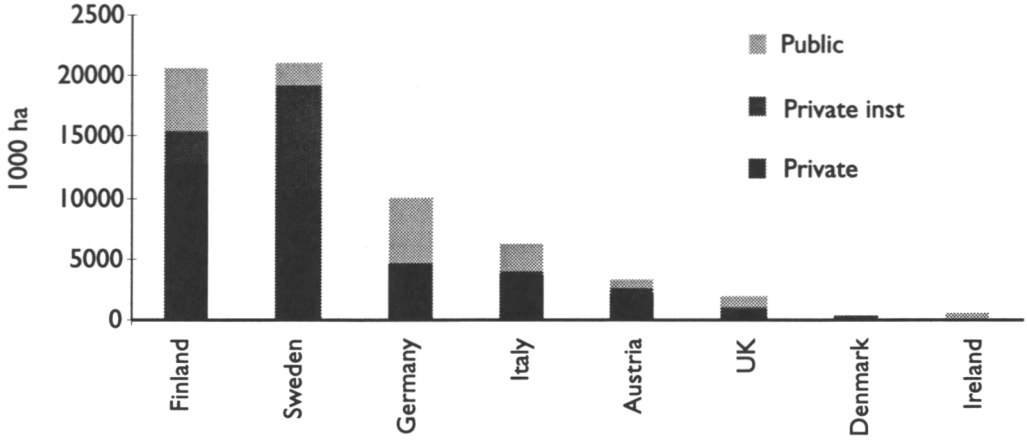

Figure 4.2. Forest ownership structure in the case countries

Sweden has the highest proportion of private institutional and company owned forests, a class of ownership not reported by Germany, Italy and Ireland, although in Ireland considerable areas of Sitka spruce plantations have be established by private institutions during the 1980s (Wall 1998).

More important than the area of forest is, of course, the volume of the growing stock, and its availability for industry. In this respect, Germany (2829 mill.m^3 o.b.), Sweden (2566 mill.m^3 o.b.) and Finland (1867 mill.m^3 o.b.) have the greatest forest reserves, Figure 4.3. The least growing stock is found in Denmark (55 mill.m^3 o.b.) and Ireland (41 mill.m^3 o.b.).

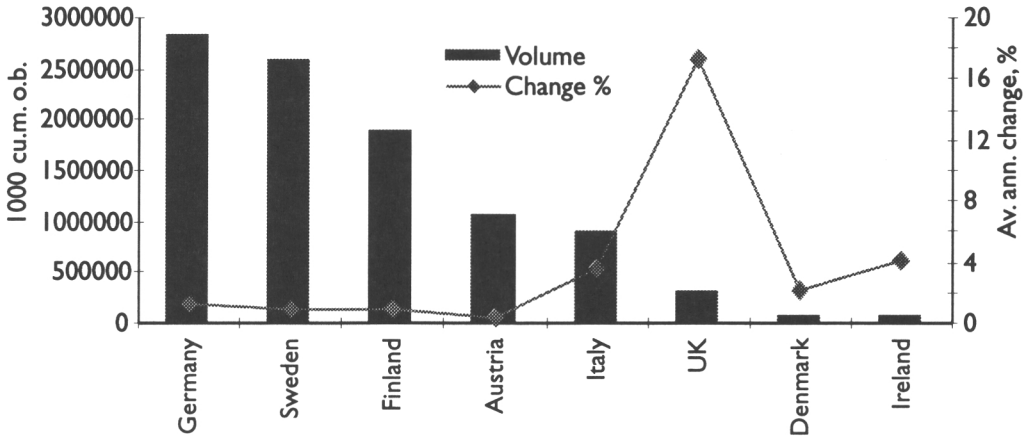

Figure 4.3. Volume of the forest growing stock and its average annual change

Afforestation has been practised in all countries, and many earlier afforestation programmes are now beginning to produce industrial timber. In the well-forested countries, e.g. Sweden and Finland, the average yearly increase in the growing stock available to industry derived from afforestation is smaller than in countries where the basic volume of the growing stock are low to begin with, e.g. U.K., Denmark and Ireland. In Italy, a great deal of marginal farmland, especially in upland areas, has been abandoned to natural forest regeneration, but this new woodland is often not of commercial value (Puissi & Pattenella 1999).

The net annual increments of the forests of the case countries are shown in Figure 4.4. Principles of sustainable forestry adhere in all cases, but for many reasons, this ideal is rarely achieved under today's social, economic and environmental political conditions. The percentage of the annual increment actually removed shows that removals fall short of the annual increment (Figure 4.4). Sweden, Denmark, Finland and Ireland harvest the highest proportion of the annual increment (each over 65%), while the lowest proportions are harvested in Germany (43%) and Italy (44%).

4.1.2. Roundwood production and consumption

The greatest producer of roundwood in the European Union is Sweden, at c. 60 mill.m^3/yr, followed by Finland at c. 50 million m^3/yr. The lowest figures are for Ireland and Denmark. Imports and exports of roundwood are restricted to small volumes in all cases, so the apparent consumption of roundwood is very similar to the actual

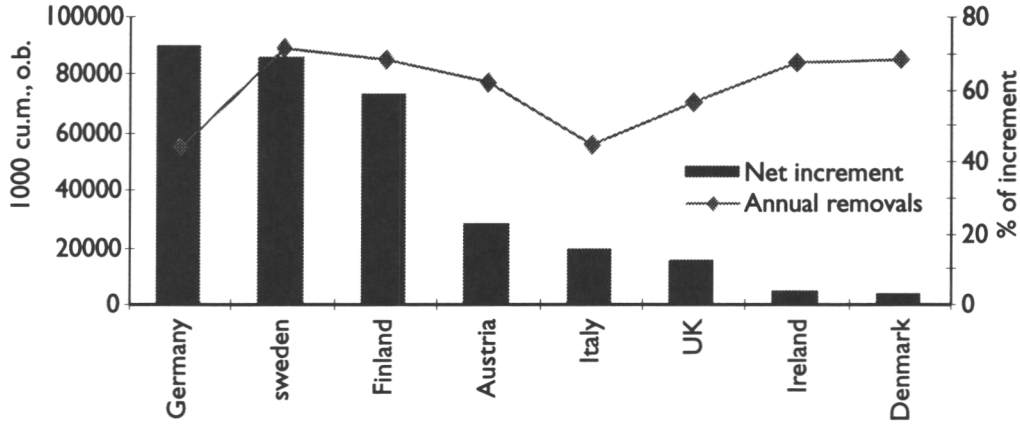

Figure 4.4. Annual growth increment and utilisation of the allowable cut

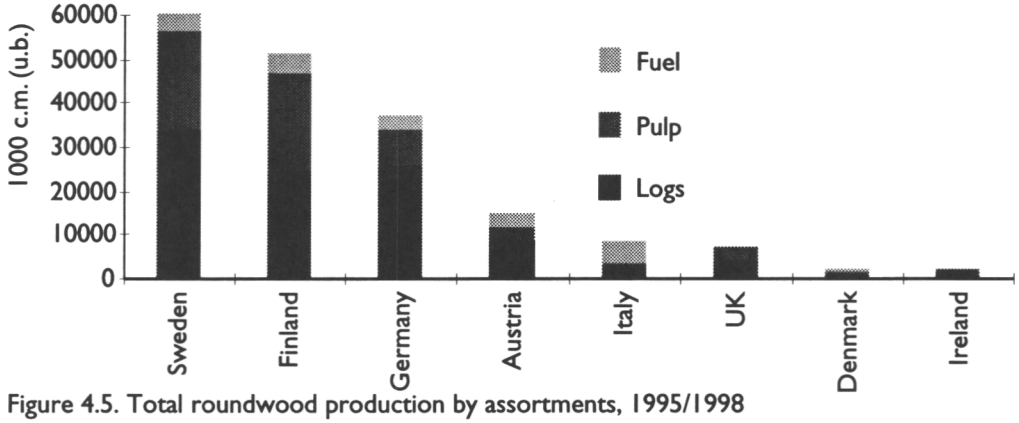

Figure 4.5. Total roundwood production by assortments, 1995/1998

Table 4.1. Apparent consumption of industrial roundwood (1000m³), 1998

	Total industrial roundwood production	Imports of industrial roundwood	Exports of industrial roundwood	Apparent consumption of industrial roundwood[1]
Austria	10858	5136	813	15181
Denmark	1192	943	414	1721
Finland	49639	9215	706	58147
Germany	36441	2157	4301	34297
Ireland	2193	40	297	1936
Italy	4367	5143	14	9496
Sweden	56440	9171	1420	64191
U.K.	7303	540	231	7612

[1]Apparent consumption = (total production + imports) - exports

Source: Finnish Statistical yearbook of Forestry

production figures. Despite Germany's considerable growing stock (Figure 4.3) and allowable cut (Figure 4.4.), the low utilisation of the annual increment (43%) means that its production of roundwood is considerable less than that of Finland or Sweden. This is clearly seen in Figure 4.5, which shows the production of roundwood by main assortments. Again, Sweden is the largest producer of both saw logs and pulpwood. Finland and Germany produce virtually the same quantity of saw logs, but Germany produces much less pulpwood. Proportionally, Germany produces the greatest amount of saw logs, followed by Austria. Fuelwood is still an important use of roundwood in Austria, Denmark and especially Italy, where fuelwood accounts for 57% of roundwood production.

The apparent consumption of industrial roundwood in 1998 in the case countries is shown in Table 4.1. Finland and Sweden not only had the largest apparent consumption of industrial roundwood, but were also the largest importers of industrial roundwood. Germany and Sweden were the largest exporters of industrial roundwood.

4.2. Primary wooden products

4.2.1. Sawn wood

Hazley (2000) has presented a detailed outline of the primary production of the mechanical (*ibid*;50–66) and chemical (*ibid*;111–170) forest industries in the E.U. The current outline will therefore present some aspects of roundwood utilisation and its trends in order to later place the role of woodworking SMEs in their industrial context.

Primary manufactured wooden goods fall into two broad classes, sawn goods, which also includes planed and impregnated goods, and wood-based panels, which includes veneer sheets and plywood. These are materials which can be used as such, e.g. sawn wood and plywood for concrete shuttering, or as a material input to secondary (value added) manufacturing, e.g. in the builders' carpentry & joinery, and furniture industrial branches.

Of the eight countries being examined, Sweden and Germany have the greatest production of sawn wood, followed by Finland and Austria. Ireland and Denmark produce only small amounts of sawn wood, while the U.K. and Italy form middle group (Table 4.2).
More significant than the production figures, however, are the figures for each country's self-sufficiency in sawn wood. Only Sweden, Finland and Austria are self-sufficient, and are the largest exporters.

Table 4.2. Sawn wood production and trade, apparent consumption and self-sufficiency ratio, by case countries, 1997

	Sawn wood production 1000m³	Self-sufficiency Ratio %	Sawn wood imports 1000m³	Sawn wood exports 1000m³
Austria	8450	181	1096	4953
Denmark	386	7	2356	367
Finland	10666	348	242	7535
Germany	14849	81	6132	2260
Ireland	642	64	462	282
Italy	1751	18	6905	140
Sweden	15669	345	211	10921
UK	2356	26	7102	93

Source: Eurostat 1998, FAO/FSY

Table 4.3. Apparent consumption and apparent of sawn wood consumption per inhabitant, by case countries, 1997

	Apparent consumption 1000m³	Apparent consumption per inhabitant (1000m³/inh)
Austria	4593	0.56
Denmark	2375	0.45
Finland	3373	0.65
Germany	18721	0.23
Ireland	822	0.22
Italy	8516	0.14
Sweden	4959	0.56
U.K.	9365	0.16

Sweden exports most sawn wood, followed by Finland, Austria and Germany. Germany, the U.K., Italy, Ireland and Denmark are strongly deficient in sawn wood, and this is seen in the import figures. The U.K. is the largest importer, followed by Italy and Germany. Germany, it will be noticed, is a major trader in sawn wood, with a large domestic production, as well as large imports and exports.

From the standpoint of the domestic use of sawn wood, therefore, the balance of trade, the apparent consumption of sawn wood, is the more indicative figure (Table 4.3).

Apparent consumption is greatest in Germany and the U.K., followed by Italy. When reduced to a standard measure of apparent

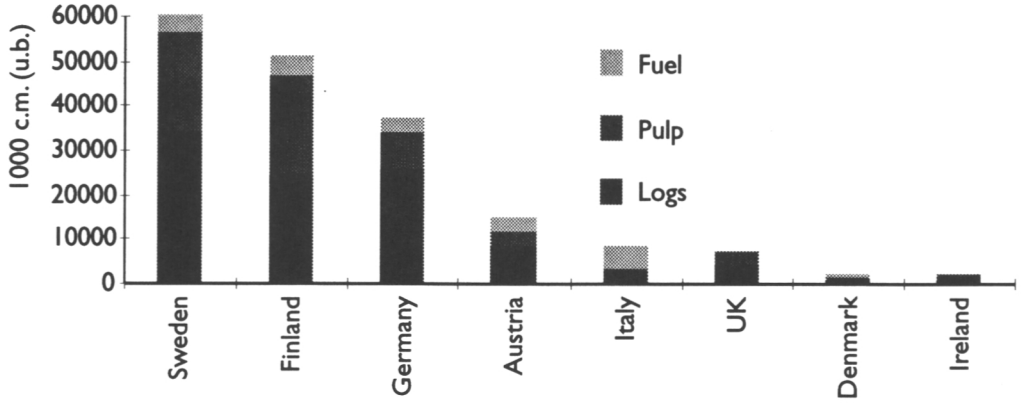

Figure 4.6. Apparent consumption of sawn wood products per capita, 1985 and 1997.

consumption per inhabitant, however, the situation changes, with Finland, Sweden and Austria being the largest *per capital* consumers. Italy and the U.K. become the smallest *per capita* consumers. Figure 4.6 shows the change in apparent consumption in sawn wood products which has taken place over the twelve-year period 1985 to 1997. All countries in the investigation show an increase in sawn wood consumption.

4.2.2. Wood-based panels

Wood-based panels, plywood and veneer sheets form a more diverse product group, with considerable production structure variations between countries (see Table 4.4). Finland, Italy and Germany are large producers of plywood and veneer sheets, Germany is by far the largest producer of particle board, followed by Italy, the U.K. and Austria. The distribution of the production of fibreboard is a little less concentrated, but again Germany is the main producer, followed by Italy and the U.K.

Taking the wood-based panels sector as a whole, Table 4.5, Germany produces approximately three times the volume than the next major producer, Italy. Nevertheless, despite large production volumes, Germany, Italy and the U.K. are deficient in wood-based panels, and have self-sufficiency ratios of 95%, 84% and 50% respectively. Sweden, too, has a 5% deficiency in wood-based panels. Denmark has the greatest deficiency, with a self-sufficiency ration of only 38%. The surplus producers of the eight countries in this study are Finland (self-sufficiency 281%), Austria (208%) and Ireland

Table 4.4. Production of wood-based panels, plywood and veneer sheets, by case countries, 1997

	Plywood and veneer sheets 1000m³	Particle board 1000m³	Fibreboard 1000m³
Austria	177	1771	120
Denmark	25	328	79
Finland	1061	475	120
Germany	784	9190	900
Ireland		200	330
Italy	914	2750	700
Sweden	126	612	192
UK	5	2175	460

(FAO Statistical Year Book)

Table 4.5. Wood-based panel and veneer sheet production and trade, and self-sufficiency ratio, by case countries, 1997

	Production 1997 1000m³	Self-sufficiency ratio, %	Imports 1997 1000m³	Exports 1997 1000m³
Austria	2098	208	417	1522
Denmark	338	38	907	261
Finland	1671	281	132	1199
Germany	11477	95	3487	2581
Ireland	530	116	181	266
Italy	3909	84	1409	880
Sweden	917	98	572	415
UK	2640	50	2872	321

Source: Eurostat

(116%). Ireland may seem an unlikely case to be a surplus producer, but Irish forest industry policy has focussed on the wood-based panel industry (Growing for the Future 1996) (See Box 1).

Apparent consumption is a better indicator of a country's real consumption of a product. Table 4.6. shows the total apparent consumption of wood-based panels and veneer sheets, and the apparent consumption per capita, in 1997. Germany is the major consumer of wood-based panels, followed by the U.K. and Italy: clearly, a population dependent relationship.

The picture changes once the apparent consumption is reduced to consumption *per capita* (Table 4.6). Denmark now becomes the greatest consumer, followed by Germany, Austria and Ireland. Italy

Table 4.6 Apparent consumption and apparent consumption of wood-based panels per inhabitant, by case countries, 1997

	Apparent consumption, 1000m³	Apparent consumption per capita, 1000m³
Austria	993	0.12
Denmark	984	0.18
Finland	604	0.11
Germany	12383	0.15
Ireland	445	0.12
Italy	4438	0.07
Sweden	1074	0.12
United Kingdom	5191	0.08

Irish Forest Products Industries

Despite its relative small current forest estate (wood production in the late 1990s = c.2.2 million m³/year, rising to c.3.5 million m³ in 2010), Ireland has embarked on an ambitious forest industries policy. The forest products industry branches in question being (primary) (secondary) wood-based panels and (tertiary) wooden furniture and wood crafts. In *Growing for the Future* (1996;59) the strategic plan for the development of the forest sector, it is stated that the Irish policy on forest products industries is to promote the establishment and continued development of the industry, in line with expected wood supply and demand, of a range of complementary primary, secondary and tertiary (including non-wood) forest-based processing industries. This policy is based on a number of considerations, including:

- A careful monitoring of volumes and trends in timber supply from Irish forests as the volume of raw material available for forest-based industries greatly increases over the next few decades;
- The optimum economic return on Irish forestry requires the development of domestic outlets for all the forest output;
- The increase of added-value opportunities which can enhance the national economy and social returns from forestry;
- The development of new products which will enhance the potential value of the industrial sector;
- Current and planned capacity within the sawn wood and wood-based panel industries will account for all available raw material supplies into the second decade of the 21st Century;
- Paper production may become an option after 2015.

The current features of the forest products industries are given as follows (Growing for the Future 1996;57)

Sawmilling
The sawmilling industry consists of some 100 mills of which 10 are medium sized (70 000 to 25 000m^3/year). These ten mills handle some 80% (1.4 million m^3)of the saw log supply. In 1996 there was a 30% over capacity in the industry. The sawmilling capacity is not expected to balance with roundwood supply until 2010 at the earliest.

Irish sawmills account for c. 60% of domestic demand for construction timber. Production also includes lower-value goods such as fencing materials and pallet wood. The sector is in need of rationalisation, including a reduction in the numbers of very small sawmills through amalgamations or closures.

Sawmills are concerned about the certainty of saw log supply because of their advanced commitments to customers. Imports of saw logs from Canada, Nordic and Baltic countries are restricted for sanitary reasons. Imported logs are given disease and insect prevention treatments.

Wood-based panels
The wood-based panel industry has been rapidly developed in Ireland as a result of strong incentives for inward foreign investments. The industry is well suited to Irish conditions as it converts low value forest output, such as pulpwood and sawmill residues into high value added products, and it is strongly positioned for product export and growth. The firms operating in Ireland are:

- Medite of Europe Ltd. A MDF plant which in 1995 produced c. 230 000 m^3, with plans to increase production to 300 000 m^3.
- Finsa Ltd. Which produces c.90 000 m^3 of chipboard per annum.
- Louisiana Pacific Coillte Ireland Ltd. This is plant is jointly owned by LP and the Irish Forest Service Coillte. It produces oriented strand board (OSB) and the planned production is 350 000 m^3/annum.
- Masonite Corporation has constructed a new $138 million new door facings plant which has a capacity of 14 million door facings/annum (120 000 m^3 of product).

Wooden furniture
The furniture and joinery industries are generally fragmented with large numbers of small, dual-purpose (furniture & joinery) firms, and relatively few medium-sized enterprises. The sector mainly uses broad-leaved timber and some better quality coniferous wood. Imported timber dominates the sector's raw material supply. The sector shows signs of regional concentration which is bringing a number of benefits.

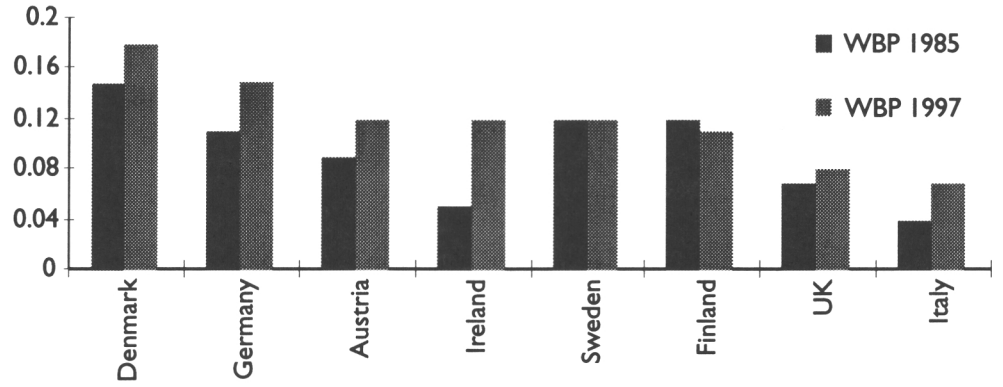

Figure 4.7. Apparent consumption of wood-based panels per inhabitant, 1985 and 1997 (Eurostat).

and the U.K. both have a very low apparent consumption of wood-based panels.

Figure 4.7 shows the apparent consumption of wood-based panels per inhabitant in 1985 and 1997. Increases in per capital consumption are largest in Ireland (140% increase) and Italy (75% increase). Ireland's major increase can be explained by new plant coming on stream during the 1990s (see Box), and the increased demand for building material that has resulted form ten years of strong economic growth. Apparent consumption per capita has remained static in Sweden and has declined in Finland.

5. PERFORMANCE AND EMPLOYMENT IN THE WOOD PRODUCTS SECTOR

5.1. Manufacturing enterprises and employees in the case countries

There were over 19 million non-primary enterprises in Europe-19 in 1996, according to the European Network for SME Research (ENSR 1997). These provided employment for over 115 million people (Table 5.1). The great majority of these firms were SMEs (firms employing less than 250 employees), while c.18 million enterprises were very small (VSEs), i.e. firms which employ less than 10 employees.

Because small, and especially very small, enterprises are characterised by relatively high entry and exit rates – the number of enterprises and their employees may fluctuate from year to year. During the 1990s, there has been a rising trend in the number of small and very-small enterprises, Table 5.2, which partly reflects an on-going processes in society (ENSR 1997). The reasons for this trend are two-fold, increasing self-employment, and the post-Fordian restructuring of industrial production. Self-employment (enterprises with no employees) tends to increase after the closure of large firms, or after some other economic disturbances causes high local or national unemployment. Self-employment (via the formation of new VSEs) can be the only alternative to unemployment. The positive effect of this process is that it may also lead to an increase in society's acceptance of the enterprise ethic and so increased the demand for enterprise. The birth of new enterprises has also been consequent upon the reorganisation of production with a concomitant downsizing of many large- or medium-scale firms. Former "in-house" production and services are sub-contracted to private enterprise; enterprises that are often set up by former employees of such firms. This latter process is important in creating regional concentrations of expertise. It is a process that can lead to the formation of industrial agglomerations or industrial districts, which in turn play an important role in the European woodworking industry.

Table 5.1. Enterprise numbers and employment in Europe, 1996[1]

		Enterprises					
		Very small	Small -sized	Medium	Total	LSE	Total
No. of enterprises (1000)	EU	17285	1105	165	18555	35	18590
	Non-EU	410	45	10	460	1	460
	Total	17695	1150	170	19015	40	19050
Employment (1000)	EU	37000	21110	15070	73180	38220	111410
	Non-EU	960	800	750	2510	1160	3670
	Total	37960	21920	15820	75700	39380	115080
Average enterprise size	EU	2	20	90	4	1035	6
	Non-EU	2	20	95	5	820	8
	Total	2	20	90	4	1030	6

[1] Due to rounding, it is not possible to devise average enterprise size from the data on employment and the number of enterprises
(Source: ENSR 1997)

Table 5.2. Growth of enterprise numbers in Europe, 1990, 1995 and 1996

Size class by no. of employees		1990	1995	1996
Very small	<=9	15210	14 835	17285
Small	10-49	975	1010	1105
Medium	50-249	130	155	165
SMEs, total	<=249	16315	16000	18555
Large	=>250	30	35	35
Total		16345	16035	18590

Source: Die KMU-Aktivitäten des Wirtschaftsministeriums Während der EU-Präsidentschaft wygsiwyg://main,69/ http://bmwa.gv.at/positionen/kmu/htm/01.10.1998.

Employment in European enterprises totalled c.115 million in 1996. Of these, 34% were employed in 40 000 large-scale enterprises (LSEs). The relative effect of these LSEs on employment is therefore considerably larger than that of the 19 million small- and very small enterprises. Be that as it may, these 19 million SMEs account for two-thirds of European non-primary sector employment.

The mean size of enterprises in the EU in 1996 was six employees, and eight in the Non-EU countries. This figure includes the owner/manager and his/her family members (ENSR 1997). The average size of enterprise varies considerably from country to country, as does the

Table 5.3. Size-class structure of non-primary private enterprise by case country, 1996

	Enterprises 1000	Average size	Size-class dominance[1]
Austria	220	11	SME
Denmark	230	7	SME
Finland	205	5	LSE
Germany	3440	8	LSE
Ireland	80	11	LSE
Italy	3345	4	VSE
Sweden	285	7	LSE
UK	3760	5	LSE
EU	18590	6	LSE
Europe-19	19050	6	LSE

[1] A country is said to be VSE, SME or LSE dominant depending upon which class has the largest share of total employment

(ENSR 1997, p.49)

basic nature of the industrial structure. Very small enterprises (employing less than 4 persons) are most common in Greece, Iceland, Italy and Portugal, where as the average size of enterprises is largest (ten or more employees) in Austria and Ireland, as well as Luxembourg, The Netherlands and Switzerland.

The basic enterprise size-structure for the case countries in the present report is given in Table 5.3. Despite the fact that Austria and Ireland have the largest number of employees per enterprise, Austria is nevertheless considered by ENSR (1997) to be SME-dominant, whereas the dominant industrial class in Ireland is the LSE. Apart from Denmark, which is SME-dominant, and Italy, which is dominated by VSEs, all other countries are considered to be LSE-dominant. The dominance of LSEs in an economy can be expected to have direct and indirect effects on policies that affect SMEs (the institutional position of SMEs will be discussed in more detail in Chapter 7).

The trend in employment in small and very small enterprises has been upwards during the 1990s (Table 5.4). As noted in section 5.1, this is not an unexpected result given that European countries have been recovering from the economic depression of the early 1990s. The greatest relative increase of employment has occurred in very small enterprises (VSEs) (+17%), compared to +12% of the LSEs. In absolute terms, LSEs employed c. 4200 more employees in 1996 than in 1990, but this compares unfavourably with an increase of 5500 employees in VSEs during the same period, and an overall increase in

Table 5.4. Growth of employment in European enterprises, 1990, 1995 and 1996

Size class by no. of Employees	1990	1995	1996	Change 1990=100
Very small 1–9	31 450	32 260	37 000	117
Small 10–49	20 500	18 825	21 110	103
Medium 50–249	15 350	15 015	15 070	98
SME total	67 300	66 100	73 180	108
Large 250 +	34 000	33 500	38 220	112
Total	101 300	999 600	111 410	110

Source: Die KMU-Aktivitäten des Wirtschaftsministeriums während der EU-Präsidentschaft wygsiwyg://main,69/http://bmwa.gv.at/positionen/kmu/htm /01.10.1998

Table 5.5. Size-class and performance of enterprises in the forest industry sector, EU, 1996

Branch of industry	Size-class Dominance	Enterprises (1000)	Av. Enterprise size	Relative labour Productivity of SMEs[1]	Relative Profitability of SMEs[2]
Manuf. of wood & wood products	SME	180	6	98	-2
Manuf. Of paper; paper products; Publishing & printing	SME	250	11	90	-5
- Paper & paper products	LSE	25	33	87	-3
- Printing & publishing	SME	225	8	90	-4

[1] Labour productivity (value added per employee) as percentage of country average

[2] Difference between value added and labour costs (inc. imputed wage of self-employed) as percentage of value added; result per size-class compared with country average.

(ESNR 1997)

employment of 5880 in the SME-sector (including a slight decrease in employment in medium-sized firms). These trends no doubt reflect the reorganisation of production mentioned above, and increased self-employment as a result of this restructuring.

5.2 Enterprise size in the wood products sector

The woodworking sector of European manufacturing industry is dominated by SMEs with an average size of six employees, including the owner/manager (e.g. ESNR 1997). Conversely, the paper manufacturers are large-scale firms, with 33 employees on average. However, when the printing & publishing branch is included, even the paper sector becomes SME-dominated, Table 5.5.

The average size of woodworking enterprises, by employment, during the period 1992–4, is shown in Figure 5.1. Ireland and Austria have the largest enterprises, with averages over 20 persons per enterprise. In the Irish case, this is due to recent foreign inward investment in the mechanical wood fibre industry. Sweden; Germany and Denmark form a central group of countries with averages around 12 to 15 employees, followed by the U.K. and Finland with c. 8 employees per enterprise. Not unexpectedly, given the cultural position of SMEs and VSEs in that country, Italy has the smallest woodworking enterprises.

A country's propensity to entrepreneurship can also be assessed by examining the number of enterprises per 1000 inhabitants. This in turn should reflect perceived opportunity. The number of woodworking units/1000 inhabitants is shown in Figure 5.2. While the number of units is not quite the same as the number of enterprises (an enterprise may own several units), the ratio is nonetheless a reasonable indicator of entrepreneurship. The fact that the highest number of enterprises per 1000 inhabitants is found in Italy is not surprising, but the fact that Finland has such a high rate of enterprises in the woodworking sector is – given that Finland is often regarded as having a

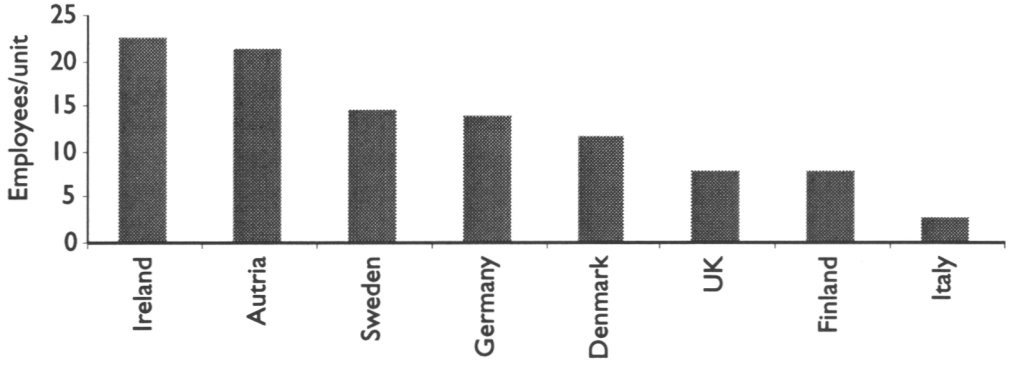

Figure 5.1. Average size of woodworking enterprises, 1992-4 (UN/EEC 1998).

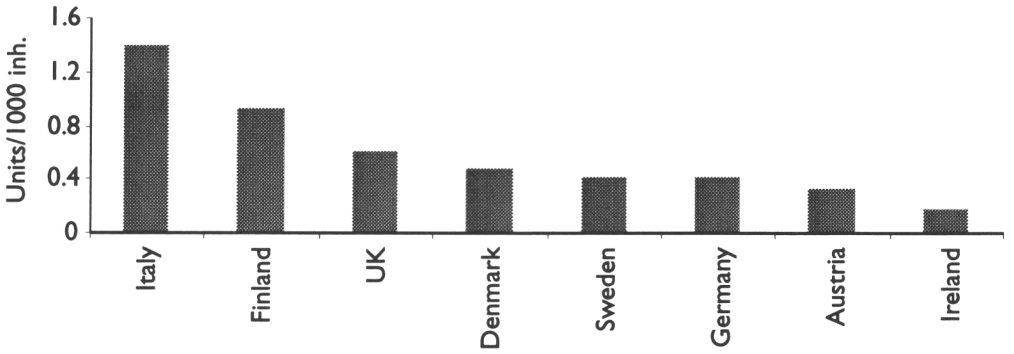

Figure 5.2. Woodworking units per 1000 inhabitants, 1992–94 (UN/EEC 1998).

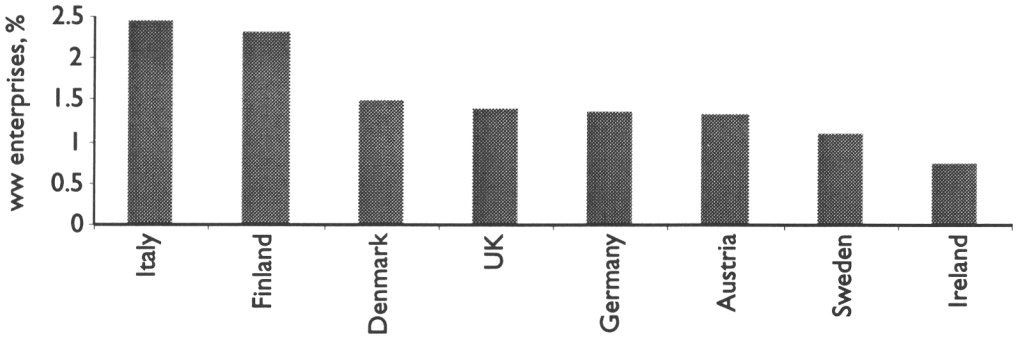

Figure 5.3. Woodworking enterprises as a proportion of total enterprises, %. 1992–94 (UN/EEC 1998).

low propensity for private enterprise. There are, however, a large number of small and medium-sized sawmills in Finland. In 1999, there were c. 2400 small sawmills (Ylitalo *et al.* 1999) despite a considerable reduction in their numbers over the past 30 years. Given its limited domestic wood resources, the U.K. also has a proportionally large number of woodworking enterprises per 1000 inhabitants.

When the number of woodworking enterprises is calculated as a proportion of all enterprises (Figure 5.3), Italy (2.4%) and Finland (2.3%) still remain in a significantly stronger position than other countries in the study. Indeed, with the exception of Ireland, where a few large units dominate, there is not a great deal of difference between the remaining five countries in the study, with figures ranging from 1 to 1.4%. Despite having an industrial policy that is geared to the needs of the forest industry cluster (which is dominated by the

large-scale concerns), Finland manages to maintain a large number of woodworking SMEs.

5.3. Employment in the forest sector and its changes

The wood products branch (331) makes the greatest proportional contribution to manufacturing employment in Finland and Sweden, as might be expected (Figure 5.4). Employment in the furniture branch (332) is proportionally strongest in Austria, followed by Denmark and Italy.

Absolute employment figures in the forest sector (Table 5.6) are partly dependent upon population-size, and so a better indicator of the performance of the forest industry branches as employers is the *change* in employment over a given time-span. Changes in employment are characterised by i) the general loss of jobs in the forest sector, and ii) the some notable successes in increasing employment one or two branches in one or two countries.

Finland had the greatest decline in forest sector employment during the period 1985-96, ranging from 15% in the paper & paper products sector and 32% losses in the wood products sector. The losses in Finland concern both primary manufacturing (331 and 341) and secondary manufacturing (332 and 342). The Swedish forest sector also experienced a decrease in employment in the primary manufacturing sectors, but it managed to increase employment in the printing & publishing branch (342), albeit by 900 jobs (2% over the period in question). Germany, too, lost many jobs in its forest sector, although in percentage terms they were not quite so large as the losses

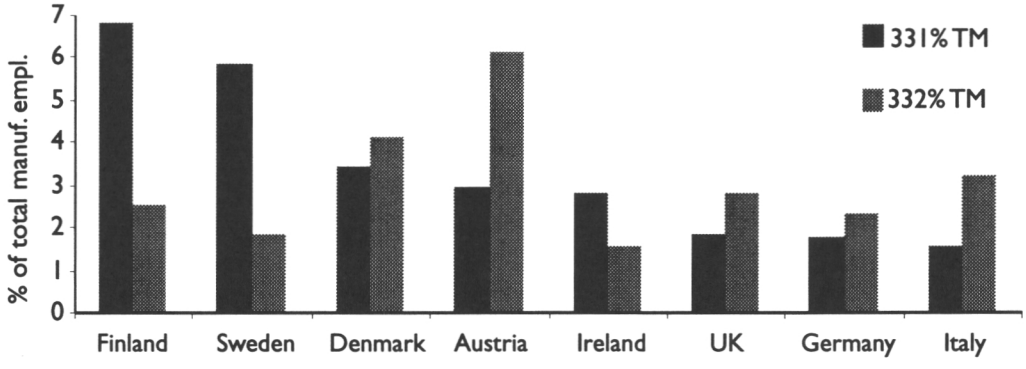

Figure 5.4. Employment in the wood products branch (331) and furniture branch (332) as a percentage of total manufacturing employment 1996/7 (UNIDO 1997).

Table 5.6 Employment in the forest sector, 1996/7, and absolute and percentage changes 1985-1996/7 by branches

	Wood products (331)			Furniture (332)			Paper & paper products	Printing & publishing
	Employment 1996	Absolute change, 1985–96	% change 1985–96	Employment 1996	Absolute change, 1985–96	% change 1985–96	% change 1985–96	% change 1985–96
Austria	15700	-1000	-6	32900	+4000	+13	-6	-20
Denmark	17648	+7480	+73	21181	+5680	+35	+11	+124
Finland	23964	-11560	-32	8957	-2850	-24	-15	-28
Germany[1]	112000	-17000	-13	154000	-28000	-15	-18	-11
Ireland	5778	+1470	+34	3044	-356	-10	+11	+14
Italy	41000	-10000	-2	89000	+17000	+23	0	0
Sweden	33500	-10800	-24	10400	-1400	-11	-20	+2
U.K.	75000	-5000	-6	116000	+15000	+15	-19	+3

[1]1991 to 1994
(Source: UNIDO 1997)

in Finland. The German situation almost certainly reflects the adjustments taking place in the German economy following re-unification in 1991. The U.K. has lost nearly one fifth of its jobs in the paper & paper products branch (341), and to a minor extent in the wood products branch (331), i.e. in the branches dominated by primary manufacturing, but employment in the value-added secondary manufacturing branches, noticeably the furniture industry (332), increased during the period.

Most noticeably, the Danish forest industries increased employment in all branches: doubling employment in printing & publishing, a near doubling in wood products, and significant increases in furniture and paper & paper products. Ireland, too, has seen employment growth in the wood products and also in the paper sector as a whole – an interesting result given Ireland's poor forest resources. Inward foreign investment (in the wood-based panel branch) from foreign investors (see Box 1, pages 44-45) is the main reason for the rapid increase in employment growth in the Irish wood products sector, notwithstanding the increased demand for wooden products, as well as paper products, as a result of the rapid growth of the Irish economy over the past decade. The only other major gains in employment have been in Italy's furniture branch.

In absolute terms, the employment situation in the forest industry

sectors was not positive during the period 1985–1997. However, the situation was clearly better in the case of the SME-dominant countries than in the LSE-dominant countries. Table 5.7. shows that in the LSE-dominant countries there was a loss of jobs in all forest industry sectors during the period 1985–1997. The least losses occurring in the printing & publishing branch. Conversely, the employment changes in the SME-dominant countries are all positive, albeit only very slightly so in the case of the paper & paper products branch. The wooden furniture and printing & publishing branches have experienced relatively strong employment growth in the SME-oriented countries during the period 1985–1997.

The frame of reference discussed the restructuring of European (and global) industrial production, and questioned whether this restructuring would lead to regional specialisation, regional convergence or regional divergence. The figures in Table 5.8 also show that, at least from the employment point of view, jobs have been lost in the LSE countries in all sectors of the forest industries, and gained in the SME countries. This again suggests that a re-organisation of production is taking place. The figures in Table 5.7 also indicate a greater ability of existing woodworking SME-dominant countries to at least maintain their competitiveness, and consequently maintain jobs. Table 5.8 shows a similar tendency, but in more detail.

The sawmill branch has lost jobs in both SME- and LSE-dominant countries due to considerable rationalisation that has been taking place in this industry. The loss of jobs in the palette branch reflect this, as palettes are a value-added production line often associated with small and medium-sized sawmills. The SME dominant countries were able to increase employment in the wood products branches in 1997–8, whereas there was a total job loss in the same branches in the LSE-dominant countries. The furniture industry also faired better in the SME-dominant countries compared with the LSE group, despite strong increases in employment in this industry in both country groups.

5.4. Economic performance of the wood products sector

5.4.1. Turnover

The turnovers of the European mechanical forest industry branches

Table 5.7. Annual average growth in employment in forest industry sectors (%), 1985-1997, by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$
Wooden products (331)	1.7	-2.0	0.16
Wooden furniture (332)	2.9	-2.2	0.01
Paper & paper products (341)	0.1	-2.3	0.20
Printing & publishing (342)	2.2	-1.1	0.27

(Source: UNIDO)

Table 5.8. Change in employment in wood processing branches, 1997–1998, by size-dominance classes

Branch	SME-dominant	LSE-dominant
Saw mills	-4.3	-2.2
Wood-based panels	1.4	-0.5
Builders' components	3.4	1.2
Palettes	-0.8	0.9
Total wood processing	0.7	-0.2
Furniture	7.2	6.9
Total	4.1	2.4

(Source:HDH/VDM)

Table 5.9. Change in turnover in the woodworking and furniture industries, 1997-8 (%), by case countries

	Sawmills	Wood-based panels	Building components	Palettes	Other	Total Wood processing	Furniiture	Total
Austria	11.8	-	30.5	-	-	18.7	27.5	22.2
Denmark	12.9	2.2	0.2	2.2	-1.5	1.5	5.0	3.6
Finland	-5.0	7.3	4.7	-3.0	-7.5	-0.6	6.2	0.7
Germany	-0.5	4.4	1.1	8.6	2.8	2.0	3.4	2.8
Ireland	3.8	5.8	-3.6	-5.1	8.6	2.0	4.6	3.1
Italy	-0.2	6.3	0.7	8.8	12.3	5.2	6.5	6.1
Sweden	-0.5	1.2	3.6	-4.2	-1.2	0.5	2.6	1.0
U.K.	8.6	-5.5	3.6	-2.7	2.3	1.5	5.2	4.0
European 15	0.8	5.1	5.4	-0.4	5.8	3.8	5.9	4.9

(Source: HDH/VDM 1999)

including furniture in 1998, and the change between 1997 and 1998 were given in a recent survey of the German woodworking sector (HDH/VDM 1999). The changes are summarised in Table 5.9.

Very strong growth (>20%) is evident for all those branches in Austria which have been traditional to its woodworking sector. Most of this growth was accounted for by the building components sector (30% growth) and the furniture sector (27% growth). In other words, growth has occurred in the value added secondary manufacturing branches (notwithstanding the 11% growth in the Austrian sawmill branch).

Italian woodworking branches had the next strongest growth (averaging 6% for the whole sector), with strong performances in the wood-based panel, palette, "other", and furniture branches. Finnish and Swedish woodworking branches exhibited the lowest overall growth (-0.6% and 0.5% respectively), largely due to poor growth in the sawmill and related palette branches. While Finland's miscellaneous "other" branch also performed weakly, its furniture branch performed well, growing 6% during the period 1997–98; the same order of growth as the Italian furniture sector. However, the Italian furniture sector's turnover was greater by a factor of 12.

An overall 3.6% growth in the turnover of Denmark's woodworking sector in 1997–1998 was largely due to the sawmill and furniture branches (12% and 5% growth respectively). The performances of other Danish woodworking branches were rather weak.

Only Ireland registered a decline in the turnover of its building components industry, a surprising result given the strong growth of the Irish economy during the 1990s. The Irish woodworking branches with the strongest growth in 1997–98 were "other products", wood-based panels, and furniture.

Table 5.10 Change in turnover in woodworking and furniture branches, 1997/8 (%), by size-class dominance

Branch	SME-dominant	LSE-dominant
Sawmills	8.1	1.2
Wood based panels	2.8	2.6
Builders' components	10.4	1.8
Palettes	3.6	-1.3
Total wood processing	8.4	1.1
Furniture	13	4.4
Total	10.6	2.3

In Sweden, there was modest growth in the builders components and furniture branches. Other branches performed weakly. In the U.K. the sawmill, building components and furniture branches performed strongly, but wood-based panels were weak, partly due to raw material constraints.

When assessed by SME- and LSE-dominant country groups, the changes in turnover of the branches in question are very marked for the SME-dominant groups of countries compared with the LSE-dominant group. This result would seem to lend strong support to the arguments presented in Chapter 2 that the flexible production and other production restructuring has benefited the SME business environment. Table 5.10 strongly suggests that SMEs been more able to quickly respond to changing market conditions than firms in LSE environments.

5.4.2. Manufacturing value added

While the study concentrates on the woodworking and wooden furniture industries, the paper and paper products industries are occasionally included for comparison's sake. The roles of woodworking (331) and wooden furniture (332) as a percentage of the total manufacturing value added (MVA) in the case countries is given in Figure 5.5.

The wood products branch (331) contributed relatively strongly to the total manufacturing value added in Finland and Sweden. This is, of course, strongly dependent on the production of sawn timber and wood-based panels (i.e. primary manufactured products). In the other countries, the role of the woodworking sector is less pronounced. Austria, Italy and Denmark, on the other hand, reveal a strong value added performance with respect to furniture manufacturing (332). Even in the U.K., the furniture sector's contribution to total MVA is greater than in Finland or Sweden. As shown by Petäjistö et al. (1997), the forest rich Nordic countries are exporters of primary manufactured, low value added goods (sawn timber, wood-based panels), while the importing countries perform value-added secondary manufacturing.

Table 5.11 shows that the wooden products branch (331), which includes saw goods, wood-based panels and other primary manufactured wooded goods, is strongly associated with LSE-dominant countries (including Finland and Sweden) which in turn reflects the importance of manufacturing of primary wooden goods to the overall industrial production structure in those countries. Similarly, the contribution of paper & paper products (341) to the total MVA of the LSE countries is twice that of the SME countries. This is a considerable

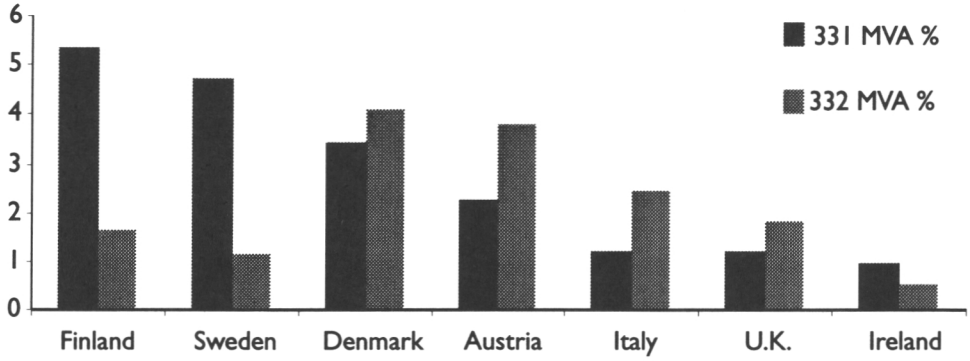

Figure 5.5. Wood products (331) and furniture (332) shares of the total manufacturing value added, 1996/7 (UNIDO 1997).

Table 5.11. Contribution of the forest industry sectors to manufactured value added (MVA), by SME- and LSE-dominant countries, 1996

	SME -dominant	LSE-dominant	$2t_{prob}$
Manufacturing Value Added/capita (1997), 1990 USD	4723	5971	0.12
Share of MVA of GDP, 1997 (%)	19.9	25.6	0.16
Share of wood products (331) of MVA, 1996, %	2.6	3.7	0.36
Share of furniture (332) of MVA, 1996, %	4.4	2.1	0.10
Share of paper & paper products (341) of MVA, 1996, %	2.5	5.0	0.22
Share of printing & publishing (342) of MVA, 1996, %	5.9	6.1	0.95

$2t_{prob}$ = Two sample t-test
(Source: UNIDO 1997)

difference, even allowing for the fact that the UNIDO statistics have aggregated the production of primary paper and pulp with the secondary manufacture of paper products. Printing & publishing (342), which should be more foot-loose, proved to be so.

Furniture (332) production and its contribution to total MVA was much higher in the SME-dominant countries than in the LSE countries. Indeed, *the furniture branch contributed 4.4% to total MVA in the SME countries, which compared favourably with the 5% contribution of the paper & paper products branch (341) to the total MVA of the LSE countries*. Furthermore, the average annual growth of manufactured value added in the forest industry sectors during the period 1985–1997 (at 1990 prices) was very much greater in the SME-dominant countries than in the LSE-dominant countries (Table 5.11).

The world economy has undergone considerable changes during

Table 5.12. Change in forest industries' share of total manufacturing value added, 1985–1996, in percentage points

	Wooden Products (331)	Furniture (332)	Paper & paper Products (341)	Printing & publishing (342)
Austria	0	0.8	0.1	-0.5
Denmark	0.8	-0.4	-0.3	0.1
Finland	0.5	0	10.2	-3.2
Ireland	-0.2	-0.2	-0.6	-0.7
Italy	0	0.5	0	-0.1
Sweden	0	-0.1	-0.4	-1.2
United Kingdom	-0.1	0.1	0.1	0.6

(Source: UNIDO 1997)

Table 5.13. Change in forest industries' share of total MVA, 1985–1997, by size-dominance classes.

	SME-dominant	LSE-dominant	$2t_{prob}$
Change in wood products (331) share of total MVA 1985-1997 (%-points)	0.4	0.1	0.32
Change in furniture products (332) share of total MVA 1985-1997 (%-points)	0.9	0.2	0.12
Change in paper & paper products (341) share of total MVA 1985-1997 (%-points)	0.0	0.4	0.31
Change in printing & publishing (342) share of total MVA 1985-1997 (%-points)	1.5	0.7	0.51

(Source: UNIDO 1997)

Table 5.14. Average annual growth of sector MVA, 1985–1997 at 1990 prices, %

SME-dominant	LSE-dominant	$2t_{prob}$	
Wood products (331)	3.2	1.8	0.39
Furniture (332)	2.2	1.0	0.43
Paper & paper products (341)	2.6	1.9	0.58
Printing & publishing (342)	4.4	2.1	0.45

(UNIDO/Table C)

the past 15 years. As already discussed in Chapter 2, these changes reflect the on-going process of global reorganisation of production. In this re-organisation, competitive advantage is a key issue, and industrial branches that maintain and improve their factors of production in a given country can be expected to survive and not have to re-locate. In this context, changes in the contribution of any given manufacturing sector to the overall manufacturing value added of a country should be indicative of how that given sector in a particular country is maintaining its competitiveness.

Table 5.12 shows that with few exceptions, changes in total MVA in the branches and countries concerned have been very small. The two major exceptions are the 10 percentage point *rise* in the MVA contribution of paper and paper products (341) to the Finnish total MVA, and the 3.2 percentage point *decline* in the MVA contribution of Finland's printing & publishing sector (342). Thus, during the period in question, Finland has concentrated on increasing its production of primary manufactured semi-finished goods, and decreased its proportion of secondary manufactured, higher value-added goods.

The averaged changes of the contribution of the forest industry branches to total MVA during the period 1985–1997, by industrial size-class groups, are shown in Table 5.13. The changes are small, with the exception of printing & publishing (342). This branch has grown relatively strongly in both country groups, but greatest (nearly twice a fast) in the SME-dominant group. As noted by Petäjistö et al. (1997) for Austria, Finland and the U.K., the printing & publishing branch is strongly characterised by SMEs.

The furniture branch (332) also grew relatively strongly in the SME countries compared with the LSE countries. The growth of the furniture branch (0.9%-points) compared very favourably with that of the paper & paper products branch (0.4 %-points). Surprisingly, the wooden products branch (331), which includes most of the primary manufactured wooden goods, grew more rapidly in the SME group of countries than the LSE group, but the low number of cases also needs to be taken into consideration.

The above figures dealt with the performance of the forest industry branches in the context of the *whole manufacturing industry sector*, but the value added performance of these branches can also be reviewed from the standpoint of *the branches themselves*. Changes in the four forest industry branches during the period 1985–1996 are summarised in Table 5.14. The table shows how the growth of manufacturing value added in the forest industry branches has been around twice as large in the SME-dominant countries as in the LSE-dominant countries.

5.5. Wages and productivity in the wood products sector

5.5.1. Wages and salaries

In the woodworking sector (331) Denmark had the highest wages & salaries (over 35 000 USD), followed by Germany (c. 30 000 USD). Finland and Austria were on a par (27 000 USD), while the lowest wages & salaries were found in the U.K. (c.22 000 USD) and Ireland (19000 USD)(Table 5.15). Wages and salaries in the woodworking sector in Sweden were c. 3400 USD per year per employee lower than in Finland.

In the furniture sector (332), a somewhat different wages & salaries regime applied. Germany had the highest incomes, at over 30000 USD. Denmark, Austria and Italy were in the 25–29 000 USD range Finland, the U.K. and Sweden ranged from 22 to 24 000 USD, while in Ireland wages & salaries were under 20 000 USD/employee.

Difference in wages & salaries per employee between the woodworking and furniture sectors are also shown in Table 5.15. Two distinct groups are formed. First, those countries in which the woodworking sector (331) salaries are *considerably higher* than those in the furniture sector (332). These countries are, in descending order, Denmark, Finland and Sweden. The second group of countries is those in which wages & salaries in the wooden furniture sector are *slightly higher* than those in the woodworking sector. These countries are, in descending order, Germany, Austria, the U.K., Ireland and Italy. Thus, it would seem that Denmark, Finland and Sweden labour organisations in the woodworking industries have come to have a greater bargaining power than the labour organisations representing the more craft-oriented furniture industry. The reverse is seemingly the case in the remaining countries.

In Italy, the wages & salaries in the two sectors are virtually the same. This fact must be borne in mind when discussing Italy's industrial organisation, as wage differentials do not appear to pose a barrier to between-sector labour mobility (e.g. Trigilia 1992). Labour mobility, in turn, assists the interaction of skills between related sectors of the economy.

Wages and salaries in the paper & paper products branch (341) and in the printing & publishing branch (342) were significantly higher than in the wood working branches, Table 5.16. This reflects the higher value added/employee in the paper sector. This differential is

Table 5.15. Wages & salaries per employee in 1996, in the woodworking (331) and wooden furniture (332) sectors, and the difference between sectors, USD.

	Woodworking Sector (331)		Furniture sector (332)		Difference in wages & salaries (331-332)	
	USD/employee	Rank	USD/employee	Rank	USD/employee	Rank
Austria	27074	4	27850	3	-776	7
Denmark	35322	1	29405	2	5917	1
Finland	27265	3	24052	5	3213	2
Germany	29841	2	31071	1	-1230	8
Ireland	19681	8	19801	8	-120	5
Italy	25756	5	25834	4	-78	4
Sweden	23833	6	22253	7	1580	3
U.K.	21945	7	22626	6	-681	6

Source: UNIDO 1997

Table 5.16. Wage differentials between the woodworking sector (331 & 332) and the paper sector (341 & 342), 1996/7, USD.

	331.332 average	341.342 Average	Difference
	USD/employee	USD/employee	USD/employee
Austria	27462	44068	-16606
Denmark	32363	35239	-2876
Finland	25658	33120	-7462
Germany	30456	35575	-5119
Ireland	19741	33032	-13291
Italy	25795	38476	-12681
Sweden	23043	26953	-3910
U.K.	22285	28488	-6203

Source: UNIDO 1997

found in both SME- and LSE-dominant country groups. The figures are for gross wages and salaries, and do not take into consideration differences in the social cost of labour (taxation, social security payments, etc.). There was no significant correlation between labour productivity and the wages & salary variables.

5.5.2.. Labour input intensity (LIIC) and productivity

Labour input intensity

The labour input intensity coefficients for the eight countries in this

investigation have been calculated for 1998. The LIIC is calculated by dividing the labour force in forestry and the forest industries into the domestic apparent consumption of wood materials. All wood materials are reduced to m^3 wood raw material equivalent (WRME) - the conversion factor for waste paper was 2.8, and for cellulose (pulp), 2.5. Pulp imports are included as a domestic resource as a correction factor, without which the LIICs of countries such as the U.K. would become too high. The correction is justified as pulp cannot be used as such, and has to be manufactured into paper or paper products. Sawn timber imports are not considered as a domestic resource, as sawn timber can be used as such, e.g. in the construction industry. However, it has to be borne in mind that some labour used for producing pulp is transferred to the importing country. Petäjistö et al (1997)were able to break down the LIIC into branches (forestry, saw mills, wood-based panels, wood products sector, paper, and paper sector). In the present investigation a sector- or branch-wise LIIC could not be calculated as the statistics of several of the countries did not compile the necessary information in a suitable form. However, it was possible to calculate the over all LIIC for the forest sector, Table 5.17.

Table 5.17. Apparent consumption (m3 WRME), forestry and forest industry employment and forest sector labour input intensity coefficients (LIIC), 1998

	Apparent consumption of industrial roundwood[1]	Waste consumption, m^3 WRME	Pulp imports, m^3 WRME	Apparent roundwood consumption + waste paper consumption and pulp imports (WRME)	Forestry & forest industry employment	LIIC (Jobs created per 1000m^3 WRME)
Austria	15181	4575	1442	21198	102500	4.8
Denmark	1721	1098	197	3016	113200	37.5
Finland	58147	1772	207	60126	127400	2.1
Germany	34297	27768	9705	71870	6610001	9.1
Ireland	1936	0	60	1996	31750	15.9
Italy	9496	11514	7845	28855	283400	9.8
Sweden	64191	4922	692	69805	1545002	2.2
U.K.	7612	13034	4742	25388	670000	26.4

[1]Forestry sector employment estimated at 50000, [2]Forestry sector employment estimated at 24000
LIIC average for SME-dominant countries 17.3, and for LSE-dominant countries 11.1

The LIICs for Austria, Finland and the U.K. are of similar dimension that in those based on the 1994 figures (see section 1.1). Austria's LIIC has declined by 15%, reflecting a rationalisation in the sector which will be noted elsewhere in this Chapter. Finland's LIIC is essentially unchanged, but in 1994 Finland was in economic depression, whereas today the forest industries are high in their business cycle, but with no effect on employment. A minor decline (3%) has also taken place in the U.K.'s forest sector LIIC.

In 1998, the largest LIICs were found in Denmark and the U.K., followed by Italy and Germany. Germany, Italy and the U.K. have, of course, considerable home markets, but the eight countries' LIICs and population-bases did not show any significant statistical correlation. Despite the distorting effects of U.K.'s large LIIC value in the LSE-dominant group of countries, the LIIC average for this group is noticeably lower than for this group than for the SME-dominant countries.

Productivity

Value added by the forest sector branches of the countries in the study is shown in absolute terms in Table 5.18. The table shows the absolute strengths of the countries in question, with the U.K., Sweden, Italy and Finland dominating the wood products branch, and the U.K., Italy and Austria strong in the furniture branch. As before, the data is from the UNIDO database. Value added statistics for Germany were not available. Other statistical sources, including German national statistics, also failed to provided these statistics[3]. The omission of Germany gives a false picture, however, as according to Hazley (2000), the German furniture industry had production worth 17600 million Euro in 1997, compared with 15 380 million Euro for Italy and 6 521 million Euro for the U.K.

The highest value added in the paper sector, according to UNIDO (1997) occurred in the U.K., followed by Finland, Italy and Sweden. These figures include the paper products branch, and thus rather distort the picture of Sweden and Finland's dominant position in the European paper making industry. The printing & publishing branch is very strong in the U.K., the figure being disproportionate to the size of the population – Italy also has over 55 million inhabitants, and yet its printing and publishing industry has a total valued added which is only c. one-third of that of the U.K.

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[3] See e.g. Hazley 2000 for selected production figures for the German forest sector branches.

Table 5.18. Forest sector value added (million US$) in 1996, by branches and case countries

	Wood products (331)	Furniture (332)	Paper & paper Products (341)	Printing & publishing (342)
Austria	916	1577	1580	1379
Denmark	919	863	763	2291
Finland	1345	398	5997	1452
Germany	n.a.	n.a.	n.a.	n.a.
Ireland	249	131	214	885
Italy	1778	3464	3822	4958
Sweden	1994	458	3645	2089
U.K.	2763	4179	7280	17517

Source: UNIDO 1997

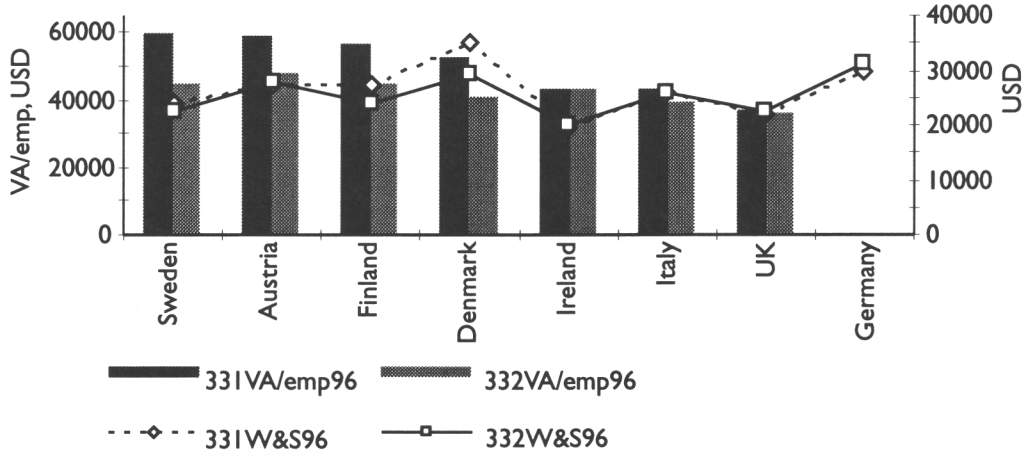

Figure 5.6. Value added per employee and wages and salaries (1996 US$) in the wood product (331) and furniture (332) branches, 1996/7. Value added figures for Germany unavailable (UNIDO 1997).

The relationship between investments in plant and human resources, which is an important factor in competitiveness, can partly be revealed by figures for productivity *per employee*. Value added figures per employee in the total manufacturing sector and in the woodworking and furniture branches are shown in Figure 5.6. The productivity of the woodworking branches exceeds the value added per employee level of the total manufacturing sector in all countries in the survey, and for the furniture branch in the U.K. and Italy.

The wood products sector (331) of Sweden, Austria, Finland and Denmark have value added figures per employee in 1996 excess of 50 000 US$, while in Ireland, Italy and the U.K. the equivalent figures were c. 40 000 US$/employee or less. The highly mechanised sawmills industries in Sweden, Finland and Austria partly explain the high value added per employee, less so in the case of Denmark. Ireland, Italy and the U.K. have considerable wood-based panel production facilities (see section 4.2.2), an industry which by its nature has a lower productivity than sawmills (see e.g. Petäjistö *et al.* 1997).

Production in the furniture branch is generally more labour intensive than in the wood products branch, and so value added per employee is lower in the furniture branch. Austria has the highest value added per employee in this sector, followed by Sweden, Finland and Ireland. Austria, it is to be recalled, also has the largest enterprise size-structure of the case countries. The U.K. has the lowest value added per employee. Denmark and Italy, both of which are strong players in the European furniture industry, also show low value added per employee.

By way of comparison, the paper sector, which is much more capital intensive than the wood products branch, had a higher value added per employee. Finland's productivity in the paper and paper products sector (341) was 161000 US$/employee in 1996/7, which was considerably greater than in Austria (87 500 US$/employee) or Sweden (85 000 US$/employee). This result supports the "Porter diamond" concept of the Finnish paper industry (see e.g. Lammi 1996) where this sector's factors of production have long been supported by Finland's industrial, forestry, financial, energy and labour policies. Value added per employee in the printing & publishing branch (342) shows less variation than for the primary production of paper & paper products: Ireland (78 700 US$/employee), Austria (67 000 US$/employee, Italy 59 000 US$/employee) and the U.K. (57 000 US$/employee) have the highest value added per employee in this respect. In Finland, the figure was 52 500 US$/employee in 1996/7.

Averaging the value-added per employee figures for the SME- and LSE-dominance classes, Table 5.19., shows that value added per employee in the mechanical woodworking sector (331 & 332) is higher in the SME-dominant than in the LSE-dominant countries, whereas in the paper sector (341 & 342) the reverse is true, noticeably

[4] See e.g. Hazley 2000 for selected production figures for the German forest sector branches.

so in the case of paper & paper products.

Porter (1990) stresses the importance of maintaining and improving a country's or branch's factors of production in order to maintain competitiveness. Investments in factors of production (e.g. capital equipment and labour force training) should result in gains in produc-

Table 5.19. Value added per employee (1996 USD) in forest sector branches, by size-dominance classes, 1996/7

	SME-dominant	LSE-dominant	$2t_{prob}$
Wood products (331)	51167	48899	0.75
Furniture (332)	42499	41887	0.86
Paper & paper products (341)	74428	91653	0.53
Printing & publishing (342)	55678	59145	0.75

Source; UNIDO 1997

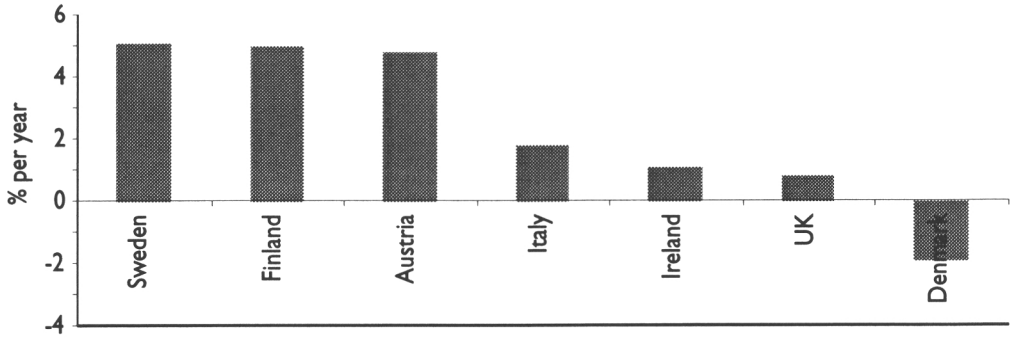

Figure 5.7. Growth of value added per employee, Wood products (331) 1985–1996/7 (UNIDO 1997).

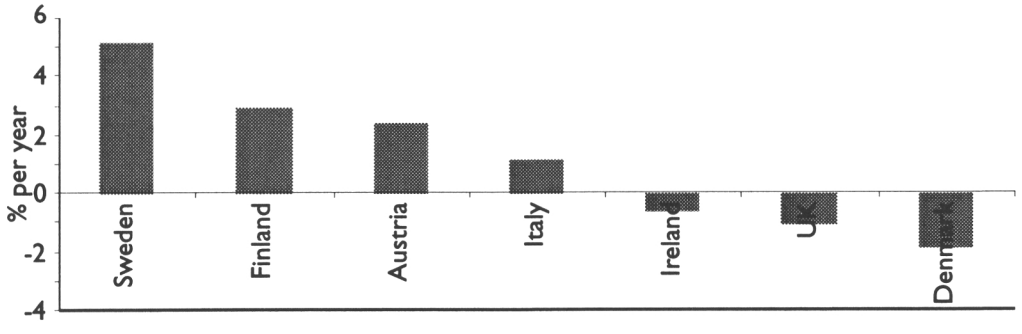

Figure 5.8. Growth of value added per employee, Furniture (332) 1985–1996/7 (UNIDO 1997).

tivity and the value added achieved by each employee. In the mechanical woodworking industry of the case countries, two separate patterns are observable, Figures 5.7 and 5.8.

In the case of wood products (331), Figure 5.7, considerable advances in value added per employee can be seen to have been made in Sweden, Finland and Austria during the period 1985 to 1996/7. Each country achieved a c.5% annual growth rate in value added per employee. Italy, Ireland and the U.K. form a lesser group, achieving between one and two percent per year, while Denmark showed a decline in value added per employee during the same period.

In the furniture industry (332), Figure 5.8., the situation is rather different, with Ireland achieving considerable growth (c.5% per year) in value added per employee. Finland, Sweden and Austria form a central group, while Italy, the U.K. and again Denmark show a decline in value added per employee during the period.

When the average growth in value added per employee is averaged for the SME- and LSE-dominant countries (Table 5.20), it is the LSE-dominant group of countries which has experienced relatively strong growths in their value added per employee during the period in question. The 3% growth in the wood products sector is twice the growth found in the SME countries. Similarly, the productivity of workers in the wooden furniture sector has also grown by 2.3% while productivity has be lost in the SME-dominant countries. Clearly, the performances of Denmark and Italy have a strong influence on these figures. On face value, these figures do not seem to be very encouraging for the SME-countries. It has to be remembered, however, that average annual growth of employment (Table 5.8) was positive in the SME-dominant countries, and negative in the LSE-countries. In the case of Denmark, Italy and the U.K. it seems that increased employment has not been matched with value added, which would suggest that there has been under-investment in other factors of production.

Table 5.21 shows the singularly negative relationship between growth of value added per employee and LIIC. In each sector, increases in productivity were associated with countries with low LIICs rather than countries with high LIICs. Similarly, value added per employee in 1996 correlated negatively with LIIC in all sectors, and significantly in the case of wood products (331), furniture (332) and paper & paper products (341). The only significant correlation between LIIC and the average growth of value added (1985–96) was for the paper and paper products sector (342). As expected, the Spearman rank correlation coefficient was negative (–0.643), as it has already been established that the paper sector is predominant in countries with low LIICs.

Table 5.20. Average growth of value added per employee at 1990 prices, 1985–1997, %

	SME-dominant	LSE-dominant	$2t_{prob}$
Wood products (331)	1.5	3.0	0.57
Wooden furniture (332)	-0.4	2.3	0.13
Paper & paper products (341)	2.6	3.3	0.74
Printing & publishing (342)	1.8	2.5	0.88

Source: UNIDO 1997

Table 5.21. Correlations between LIIC and average annual growth of value added per employee, 1985–1996, and value added per employee in 1996

Sector	Spearman rank Correlation
Annual average growth of VA/employee:	
Wooden products (331)	-0.964*
Furniture (332)	-0.643*
Paper & paper products (341)	-0.714*
Printing & publishing (342)	-0.214
Value added per employee 1996	
Wooden products (331)	-0.643*
Furniture (332)	-0.714*
Paper & paper products (341)	-0.750*
Printing & publishing (342)	-0.036

*Significant at or less than 5% risk

6. GEOGRAPHICAL PROXIMITY – A KEY TO SME SUCCESS?

6.1. Industrial agglomerations and incipient industrial districts

The localisation of the industrial development of any given branch into so-called "industrial agglomerations" or "industrial districts" can bring a number of advantages to SMEs (see discussion in section 2.2.8). For example, transaction costs and other externalities can be optimised, information channels are short, and the spread of innovations is easy, while investments in human resources stay in the locality. As the locality becomes specialised, social structures grow to support the values inherent in the branch in question: a process often referred to as shared performance or embeddedness (e.g. Ettlinger & Patton 1996). In these conditions, trust between competitors also begins to develop, which itself opens new opportunities for co-operation (e.g. Sabel 1992).

Regional concentration or localisation of an industry can lead to a considerable stimulus to factor creation, and to the upgrading of those factors. The concept of "new industrial space" nevertheless addresses the question of whether or not the mutually supporting determinants for industrial competitiveness, as outlined by e.g. Porter (1990), can be formed or not. The implication being that *mature* industrial districts, i.e. old industrial areas based on low- or medium technologies, no longer contain the ability to innovate and constantly renew their factors of production – a view not shared by Ettlinger (1994) or Florida (1996)(see discussion in section 2.2.1).

The "new industrial space" concept explicitly requires the development of SMEs, and a number of studies (e.g. Markusen 1996, Parc 1996) examine industrial space from the standpoint of industrial production structures produced by geographical concentrations and networks of SMEs. The basic industrial district is Marshallian in form (Marshall 1920), and many studies have demonstrated that the industrial districts of the Third Italy, for example, are simply a modification of this form (e.g. Becattini 1990, Trigilia 1992, Markusen 1996).

The literature on new industrial spaces and industrial districts is fairly rich, but examples concerning the woodworking industry are less common. In the following section, examples of Italian, Danish and Irish industrial districts are examined on the basis of available literature. This is followed by an assessment of whether Finland's woodworking SMEs have the pre-conditions for the formation of industrial districts. A common feature of the literature on woodworking industrial districts is the claim that they are coincidental, i.e. the chance coming together of factors at a given time and place. Kristensen (1992) considers that the concentration of the furniture industry in the Salling area of Denmark was partly coincidence, Merlo & Fodde (1996;108) also observe that the individual woodworking industrial districts of northern Italy were unique and unrepeatable cases. Be that as it may, the industrial districts of the so-called "Third Italy" have become a model for the development of industrial districts elsewhere in Europe, and Third Italy has become the model against which other industrial districts are compared, and from which lessons are learned.

6.2. Industrial districts of Northern Italy

The manufacturing value added (MVA) of the woodworking branch in Italy in 1994 and 1985 were (UNIDO):

	1985	1994
Wood products except furniture (331) – MVA as % of total MVA	1.21	1.20
Furniture – excluding metal (332) – MVA as % of total MVA	1.94	2.39

Thus, the manufacturing value added of woodworking in general has fallen slightly, while that of the furniture branch has increased. Both figures are slightly higher than those reported by Merlo & Fodde (1996;102). Merlo & Fodde (1996) analysed the forest products-wooden furniture production chain and found significant linkages regarding imported timber but none with respect to domestic timber. Thus, the Italian woodworking industry is primarily based on imported materials; a situation similar to that in Great Britain (Petäjistö et al. 1997); and yet Italy has become famous for it woodworking, especially wooden furniture, industry.

Merlo & Fodde, (1996;107–8) identify the woodworking industrial districts, with products ranging from chairs to kitchens, reproduction furniture to D.I.Y. furniture, MDF furniture to solid wood an-

tique reproductions. Industrial districts specialising in fruit packaging or coffins are also represented. Nevertheless, they argue (*ibid.* 108) that no theoretical framework for these industrial districts is generally discernible, a view which not altogether supported by Becattini (1990). Indeed, Merlo & Fodde (1996;108–9) are not even fully committed to the Marshallian view of Italian industrial districts, citing theory of production based on time, stocks and flows, and transaction cost theory (e.g. Georgescu-Roegen's 1976, 1990, Coase 1937). Reducing transaction costs is, however, one of the arguments for industrial districts.

Cultural factors play an important role in the creation of industrial districts (see sections 2.2.2 & 2.2.3). Italy has a long history of co-operative ventures, particularly in the central and northern Italian regions. According to Brierley (1995), this movement has it origins in 19th Century utopian socialism which sought to combine the roles of employer and worker. Co-operatives grouped together into associations which reflected their political, religious or social aspiration. Thus, citing Brierley (1995;164–165), there were catholic associations (especially in the north-east, the so-called 'white' co-operatives), lay associations, left-wing associations (the 'red' co-operatives of the central regions, Tuscany, Emilia-Romagna and Umbria),and more recently, green associations." Becattini (1990;154) also stresses the importance of the Italian Communist Party (PCI) in the development of local enterprise. According to Becattini (*ibid.*), the PCI created a full system of formal and informal social institutions in the geographical areas where it was well established. These areas included many of the areas in what it now called the Third Italy. One such organisation created by the PCI was the National Artisan Federation (CNA) which was to play an important role in the strengthening of woodworking enterprise (see section 7.1). Thus, citing Becattini (*ibid.*), "the PCI has created a continuum of institutions, more or less formal, acting as 'socialising agencies' that bind people together at work (e.g. the CNA), at home (e.g. co-operatives) and in leisure time (Association for Recreation and Culture – ARCI)". By means of these "socialising agencies", a concept of life was established which put the accent on certain values (e.g. work and family ethics, group solidarity, etc.) which ahs been transmitted from one generation to another in a non-compulsory way.

In addition to the strong co-operative tradition, Trigilia (1992;36–7) identifies additional institutional factors that have been of crucial importance to the growth of the Third Italy industrial districts. These factors are:

- A network of small and medium-sized towns with strong craft and trading traditions which acted as a pool of resources and entrepreneurial skills;
- The spread of family-based agricultural small-holdings helped to create the original flexible supply of an inexpensive workforce who skills and motivations were well suited to the development of small businesses;

The strong tradition of co-operatives and associations seems to have been a key factor in the strong emergence of SMEs in the Post-war economy of central and northern Italy. Given the necessity to re-construct Italy's industrial economy, an national industrial policy was introduced which was strongly corporate, and "top-down", favouring the development of large-scale concerns, and a Fordian production regime. The state was strongly involved in the economy, and so the economy suffered, and still suffers, from problems related to patron-age, etc (Brierley 1995; 143). Nonetheless, political instability at the national level (most post-war Italian governments have survived less than 18 months) resulted in *de facto* industrial policy being carried out at the regional and especially local levels. At the local and regional level, as outlined above, there was an intact structure of economic co-operatives and associations which supported local, small-scale family enterprise, as well as advancing a strong local identity.

The Italian small-firm phenomenon gained new proportions during the 1980s, during which time their number grew from 200 000 to 3.8 million. During the 1990s this phenomenon has continued, with new firms being created at an average of 300 000 per month, although 120 000 firms a month were also failing. (Brierley 1995;192).

The success of Italian SMEs seems all the more unlikely given the fact that they are producing goods that elsewhere are produced by large corporations in fierce competition with one another and with the Third World and eastern Europe. This is especially so as Italy's industrial structure is only "medium-to-low-technology" electrical goods, machines, clothes, wooden furniture, etc.). The Italian entre-preneur has, it seems, rejected the basic theory of the firm which requires the firm to be an organiser of human , capital and material resources and energy. The Fordist production mode and Tayloristic management (see section 2.2.1) provide the optimum models for the organisations of these production factors. It is argued that such values are alien to the Italian entrepreneur, as Brierley (1995;193) states:

> "To the extent that the firm consists of basic operations such as planning and design, production, sales, all supported by services, any one of these operations can be subcontracted out. The first thing to go is production, in favour of sub-contracting a semi-finished product (the entrepreneur

no longer has the problem of controlling a workforce). Planning and design can also be decentralised. And so the cycle continues."

Various explanatory models have been proposed for the Italian SME districts: Brierley (1995) quoting King (1987) identifies the following features of the SME industrial structure of the Emilia-Romagna region:

- Decentralised production in small and medium sized rural towns;
- Geographical specialisation in the kind of product made;
- A high degree of low-wage female and part-time labour in small factories, craft workshops and homes;
- Solid traditions of peasant farming;
- General craft skills in the region.

Goodman et al. (1989, also quoted by Brierley 1995;194–5) argues for a "flexible specialisation" model, characterised by:

- Production characterised by the decentralisation of various stages of the production process;
- SMEs specialise in a limited number of production phases, but for many different types of goods;

Thus, Italy's social and cultural history, as well as post-war developments of its industrial policy have resulted in a production structure which in the central and northern regions is characterised by a vigorous and dynamic SME oriented production structure.

Brierley (1995;195) summarises characteristics of the Italian industrial districts as follows:

- Flexibility of production helped by falling costs of modern technologies;
- Division of labour between firms;
- Complex sub-contracting shares risks amongst a number of firms;
- Dualism of competition and collaboration – the same firms may collaborate closely on the development of new tools or techniques, but will compete fiercely for contracts;
- Ability to produce non-standard goods quickly in response to short-term demand;
- Efficient circulation of goods and information between producers (helped by the geographical proximity of firms);
- Frequent use of microcomputers to communicate information, even to domestic out-workers;
- Unique local, social and institutional conditions between modern markets towns and their once agricultural hinterlands;
- Firms not free operators but part of a complex and integrated system of production –they are independently owned but inter-linked within the industrial system;

- Vertical disintegration of the production process, creating a new set of inter-firm relationships;
- Highly innovative firms operate next to technologically backward firms

While the advantages of industrial districts are fully recognised, disadvantages can also occur. Some of the advantages and disadvantages of the Italian woodworking districts have been examined by Merlo & Fodde's (1996), Table 6.1. The positive attributes are seen to be very close to those of the Marshallian industrial district model outlined earlier in this chapter. Merlo & Fodde (*op cit.*;113) report that the disadvantages have gradually been removed as the industrial districts have developed (during the 1990s) and as they have become economically and *politically* competitive. The processes creating the competitive advantages of these districts are summarised in Figure 6.1.

Bambi (1998), in examining the wooden furniture industry in Tuscany, shows that such industrial districts have to evolve. Changes occur as a result of changes in market conditions and consumer tastes, and the changes occur via the interaction of internal and external factors, e.g. rigid production structures found in some medium-sized

Table 6.1. Some advantages and disadvantages of woodworking industrial districts in Italy (Merlo & Fodde 1996;112–3)

Pros:	Cons:
Flexibility	High rate of enterprise mortality, which nevertheless creates new opportunities for entrepreneurs
Fewer barriers to entry of new enterprises	Low political weight compared with old (mature) industrial regions
Technical innovation	Rather backward company structures – poor financial development
Easy access to credit	Lack of long term strategies and policies
Scale economy at district level	
Social mobility	
Growth of entrepreneurial spirit	
Motivation and group identification in the workforce	
Social consensus	
Well developed information systems and political support	
Spontaneous development of backward regions without distortions attached to r egional policies	

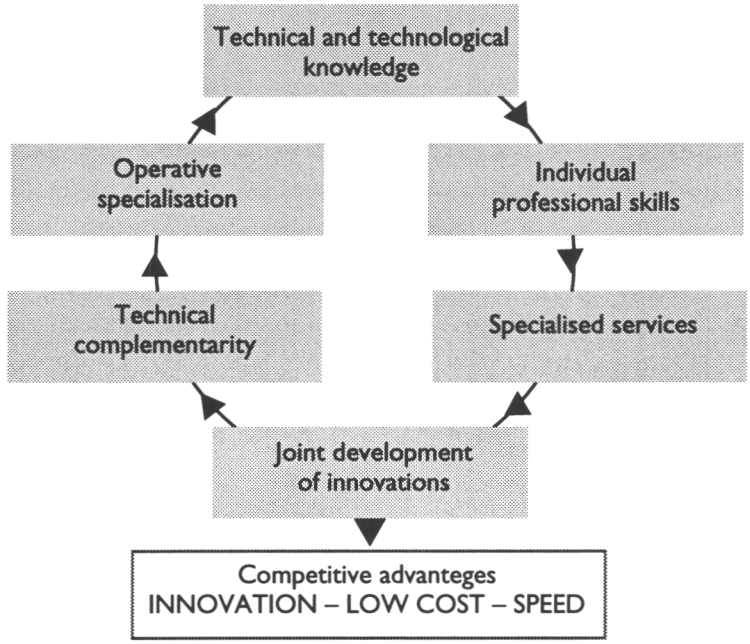

Figure 6.1. Development of competitive advantage in Italian industrial districts (Merlo & Fodde 1996;113).

firms cannot always rapidly adjust, and they are not reactive to market shocks. Technology also changes, and this in urn affects the use of human and material resources (Bambi 1998, 65–66). Bambi concludes that the ability of the Tuscany industrial districts to maintain their competitive advantage has been largely due to markets with differentiated and variable demands, technologies which are widely decomposable into different phases, and the down-sizing of production in the Italian wooden furniture production system (*ibid.* 67).

Vocational training in Italy is argued to be beset with problems (Brierley 1995;187–191), problems that are characterised by conflicts and over-lapping responsibilities. Brierley argues that there are major deficiencies in the vocational training of agricultural workers, apprentice training, vocational training for mature adults, and so on. Only a few of the largest private corporations and public enterprises have their own training services, while apprenticeships have, according to Brierley (*995*;190–1) virtually disappeared from industrial firms in Italy. In consequence of these deficiencies, there has been a tendency for small firms to resist the introduction of new technologies in order to side-step the issue of re-training. Nevertheless, Italian

firms have kept up with technological change, and because the nature of industrial work has been changing so radically, training must be happening. He argues that there would appear to be a two-tier system of training – one rather ineffective institutional system and a more successful, but still inefficient, implicit submerged system based on decentralised production and precarious employment in small sub-contracting firms. Most significantly, Brierley (*ibid.*) notes that this latter system is implicit in the creation, or rather the Schumpeterian "creative destruction" of firms. Thus, it would seem that the weaknesses in the institutional vocational education system in Italy has been at least partly off-set by the basic nature of the working of the Marshallian industrial districts. This, as we shall see, if rather different from the situation in Denmark, where a noticeable woodworking industrial concentration has also developed.

6.3. Industrial districts in Denmark

Denmark is the world's third largest exporter of wooden furniture. Its exports accounted for 20% of the EU' exports of wooden furniture in 1992 (Maskell 1998a;105). According to Maksell (*ibid.*), Denmark's strong competitive position was built and maintained in spite of unfavourable developments in the relative cost of labour compared with the EU and other OECD member states.

Maskell (1998a;108) further notes that the Danish furniture industry does not differ in its processes from other producers elsewhere, nor is the machinery different. However, the lack of domestic suppliers of production machinery and the dominance of small firms have not prevented production becoming increasingly automated. Maskell (*op cit.*108–109) reports that where a product is less suited for automation, the firms in question specialise in that product. Networking and sub-contracting arrangements are well established in the Danish furniture industry. Many firms act as sub-contractors, using various proportion of their production capacity to produce specialised, finished or semi-finished inputs to other wooden furniture producers. Thus, both technical and organisational elements have contributed to the success of the Danish wooden furniture industry. Maskell (*1998a* 109–110) addresses the question as to why these apparently simply elements have not been imitated by low cost countries or regions, and claims in answering this question that the main issue ahs been the proximity effects of geographical concentration. Maskell (*ibid.*) identifies the key elements of the external economies by which the Danish

furniture industry has maintained, and even increased, its competitive advantage. These are typical of the external economies obtained from a Marshallian-type industrial district, and include: relatively easy access to specialist supplies of complementary goods and services, such as auditing, finance, transport, repairs, logistics, market research, marketing, data processing or design, educational and research facilities, suppliers of production equipment, and other infrastructure advantages.

Many of the conditions found in Third Italy are also to be found in Denmark, especially in the Salling district (Kristensen 1992;125). A major difference is that in Denmark there has been little debate on *industrial districts*. In Italy, *industrial districts* and *flexible specialisation* are not just concepts used by academics, but rather part of peoples' daily perception of their world. In Denmark, the furniture industrial districts have not created the same internal unity as in Italy. In the absence of such an internal dialogue, self-employed people and SMEs in Denmark have not developed a strategy for the future of their industry. Even if industrial districts would provide such an alternative strategy, the necessary links between micro- and macro-politics facilitating such a strategy are missing.

The social and cultural history of an area is recognised as being very important in creating conditions for enterprise. In Denmark, the 1930s had seen a socio-economic transformation in Jylland, with well-off yeoman farmers investing surplus capital in small industries in local railway towns. In the post-war period, these so-called "yeoman republics" found difficulty in accepting the tenets of the socio-democratic welfare state, which were seen to be barriers to enterprise (Kristensen 1992; 159–61). The ethic of the welfare state was seriously challenged in the 1973 general election, in the aftermath of which entrepreneurial and free-enterprise values long supported and protected by the yeoman republics of the small railway towns gained ground. The reforms following 1973 nevertheless failed to become a framework for national industrial policy.

Despite a lack of coherence and direction in Danish industrial policy of the early 1990s, a "network programme" was introduced This programme was based experience gained from the Italian industrial districts: namely to encourage SMEs to develop on the basis *of co-operation*. However, according to Lorenzen (1999):

> while many policies aimed at industries with a dominance of SMEs have been particularly directed towards stimulating entrepreneurship and inter-firm co-operation such programmes failed because they paid little attention to the more specific needs of inter-firm co-ordination, in particular governance and trust. Very few of today's Danish furniture

co-operative networks were initiated with help from the Network Programme, and it seems that the central preconditions for successfully establishing co-operative networks – trust and the ability to continuously co-ordinate - are much more dependent upon the peculiarities of the single firms and whether they have been interacting previously to the establishment of the network than upon subsidies.

The development of SMEs is best served if the vocation system of a nation provides the necessary support. Indeed, Porter's theory of comparative advantage argues emphatically that investments in education can change factor conditions (Porter 1990;72–80). In the Danish context, there is evidence that such a process had been achieved in the woodworking sector, especially in the Salling area (Kristensen 1992, Maskell 1998a&b and Lorenzen 1999b). Kristensen (1992;165–6), for example, outlines the importance of the development of a vocational training system that aimed at providing people with the basic theoretical knowledge of their industry and trade, as well as an introduction to new technologies:

- New courses for wood technicians gave experienced woodworkers an advanced knowledge of materials and technologies and methods for running a workshop;
- Central institutions were transformed into a locally oriented system. Nationally administered technical schools, once separate from schools for specialised workers, were, in the Salling woodworking district, were integrated into the local system to serve the needs of the furniture industry.

Kristensen (*ibid.*) argues that the advantage provided by such localised institutions in the creation of an industrial district is derived from the fact that the district can develop beyond the limits of the constraints set by a limited labour market. It can also provide unskilled workers with a path to a career. This creates new options. Lorenzen (1999;128–9), has found that the trends outlined by Kristensen have indeed strengthened the Salling district via the process of localised learning.

The Danish county of Salling presents a geographical concentration of woodworking enterprises that qualifies as an industrial district in the Marshallian sense, and as found in Third Italy. Lorenzen (1999) notes that furniture production in the Salling area is strongly and increasingly specialised, Table 6.2. In 1996, forty-six firms in the Salling district specialised in the production of wooden furniture, which was some 28% of the total number of manufacturing firms in the region. If related firms are included, the total number increases to 54, or 33.1 percent of the total number of firms. Considering that in

Table 6.2. Production structure of the Salling furniture production district (Lorenzen 1999)

	1972	1988	1992	1996
Furniture firms	25	47	47/51	46
Related wood firms	4	6	6/5	8
Furniture + related wood firms	29	53	53/56	54
Other manufact. Firms	82	112	103/100	109
Furniture + related wood employees	706	1538	2136/2227	2388
Other manufact. Employees	4744	6737	6804/6713	6084
Furniture + related wood % of total manufacturing (employment)	13	18.6	23.9/24.9	28.2
Salling % of total Danish manufacturing (employment)	1.3	2.2	2.5	2.5
Salling % of total Danish furniture + related wood (employment)	4.1	9.3	12.3/8.6	8.7

1996 only 7.6% of all Danish firms were furniture producers (10.8% including related industry firms), then the degree of concentration in the Salling district becomes apparent. As shown in Table 6.2, the Salling district has experienced growth in terms of total number of furniture producing firms as well as in terms of relative importance expressed as a percent of total number of manufacturing firms.

6.4. An incipient industrial district in Ireland: furniture making in the Monaghan district

The selection of Ireland as a case country was largely based on knowledge of the existence of an incipient woodworking industrial district around the town of Monaghan. Ireland's forest industries are still small in absolute terms, but thanks to inward foreign investment, and an aggressive regional development policy complete with strong fiscal and subsidy incentives to such foreign investment, the country's forest sector and primary forest industries have developed rapidly over the past fifteen to twenty years (Coford 1994, *Growing for the Future* 1996). The Irish timber and wooden furniture industry consists of over 400 enterprises (Redmond 1989).

The manufacturing value added of the wooden products sector in Ireland has decreased from 1.1% of MVA in 1985 to 0.85% (246.25 million USD) in 1996 (UNIDO 1999). In the furniture sector, MVA in 1985 was 0.6% of the total and in 1996 this had fallen to 0.45%.

These relative declines are, in fact, largely due to rapid gains in other sectors. According to UNIDO (1999), employment in the wooden products and wooden furniture industries has increased from 7 700 in 1985 to 8 822 in 1996, there being a 34% increase in employment in wooden products industries and a 10% decrease in the furniture industry. The wooden products industry has expanded rapidly in recent years as a result of the building boom associated with the rapid growth of the Irish economy.

The furniture industry is predominantly Irish-owned, mainly by small family firms, many of which are located in or near small towns in rural areas. The sector produces average- to high-quality furniture, although design is lacking. The branch has chosen to follow the tastes of its main market, which until recently has been the U.K., especially Ulster and Northern England. The production structure of the industry in 1995 is shown in Table 6.3.

Some 60% of the timber and wooden furniture firms employ less than 15 persons, 31% 15 to 49 employees, while 6% employ 50 persons or more (Mottiar 1998a). The change and growth of the structure of the industry is outlined in Table 6.4.

The low-ebb of the Irish furniture industry occurred in 1970 at which time the sector was written off in the belief that it would be one of the worst hit by Ireland's entry into the EEC. In fact, growth occurred, and the timber and wooden furniture industry grew six-fold between 1975 and 1990 (Mottiar 1998a;1). This is reflected in employment figures, which fell by c. 30% during the period 1981 to 1990, but at the same time, thirty of the forty firms involved in the export trade had actually increased the number of people employed by 13% (Mottiar 1998a;17).

Table 6.3. Market structure of the Irish furniture industry by value and segments (Mottiar 1998a;9)

Key segments	Value of market £ million	%
Beds	39	13
Bedroom	49	16
Upholstered	84	27
Living/Dining room	53	17
Kitchen	68	22
Other (incl. Garden)	13	4
Total	306	100

Table 6.4 Size distribution of Irish timber and wooden furniture firms, % (Mottiar 1998a)

Employees	1958	1975	1990
Less than 5	8	23	16
5-9	27	24	37
10-14	14	14	14
15-19	9	10	10
20-29	15	9	8
30-49	15	10	6
50-99	7	6	5
100 and over	4	4	1
Total	100	100	100
Total no. of firms	272	354	435

As already noted, many timber and wooden furniture firms in Ireland are family owned, and employ local labour. Mottiar (1998a) notes that around the towns of Monaghan and Navan there has been a pattern of employees leaving companies to establish their own firms. In some cases, companies have encouraged such a move to enable components to be made without having to bear the costs of employees: a process noted in the frame of reference as being common to the flexible production regimes which characterise industrial districts.

Mottiar 1998b has examined the case of the Monaghan woodworking "industrial district" in detail, and the following description is based entirely on her work. The industrial history of Monaghan is largely characterised as follows:

- Until 1960s the area was entirely agricultural with few industries and none of significance;
- The area suffered a 26% decline in agricultural employment and a 7% decline in industrial employment during the 1950s. Agriculture suffered further job losses in the early 1960s;
- Cottage (craft) industries , e.g. weaving, were present in the area but unrelated to agriculture;
- Local development efforts in the 1960s led to the beginning of the area's industrialisation, industrial employment increased by c. 25% and in the latter part of the 1960s some 46 new firms were established in Monaghan county.
- By 1970s there were many firms employing more than ten people. Between the early 1950s and the early 1970s the number of firms employing more than 50 people had more than doubled, from ten to 23.
- New industries included light engineering, textile, footwear and furniture.

- The period 1980 to 1990 experience continuous industrial expansion, reaching 124 firms in 1987.
- Between 1979 and 1989 eight new firms were established in the timber and wooden furniture sector.

In addition, the Monighan woodworking industry has the following history

- c.200 years of experience in carpentry crafts;
- Family dominated ownership structure;
- Family firms resulted in an accumulation of hereditary skills;
- Significant local supplies of quality timber in the 19th Century, subsequent timber supplies imported from other regions or abroad, leading to the establishment of two timber wholesalers in the district;
- Ireland became an important producer of MDF which was accessible to the domestic woodworking industry;
- A chance factor played a role in the form of an energetic artisan, John Coyle, immigrating to area in 1936;
- The development of spin-off firms (especially from Coyles) have both perpetuated and diversified the region's production structure;

Table 6.5. Goods and services found in the Monaghan woodworking industrial district (Mottiar 1998b)

Category	Products
Primary materials	Treated wood materials
	Fire-retarding wood treatments
Primary Components	Turned wood
	Carved wood
	Cabinet and cupboard doors
	Chair frames
	Chairs
Secondary goods (final products)	Domestic furniture
	Pub & restaurant furniture
	Timber houses
	Picture and mirror frames
	Audio speaker cabinets
	Shop-fronts
	Doors
	Chairs
	Staircases and landings
	Handrails
	Architraves and trim
	Builders' joinery products
Services	Wholesale distribution of timber
	Woodworking machinery re-conditioning and servicing
	Accounting and insurance

- Young entrepreneurs received "moral support" from older entrepreneurs;
- A business ethos has become well established in Monaghan county which encourages entrepreneurship;

A key element in the industrialisation of Monaghan country was, then, public intervention in the form of a County Development Plan, and its implementation during the 1960s, which was partly aimed at seeking jobs for the agricultural population. There are strong parallels here with the Italian and Danish industrial districts, described above, which also had as their roots in the agricultural hinterlands which contained a source of labour and craft industries which provided a basis of skills and innate entrepreneurship.

As in the woodworking industrial districts of the Third Italy, the Monaghan woodworking industrial district contains a wide range of products, Table 6.5. The importance of wholesale distribution of timber in the list in Table 6.5 is due to the character of Irish forest industries. The supply of domestic timber is both limited, and largely directed at the large-scale wood-based panel industry. Little or no domestic hardwood is available to the Monaghan woodworking industry, and so importing and distributing timber is an important service.

Of today's woodworking firms, the oldest was established in 1923 (O'Reilly). The four largest firms today were established before 1970. The largest (Coyles) was established in 1936. The formation of this incipient industrial district has occurred via the process of localisation, by which means older firms have spawned new firms as employees have left to established their own enterprises. This process has been both spontaneous, and at the instigation of the "parent" company. The process in Monaghan is clearly demonstrated in Figure 6.2.

Mottiar (1998b;191–218) has demonstrated that the concentration of woodworking firms in Monaghan has the following properties:

- Wooden furniture firms are engaged in Schumpeterian competition with each other;
- Quality, price and new designs, in that order, were the main factors of competition;
- Little (formal) co-operation was found amongst firms. Formal co-operation is limited to two firms – mainly via common products range and design (both produce same range and then compete with no specialisation)
- Some informal, horizontal co-operation exists (lending machinery, product development, common purchase of inputs and marketing);
- Low membership of branch associations;

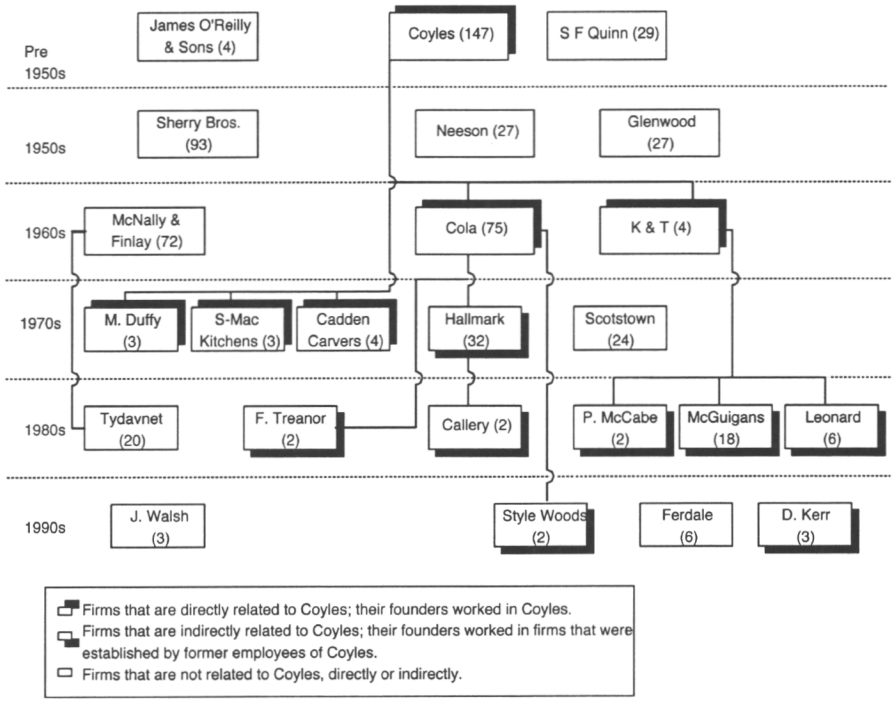

Figure 6.2. The localisation of the wooden furniture industry in Monaghan, the Coyles example (after Jacobsen & Mottiar 1998).

- Branch associations weakly organised;
- Vertical co-operation with suppliers well developed (informal information, services, assistance, ideas)
- Some interdependence of firms through constrained sub-contracting arrangements;
- Few firms have specialised in components (upholstery, wood carving & turning, chair-making);
- Few firms are wholly dependent upon others;
- In-house manufacturing predominant for fear of loss of quality;
- Spatial proximity of firms encourages the development of trust and communication, i.e. a "professional community";
- Social rather than family relations important. Relations between neighbours, friends and former colleagues link many firms together, so facilitating sub-contracting, co-operation and the flow of information, as well as vertical disintegration;
- Family members are committed to family firm;
- Small firms with weak managerial hierarchies means that employees take part in many different tasks.

On the basis of this analysis, Mottiar (*ibid*;217) concludes that the furniture industry of the Monaghan area does not constitute a true Marshallian industrial district. This is because of the dominance of a few large, and the fact that the milieu of the district is essentially professional rather than social or familial. Most of the attributes of the district operate on the *meso*-scale, rather than on the *micro*-scale, which they should to be a Marshallian district. Motiar nevertheless concludes that the professional milieu has brought distinct benefits which otherwise would not have been available, and has undoubtedly strengthen the region from within. The inter-dependencies between firms, shown in Figure 6.2, also suggest that, given time, the region may develop rather more Marshallian features.

6.5. Potential industrial districts in Finland

6.5.1. Recent research

SMEs can overcome many of the disadvantages of their inability to benefit from economies of scale by organising in such a way that the economies are gained by reduced transaction costs, by sharing goods and services, and by a whole raft of exogenous benefits gained through external economies of scale. The success of Italian, Danish and indeed Irish wood and wooden furniture SMEs has much to do with their concentration into industrial agglomerations and industrial districts. What then for Finland? Can Finland's wood products and wooden furniture industries halt the decline of past decades by creating such agglomerations or industrial districts? Does Finland have any industrial districts, and if not, do conditions exist for their emergence?

Little research seems to have been done in Finland concerning the development of industrial districts in the "low-tech" woodworking sector. Most studies of the Finnish forest sector have been aimed at the paper sector and its "cluster", rather than the woodworking sector and its agglomerations. For example, Lammi & Rouvinen (1996;37–47) present a clear picture of the Finnish paper industry in the framework of the Porter "Diamond" (Porter 1990). A wide-ranging report, outlining many of the technical, economic and social implications of flexible production and networking in Finland for the 1990s (Ollus et al. 1990) was nevertheless strongly oriented towards technical developments, e.g. the application of manufacturing protocols, CAD, CIM and logistic systems to solving the flexible production

problems facing industry. The report pays passing reference to the wood products and furniture industries (Ollus et al. 1990;105). Vartiainen (1996;17–25) presents a theoretical overview of the post-Fordian production regime as it might apply to the forest industries of Finland and Sweden. Again, the analysis is entirely in the framework of the large-scale forest industries, but he notes (*ibid.*;23) that the relative stability of the locational pattern of forest industries in Finland (and Sweden, cf. Larsson & Malmberg 1992) may be an expression of the special institutional, nation and local embeddedness of certain wood-processing industries. Kautanen (1996, 1998) has addressed aspects of the wooden furniture industry, which can be located squarely in the SME sector, and much of the following discussion will be based on Kautonen's investigation. But prior to that, it is pertinent to examine the current distribution of the Finnish woodworking industries.

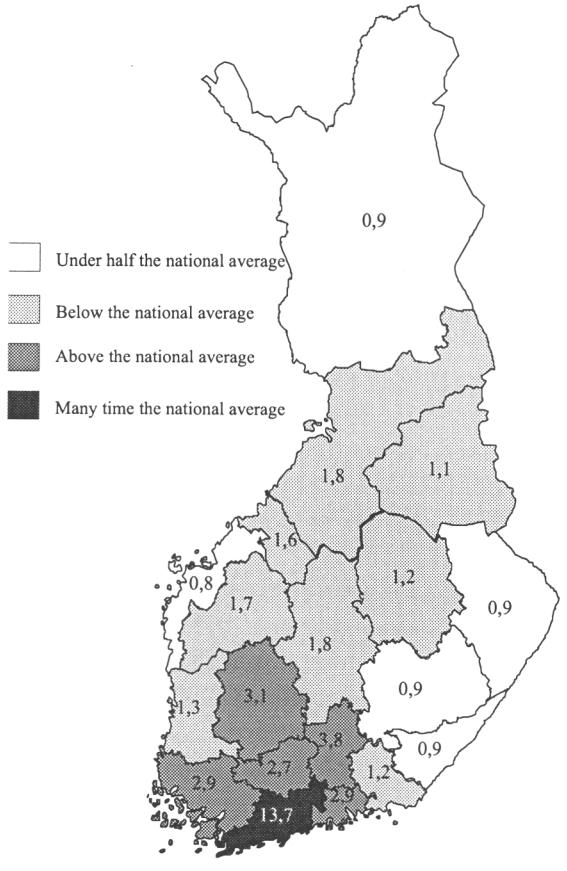

Figure 6.3. Labour input intensity coefficients (LIIC) for Finnish provinces, 1998.

6.5.2. Distribution and development of Finland's forest and woodworking SMEs

Based on employment and wood consumption figures for 1998, labour input intensity coefficients (LIIC) were calculated for the provinces of Finland, Figure 6.3. The highest LIICs are concentrated in the central southern and south-western parts of the country. This pattern reflects that found in the case countries where a strong negative relationship between domestic forest resources and LIICs is apparent (see also Petäjistö et al. 1998). Correlating the LIIC figures with the areas of forestry land and forest land (%) by provinces results in significant and negative correlations, as expected (Table 6.6).

Within Finland, the forest-rich regions (e.g. North Karelia, Kainuu) are the areas with the lowest labour input intensity coefficients (LIIC) – the areas with considerable forest resources create the fewest jobs in forestry and the forest industry sector. The areas with low LIICs (Figure 6.3) do in fact possess large scale forest industries, but they are capital intensive and create few jobs. Forestry operations, too, are highly mechanised: the forestry sector having reduced its labour force considerably during the Post-war period (e.g. Elovirta 1995). The areas with higher LIICs are areas with fewer LSEs and more SMEs, that is to say, areas with more value-added secondary manufacturing, and this is reflected in the distribution of the labour force employed in secondary value added manufacturing in the woodworking sector (Figure 6.4). The strongest concentration of employment is found in southern and western Finland. Indeed, one third (33%) of the total employment in the woodworking sector is found in the province of Uusimaa.

Table 6.6. Correlations between LIIC and proportion of forestry and forest land in Finland, by provinces

	LIIC	Forestry Land[1] %	Forest Land[1] %
LIIC	1.00		
Forestry land %	-0.43*	1.00	
Forest land %	-0.44*	0.54**	1.00

* significant at 5% risk

** significant at 2% risk

[1]Figures cautiously estimated where boundaries between Forest Centres and Provinces vary

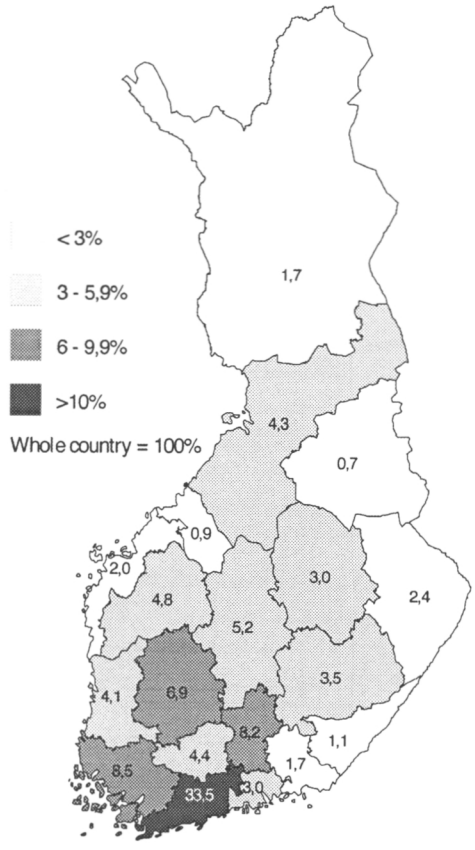

Figure 6.4. Distribution of employment in secondary woodworking manufacturing enterprises in Finland, 1998.

Table 6.7 Regional distribution of enterprises in Finland, by branches (incipient industrial agglomerations in bold type)

Province	Sawmills	Builders' components	Wooden houses	Furniture
Uudenmaan	7	**13**	5	**15**
Turun-Porin	**12**	**14**	**8**	**16**
Hämeen	**14**	**15**	**13**	**19**
Kymen	8	6	5	4
Mikkelin	7	6	**10**	4
Pohjois-Karjalan	7	5	4	2
Kuopion	6	5	6	3
Keski-Suomen	8	6	8	4
Vaasan	**11**	**15**	**19**	**23**
Oulun	**12**	8	**14**	7
Lapin	7	5	8	3
Total	100	100	100	100

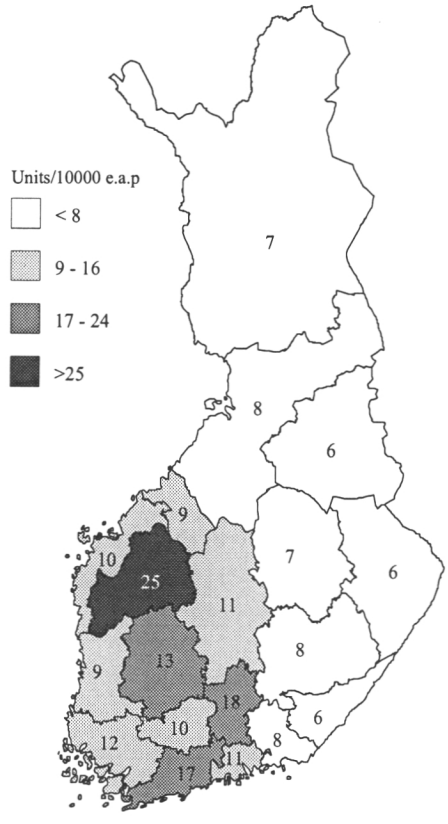

Figure 6.5. Number of woodworking enterprise units per 10 000 economically active population, 1998, by provinces.

If the benefits of external economies are to be created, a key element will a region's basic stock of enterprises, and especially of its degree of entrepreneurship, as the Italian, Danish and Irish examples have demonstrated. In Finland, regions with the potential to form industrial districts appear to exist. The distribution of enterprises by branch in the mid 1990s, Table 6.7, suggests the presence of regional concentrations of certain branches (bold type).

The distribution of woodworking entrepreneurship, measured by the number of secondary manufacturing production units (enterprises) in relation to the size of economically active population, is shown in Figure 6.5). The strong concentration of entrepreneurs in the central western province of Etelä Pohjanmaa (Southern Ostrobothnia) is very clear. The main woodworking branch represented in that region is wooden furniture (see Table 6.7). Adjacent regions also have fairly strong concentrations of woodworking enterprises. These

areas of Finland would seem to exhibit very good possibilities to develop the advantages provided by Marshallion-type industrial districts. Whether the current operating rationale of SM-entrepreneurs is capable of developing the necessary co-operative ethic with which to create localisation effects and socio-economic embeddedness is another matter. Evidence from the Lahti region suggests that this rationale is still poorly developed (Kautanen 1998). Frequent reports of the failure of networking arrangements also point in the same direction.

The wood products and furniture enterprises of Finland thus display a clear tendency towards the formation of agglomerations. In terms of the frame of reference, this can be seen as a domestic form of divergence (i.e. regional differentiation). It can also be seem in Myrdalian terms. A cumulative process would seem to be creating these areas of industrial agglomerations, while regions lacking in a tradition of wood-based SME enterprise suffer from backwash effects. In figures 6.3 to 6.5, employment and enterprise is shown to be lowest in districts with large-scale forest industries, suggesting that LSEs are creating an socio-economic environment suitable conducive to the creation of local enterprise.

Despite the presence of incipient industrial concentrations, whether these can develop into Marshallian-type industrial districts depends very much on the social cohesion in the regions concerned, as well as upon government policies that may help or hinder such a development. Regional development policies in Finland have not been able to stop the concentration of value-added manufacturing firms into the south-western quadrant of the country. Rather like the Italian concentrations of enterprise, the spatial concentration of woodworking enterprises in western and south-western Finland would seem to have strong regional cultural dimensions. Western Finland (Ostrobothnia) has had a long history of enterprise in the forest sector, beginning with boat building, charcoal burning and tar distilling in the 17th and 18th Centuries (Kaila 1931a& b). This history of enterprise in Ostrobothinia was still clearly visible in the 1930s (Katajamäki 1988;34), and still appears to be refelected in the current distribution of woodworking enterprises (Figure 6.5), and the current distribution of employment in the secondary manufacturing woodworking sector (Figure 6.4). Similarly, the south-western part of the country was still the core area of industrial activity in the 1930s (Katajamäki 1988;34). Conversely, Eastern Finland was largely an agricultural pioneering territory, with remnants of slash-and –burn cultivation, until well into the 20th Century (Valle 1952, Smeds 1967), while Eastern Finland's forest industries have been dominated by large-scale enterprises. It may be significant that the "forest industry"

regions of Finland in the 1930s are today those areas with low forest industry LIICs (Figure 6.3).

Thus, it would seem that the development of Finnish woodworking enterprises and their concentration in the south and west have a socio-economic history not dissimilar to that of the agglomerations of woodworking SMEs – the industrial districts – found in e.g. Italy, Denmark and Ireland. There, too, woodworking industrial districts have been created as an inter-relationship between small rural towns and their agricultural hinterlands (e.g. Trigilia 1992, Kristensen 1992, Merlo & Fodde 1996, Mottiar 1998a).

6.5.3. Co-operation, networking and embeddedness – missing elements in Finnish SMEs?

Recent investigations by Eskelinen & Kautonen (1997) and Kautonen (1996, 1998) have examined the wooden furniture industry in the Lahti region of Finland (see Table 6.7). The region has been important for wooden furniture production since the 1930s because of its ready access to high quality birch and skilled labour from its rural hinterland. Lahti was also nodal with respect to land and water transport routes.

Some 105 firms were reported to have existed in 1995 (Kautonen 1998;101), of which 57% were very small enterprises (1–4 employees), and 29% small enterprises (5–19 employees). Only three firms (3%) employed over 100 employees. Kautonen (1998;101) points out that the concentration of woodworking industries in Lahti has not guaranteed its long-term success, as the industry has undergone considerable decline in the 1990s, largely as a result of domestic and international economic depressions. Even the apparent partial recovery of the industry in the mid-1990s has been attributed to price competitiveness following devaluation rather than the competitiveness of products (Eskellinen & Kautonen 1997).

Kautonen, quoting several sources, considers the key reasons for the weak competitiveness and decline of the furniture industry around Lahti:

- Deficient use of indigenous design resources (despite the fact that Lahti has a major industrial design school);
- Weak branch organisations;
- Legacy of bilateral trade with the Soviet Union;
- Neglect of export marketing during period of high domestic demand in 1980s,
- Lack of specialisation;
- High debt/turnover ratio due duplication of machinery arising from the lack of specialisation;

- Failure to develop core competencies;
- Lack of technological transfer;
- Strong sense of rivalry between firms leading to detrimental pricing;
- Little or no inter-firm information sharing or co-operation.

In order to strengthen the industry the following measures would need to be taken (Kautonen 1998, citing AJ-Consultants 1994);

- Improved wood purchasing strategy;
- Enhance image of renewable wood resources;
- Improve work productivity;
- Increased use of design,
- Increased co-operation between firms;
- Public support for establishing an export marketing organisation.

On the basis of the above weaknesses alone, it can be seen that the furniture industry "agglomeration" of the Lahti area is far from fulfilling the basic criteria of a Marshallian industrial district, or its Italian variant (a direct comparison with the features of the Italian wood working industrial districts outlined in section 6.2. is very instructive). A reason for the failure for the inter-action of firms to develop may be the lack of specialisation within the Lahti agglomerate, Table 6.8. This has led to firms having to acquire much more machinery than a specialised firm would need. This in turn has led to increased indebtedness. Another reason would seem to be a negative competitive ethic, which Kautonen (1998) reports as having led to cut-throat pricing strategies and a lack of inter-firm co-operation. Technological transfer has taken place as a result of geographical proximity, but not due to specialisation or formal networking. That is to say, the benefits which are attributed to the maximisation of external economies, as in the Marshallian industrial district, have not been acquired by entrepreneurs in the Lahti district. Indeed, the poor trust between entrepreneurs seems to be a direct result of geographical proximity, unlike the situation that is supposed to result from agglomeration effects. Entrepreneurs in the Lahti region considered it to be harmful to trust anybody, since any information given to another entrepreneur would be circulated effectively in the local business community (Kautonen 1998;110).

In dealing with the question of research and development in the Lahti-based furniture industry, Kautonen (1998;114) reports a lack of co-operation between research and education institutions and SMEs. A branch of industry is pictured which is characterised by the absence of common understanding because firms have not perceived any mutual interest in such co-operation. A further problem has been the general-

Table 6.8. Specialisation of wooden furniture firms in the Lahti area, Finland, 1995 (Kautonen 1998;109)

Level of specialisation	Number of firms
No specialisation	39
Specialisation in sub-contracting	19
Specialisation in specific product segments Which employ similar manufacturing techniques	31
Specialisation in one segment only	7

ised academic knowledge provided by public institutions, with little available firm- or product-specific practical knowledge. Of the eighteen firms studied by Kautonen, nearly 40% had no contacts with R&D organisations, over a quarter had no links with public service organisations, and two thirds had no links with private consultants. Only 38% of the firms belonged to any form of inter-firm network. Such lack of trust and lack of co-operation is in complete contrast with the entrepreneurial ethic found in Italy and Denmark, for example, which while not lacking fierce competition is also fully aware of advantages of co-operation: trust being a natural outcome of embeddedness (see section 2.3, and especially section 2.3.2). The problem seems to be a question of social psychology rather than industrial development economics

Networks and co-operation in other woodworking SME branches

If poor inter-firm networking is a characteristic of the Lahti wooden furniture district, then the situation in other branches would seem to be no better. Recent studies of the Finnish small sawmill and builders' components industrial branches (Petäjistö et al. 2000 & 2001) showed that the vast majority of firms have not accepted the concept of networking, Table 6.9. Only 12 sawmills out of 79 (15%) reported that they belonged to a network-proper (of which 10% were very small sawmills 22%, medium small sawmills and 20% and the largest small sawmills).

Networking involves trust: a commitment to an agreed production-co-operation logic. Many small firms have objected to such commitments. The failure to uphold commitments has been a common reason for the failure of networking arrangements. There are, however, other less formal forms of inter-firm co-operation that may nonetheless be

Table 6.9. Proportion of firms involved in sub-contracting and networking in the Finnish sawmill and builders' components branches, %

	Sawmills[1]	Builders' Components[2]
Networking	15	16
Sub-contracting in	24	50
Sub-contacting out	28	45

[1]Petäjistö et al. 2000;
[2]Petäjistö et al. 2001

important to the firms concerned, e.g. in reducing transaction costs. In three separate studies, tree nursery, sawmill and builders' components industry (Petäjistö & Mäkinen 1999, Petäjistö et al. 2000, 2001) entrepreneurs were asked to what extent they had practised inter-firm co-operation in a number of areas. Considerable variations in inter-firm co-operation occurred by mode of co-operation and by branch, Table 6.10. The low level of co-operation in the sawmill branch, reflecting the lack of networking noted above, is not unexpected given its simple product line and low technology. However, raw material (saw logs) acquisition is a vital element in the success of a sawmill enterprise, and this is recognised in the relatively high level of co-operation reported in this activity.

Table 6.10. Proportion of Finnish enterprises reporting regular and systematic inter-firm co-operation, % of enterprises in branch

Area of co-operation	Tree nurseries[1]	Sawmills[2]	Builders' Components[3]
Production	21	7	22
Raw material acquisition	49	19	25
Information exchange	46	9	15
Marketing	19	6	17
Acquisition of equipment	22	4	4
Product development/Further Manufacturing	20	2/10	11
Exporting	n.a.	2	9

[1]Petäjistö & Mäkinen 1999;
[2]Petäjistö et al. 2000;
[3]Petäjistö et al. 2001

The builders' components branch, with its diverse production range, shows higher levels of inter-firm co-operation, as should be expected. This branch would benefit from co-operation in marketing, but this does not seem to be in evidence (Table 6.10). As with the sawmills, the area with the highest level of inter-firm co-operation is the acquisition of raw materials.

It is perhaps surprising that the tree nursery branch, with its simple and standardised product, limited market and restricted suppliers (Petäjistö & Mäkinen 1999) should exhibit so high figures for inter-firm co-operation. These very small enterprises seem to have intuitively realised that in their external economies can reduce the weaknesses in both the supply- and demand-side constraints which characterise the branch.

Of the 22 sawmills which reported some form of inter-firm co-operation in the study by Petäjistö *et al.* (2000), 7 sawmills (22%) considered that the experience was positive, 41% considered the arrangement to have been satisfactory" and 22% reported a negative experience. Inter-firm co-operation was more a feature of the medium to small-sized small sawmills (size-class 1000–4999 m^3/year). Larger and smaller classes reported fewer co-operative activities. In the builders' components study (Petäjistö 2001), only 25% of the firms replied to the question concerning their experience of inter-firm co-operation. Of these firms , 53% were of the opinion that co-operation had been beneficial, 37% thought it had been acceptable, and only 10% (two firms) considered co-operation to have worked poorly. Significantly, the greatest satisfaction from inter-firm co-operation was experienced by firms that perceived their success to have been average or above average for their branch.

6.6. Woodworking SMEs as a tool of regional policy: Developing in the right direction?

The Porterian competitive advantage ethic has been understood and widely accepted in the context Finnish forest cluster LSEs (e.g. Lammi & Rouvinen 1996). Conversely, positive experiences in other countries in the development of Marshallian-type SME industrial have failed to appear in policies which guide the woodworking *SME*s in Finland. This is probably because SMEs are regarded merely as a dimension of regional employment policy (Uusitalo 1995, *Ihmisten maaseutu* 2000). SMEs lack an integrated industrial development strategy for improving their national and international competitive-

ness.

The importance of including SME-supportive policies in the national raft of industrial policies, rather than merely as a part of local development *politics*, gains importance from the fact that many countries are becoming aware of the advantages of industrial clusters and industrial districts (which are in fact "mini clusters") as a means to cope with globalisation. A geographically fragmented approach to SME development in any branch or sector, as found in Finland, will probably fail simply because such an approach cannot build on the key factors of external economies, social commitment & embeddedness, and localised learning. The absence of the co-operative ethic in Finnish entrepreneurs (discussed in the previous section) is also a serious problem which needs to be addressed in future entrepreneurial education and training programmes (see e.g. Uusitalo 1995).

A number of networking projects have been instigated in the woodworking branches over the past 10–15 years. Several of these were instigated under the *Puu-Suomi* project (Puu-Suomi... 1995, Vanhanen 1995), while others have been advanced under other programmes, e.g. LEADER. No overall conclusion can yet be drawn about the success of these projects. First, because network established under such schemes may survive only as long as the supportive financing arrangements. Secondly, networking projects are usually over-dependent upon strong leadership. Should that strong leadership be withdrawn, the network often collapses. Thirdly, the lack of a co-operation ethic among entrepreneurs (e.g. Kautanen 1996, Petäjistö et al. 2000 & 2001), has meant that networking has often been seen as an "emergency measure", and it is widely understood that many networks that were set up during the deep economic crisis of the early 1990s terminated as soon as "better times" returned.

One approach to wood products enterprise development in Finland has been to try to establish a new manufacturing tradition in areas which lack an enterprise tradition. An example of this type of approach, is the development of an academic centre for forestry based on the University of Joensuu, as well as an associated Centre for the Advancement of Wood (*Metsäosaamiskeskus*), both located in the forest-rich but socio-economically underdeveloped region of North Karelia. Another approach has been to establish development centres which act as agencies between various actors in the *existing* woodworking industry – i.e. to strengthen the production context of regions which may be incipient industrial districts. An example of such a project which seeks to build on existing regional strengths is WINCENT – a Wood Innovation Centre[4] run by the University of Helsinki's Seinäjoki Institute for Rural Research and Training (www.sjoki.-

uta.fi/hymakes/wincent). This is located in Etelä Pohjanmaa (South Ostrobothnia), the area with the greatest concentration of wood working enterprises (Figure 6.5).

The latter approach to SME and regional development would appear to have the greater possibility to bring about the development of beneficial industrial agglomerations by *concentrating development resources in those regions where the basis for such developments already exist.* The former development model have to be assessed on purely political grounds as there seems little attempt by such policies to optimise the current competitive advantages which can already be found in the distribution of woodworking enterprises in the country as a whole; i.e. the incipient woodworking industrial agglomerations or districts located in western and south-western Finland.

[4] See Barret & Cohen (1996) for a discussion in a Canadien context of the rationale which underlies Wincent's activities.

7. THE ADVANCEMENT OF WOODWORKING SMEs

7.1. Introduction to the qualitative study

According to the current literature, SMEs can and do play a major role in the current re-organisation of industrial production. To succeed in this new production environment, SMEs need to practise what is called "flexible production". That is to say, SMEs need to be able to adjust quickly to customers' needs, the very opposite of the Ford production ethic based on mass-production of standardised goods in large factories with Tayloristic management regimes. Further, SMEs have to be well endowed with information concerning customers' demands, changing technologies, etc., they also have to be able to decide on participation in vertical and horizontal production chains. With the number of SMEs being very high, as demonstrated in Chapters 5 and 6, competition is also fierce. Finding the balance between inter-firm co-operation and competition may be a key factor in SME success, and this too is frequently a question of information flows.

Given the limited scope of the investigation, it was not possible to carry out an enterprise-level investigation in all eight countries, however desirable this would have been. Be that as it may, information was required that would supplement the quantitative statistics, and that would contain qualitative assessments of the performance of SMEs in the various industrial branches.

The chosen solution was to administer a questionnaire to branch organisations in the eight countries, as described in Chapter 3. These organisations were selected as representatives of the lowest level of aggregate information concerning SMEs. It was assumed that each branch organisation would a) have a good overall knowledge of the workings of its branch and its strengths and weaknesses, and b) that it would be well aware of the position of SMEs within its branch by way of its membership. Despite the good offices of the co-operating organisations, return rates were variable, and the over all aim of at least one representative organisation per branch was not achieved. The analysis is consequently confined to country-wise comparisons, not branch-wise and country-wise, which was the original aim. The analytical method was outlined in Chapter 3.

7.2. Industrial organisations, their function and significance

The frame of reference (Chapter 2) addressed the question of industrial districts, and the benefits that are to be obtained from the social, economic and technical synergies which can result from proximity effects and localised learning: the flow of information being central to this process. The means employed by firms to acquire information are many and varied, ranging from passive sources (the media) to active sources (courses, trade fairs), as well as informal sources (customers, family & friends) to formal sources (financial institutions, R&D projects, etc.

Studies of the formation of industrial districts (e.g. Trigilia 1992, Markusen 1996, Parc 1996, Lorenzen 1998b) have revealed that the use of both formal and informal information channels is of importance to the development of such districts. Thus, well developed information channels should be associated with "localised learning" and the development of the symbiosis and synergies which typify successful woodworking industrial districts. This is none more obvious than in the case of the Italian industrial districts of north and central Italy. One of the reasons cited by many observers for the success of Italian SMEs is the large number of industrial organisations which exist to promote both branches and localities by acting as disseminators of knowledge, and helping enterprises with the "learning process". Such organisations also enhance members' identity with their branch (and locality), attributes which were missing in the case of the woodworking concentration around Lahti, Finland (Trigilia 1992, Kautanen 1998).

Italian Woodworking Associations[5]

Italy has benefited from a system of "socialising agencies" in the form of co-operatives, trade federations, and other social groupings (religious and political). Of particular significance has been the formation of trade federations, especially those that support artisans and SMEs.

In Italy, a woodworking firm can be a member of one of five large associations. Three of the associations represent artisans and two are for industrial firms. The artisan associations are called *Confartigianato* (Confederation of Artisans), CNA (National Confederation of Artisans, and CASSA (Confederation of Autonomous Syndicates of Artisans). The main industrial association that tends to be for larger firms is called *Confindustria* (Confederation of industries), of which *Federlegno - Arredo* (Federation of Woodworking and Furniture Firms) is the branch that represents the timber and wood products industry. The other association is called *Confapi* (Confederation of Artisans and Small Business), which represents its woodworking members through its branch *UNIFal,* which in turn represents the small woodworking industrial firms.

Artisan associations
The three artisan associations were set up in the years immediately following the Second World War. By 1995, some 3,138,200 people were employed in the artisan sectors of which there were 380,000 manufacturing firms.

Confartigianato: This federation claims to be the largest federation with over half a million affiliated artisan businesses from all sectors of industry. Its main roles are to: help and represent its members on all political levels, including the European Union; to promote and assist all members' activities; and to provide support by way of business advisory services. It is represented in several national institutions, such as INPS- National Institute for Social Insurance, CNEL- National Council of Economy and Labour, and also has its own bank- *Artigan cassa*, made up of private investors. At the European level, *Confartigianato* represents the Italian artisans in, for example, the Economic and Social Committee of the EU and is part of the European Union of Crafts and Small and Medium businesses. For research and development it makes use of the semi-public and private institutes, both at the local level (such as *EBAV* –The Veneto Artisan Research Authority), and at the national level (such as *CATAS*, (Italian Laboratory for Testing Wood Products, and *CSIL* – the Centre for the Study of Italian Woodworking Industries).

The structure of *Confartigianato* is such that it is made of many smaller federations and associations. It has a head office in Rome, 20 regional federations 199 provincial and 1,200 town offices. There are also affiliated category associations for all main types of industry, such as the *Assosazione Nazione dell Legno* (AIAL) for wood workers, who provide additional specific assistance where required.

CNA: This is the *National Confederation for the Craft Sector and SMEs*, and is an autonomous association for the representation of the interests of its members and is very similar to *Confartigianato*. It was started in 1946 and now has over half a million members and represents enterprises, craft firms, and co-operatives of small and medium sized firms.. Its roles are to help its members by supporting entrepreneurship with respect to labour, competition, co-operation and solidarity, as well as legal require-

ments such as safeguards. CNA achieves these objectives by relating directly with public institutions and with all social, economic and political partners. The CNA is made up of many locally based offices. There are 20 regional offices, 106 provincial offices and 763 offices. There are also affiliated trade associations. The main difference between CNA and *Confartigianato* is that CNA operates these local offices, where *Confartigianato*'s regional offices are affiliated associations. CNA also has a specific branch for the woodworking sector called FNALA, National Federation of Wood and Furniture Artisans.

At both local and national levels, CNA assists and influences policies and represents the artisans amongst many national bodies and institutes, such as INPS– National Institute for Social Insurance, CNEL– National Council of Economy and Labour. It is also represented within working groups of the Ministries of the Environment, Foreign Trade, Finance etc. In collaboration with the Government, it has signed a convention with the Ministry of Education, for vocational training and with the Ministry of the Interior to combat corruption, and has been instrumental in many other agreements. CNA is also active in Europe and has an office in Brussels, where it promotes Italian and all European artisans. It also has programmes to involve and help women and young artisans.

CASA: the *Confederation of Autonomous Syndicates of Artisans* operates on a similar principle to the regional and local associations. It also has a branch specifically for the wood products sector called FALA, Federation of Wood and Furniture Artisans.

Industrial associations

Of the two main industrial associations *Confindustria* is the largest. It represents all sectors of industry. It is oriented towards the larger firms. It operates from a head office and has regional associations. It also has a division for each of the main branches of industry, such as *Federlegno* for timber and woodworking branches. *Confapi* is for smaller firms, which are still classified as industries and not artisans (i.e. they have over 15 employees), with a similar structure, i.e. a head office and regional and town offices, an example being *Unindustria of Treviso*

Federlegno represents the industrial woodworking sector in Italy, and it is part of *Confindustria* of which one must be a member to be a member of *Federlegno. Federlegno* has 9 main sections, each with sub-groups, representing all the main woodworking branches, and four additional groups for Pensions, Pallet testing, Certification, and Doors and windows. *Federlegno* also has strong links with four research establishments, CATAS and CRIL for testing wood, products and product research, and ICILA and CLAC for legislation, guidelines and certification.

Confapi – the Italian Confederation of Small- and Medium-sized Business - of which *UNITAL* (Italian Union for Furniture and Woodworking) is the branch specifically for woodworking. *Confapi* represents the small industrial (but not artisan) businesses and was formed in 1947 and now his more than 65,000 member firms. Its role is similar to that of the other associations, and it represents its members in various departments of government. It has recently set up an office in Brussels and is a member of the European Association of Craft and Small- and Medium-sized Businesses (*UAPME*). The national structure is based on regional and provincial affiliation category associations, such as *UNITAL*

[5] This section is almost entirely based on a paper by Richard Panting: Dept. of Agriculture and Forestry, University of Padova

7.3 Development of the demand for wooden products over the next five years

Demand is the basis for the development of any branch of industry, and this is fully reflected in the Porterian "Diamond model". Given the current trends in the global economy, how future demand is perceived is likely to have an important affect on the development of a branch. Given the diverse market conditions in the countries of the EU, it can be expected that differences will occur in the perceptions of the development of demand in the future.

There were considerable variations in the expectations of the development of demand, Table 7.1. The aggregate figures for each country show Finland to be the most pessimistic concerning future developments (declining Domestic, EU and World markets). The most optimistic in this respect are Austria, Denmark, Ireland and the U.K.

Examined from the standpoint of the ESNR (1998) SME- or LSE-dominance classification, the woodworking industries in SME-dominant countries can be seen to export considerably more of their products to the other EU countries, or to the world markets than the LSE-dominant countries, Table 7.2. However, in this investigation,

Table 7.1. Percentage of products by value going to different markets with development expectations, (% of total responses per country)

	Domestic Market		**Other EU Countries**		**World *market*[1]**	
	Share of total market, %	Trend	Share of total market, %	Trend	Share of total market, %	Trend
Austria	52	Static	41	Static	6	Static
Denmark	60	Static	30	Static	10	Increase
Finland	77	Decrease	17	Decrease	6	Decrease
Germany	84	Decrease	12	Static	4	Static
Ireland	84	Increase	14	Increase	2	Static
Italy	66	Decrease	21	Static	12	Static
Sweden	73	Static	24	Static	3	Static
U.K.	91	Static	7	Static	2	Static
ALL	73	Static	20	Static	6	Static

[1] Excluding EU

Table 7.2. Percentage of products by value going to different markets, averaged by SME- and LSE-dominant countries

	SME-dominant	LSE-dominant	All
Domestic market	59	82	73
EU-market	31	15	20
World market	9	3	6

Table 7.3. Market trends expected by the woodworking industry to increase over the next five years. Percentages of country-wise responses

	Au	Dk	Fi	Ge	Ir	It	Sw	UK	Chi-Square[1]	Prob.
9a) Domestic demand	40	0	33	37	100	38	40	44	32.8	0.04
9b) Export demand	80	66	83	50	57	53	40	22	25.3	0.23
9c) Competition from imports	40	66	16	50	28	92	40	44	39.7	0.00
9d) Competition from substitutes	0	0	16	0	42	61	40	33	40.2	0.00
9e) Production structure determined by large buyers	40	100	33	62	28	23	40	33	11.7	0.62

[1]Chi-square for all classes of the variable in each row

the LSE-dominant countries include Germany and the U.K. which have very large domestic markets.

Recipients of the questionnaire were asked how some key market trend factors were likely to change in the next five years. These factors were competition from imports, which could be expected to challenge the domestic producers through increased price and/or quality competition. Competition from substitutes, whether of domestic or foreign origin, can also be considered to be a threat to the wood working industry, e.g. in the form of plastic or metal components. A third condition that, according to Porter (1990), can affect the competitiveness of an industry is the role of domestic wholesale buyers. The large wholesaler can create production networks and so give SMEs a chance to gain compete with large producers, on the other hand, fewer buyers in the market reduces competitiveness, usually to the detriment of the branch in question. Table 7.3. presents the percentages of those organisations in each country that considered the factor in question to *increase* over the next five years.

The demand variables were considered together by employing principal component analysis, which seeks to determine basic "dimensions" or "components" in the data matrix. The standardised scores of these components can then be used as variables in further analysis (see Chapter 3 for a more detailed explanation of the method). The principal component model for market trend variables is presented in Table 7.4.

The variance explained by the components is a high 75.2%, and the interpretations of the components are as follows:

PC91: Open market component – This component is characterised by strong loadings of variables *x9c – competition from imports* and *x9b – export demand*, which given their positive coefficients, strengthen in importance as the component strengthens. The apparent contradiction between x9b & x9c on the same component is assumed to mean that while organisations considered imports to become increasingly competitive in their home market, they also expected export opportunities for their own branches products. Thus, the component would appear to be a direct expression of the efficacy of the Single European Market! The component is therefore called the "open market" component.

The country-wise average scores for PC91 are shown in Figure 7.1 Open markets were considered to be most likely develop in Italy, Austria, Denmark, Finland and lesser so, Germany. In Sweden, Ireland and especially the U.K., organisations seemed less sure of this development. The U.K. has a strong domestic market, while in Ireland, too, strong economic growth obviously gives cause for optimism in domestic industries. The behaviour of Sweden on this com-

Table 7.4. Principal components model of market trends perceived by the wood-working industry in the case countries

	PC91	PC92	PC93
Eigenvalues	1.80	1.01	0.93
Varimax rotated loadings:			
x9c – Competition from imports	0.86	*	
x9b – Export demand	0.82	*	
x9a – Domestic demand	*	0.98	
x9e – Production structure dictated by large buyers	*	*	0.89
x9d – Competition from product substitutes	*	*	0.65
Variance explained (%)	*29.95*	*20.31*	*24.95*

* loadings below .400 omitted for the sake of clarity

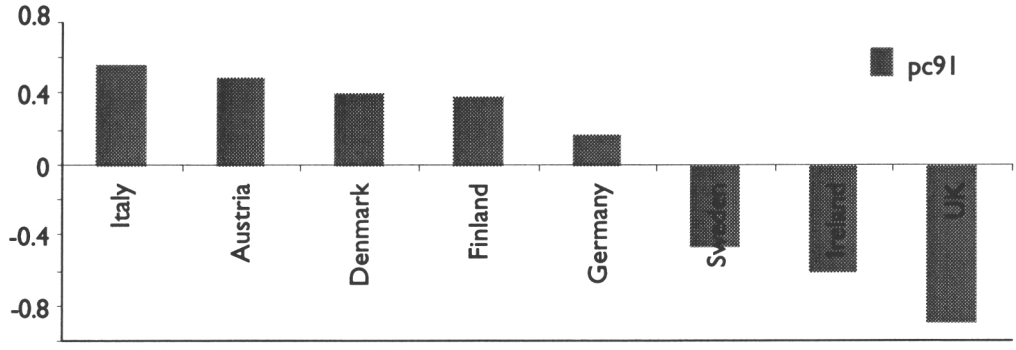

Figure 7.1. Country-wise average scores for PC91 – Open market component.

ponent is less easy to explain. According to Table 7.3, Swedish organisations reported both increased export opportunities as well as increased competition from imports. However, Swedish organisations also reported a relative high percentage of "Cannot say" answers, and this is also a feature of the Irish and British responses, and it is this element which may add to the relatively low average scores of these countries. However, it has to be borne in mind that the principal component scores are *relative* rather than absolute measures.

The openness of economies has been addressed by WEF (1996), and the lack of correlation between the WEF rankings and the component score "rankings" here was clearly evident. E.g. Italy came 8th and the U.K. 1st of the eight countries according to the WEF, but the reverse is true of the scores of PC91. This is considered to be a result of the fact that the WEF inquiry was directed at LSEs and corporate managers, whereas the current survey was directed at SMEs. As will be seen in this chapter, distinct differences occur between the evaluations of SMEs' positions in the so-called SME-dominant and LSE-dominant countries.

PC92: Domestic Demand Component – This component is characterised by a single loading (*x9a – domestic demand*) and thus its interpretation is the same as the original (non standardised) variable (see Table 7.3). Thus, Table 7.3, and Figure 7.2 should give the same result, but visual inspection shows that there are small discrepancies. These arise because a) the table presents absolute figures for each category (derived from the scale "decrease, increase, no change, cannot say"), whereas the scores shown in Figure 7.2 are *standard-*

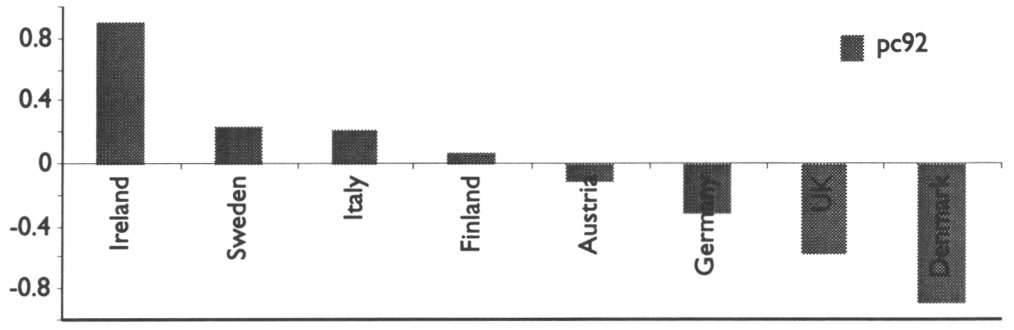

Figure 7.2. Country-wise average scores for PC92 – Domestic demand component.

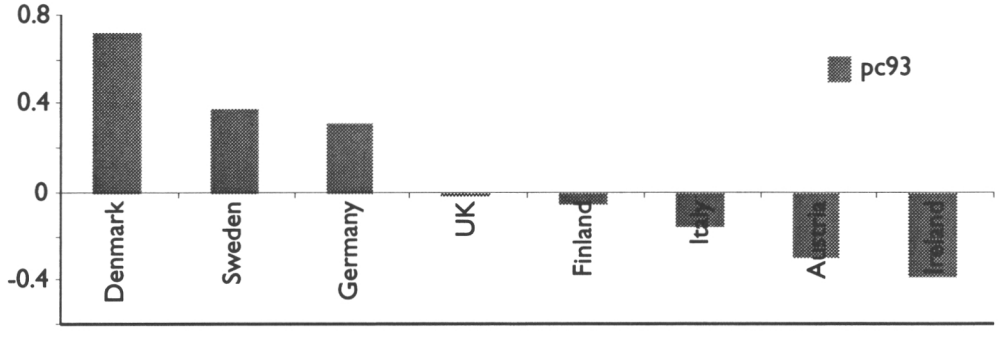

Figure 7.3. Country-wise average scores for PC93 – Large buyers and substitution component.

ised estimates of the *balance between each category*. Again, the average scores per country show relative rather than absolute positions. Confidence in the results is enhanced by the strong position of Ireland. As noted earlier, domestic demand in Ireland is strong, supported by an annual growth rate of c.8%.

PC93: Large buyers and substitution component – The final component (extracted at the lower limit of the acceptable eigenvalue) is characterised by variable *x9e Market dictated by large buyers* and variable *x9d Competition from product substitutes*. The role of large buyers (e.g. retail and wholesale chains perhaps with "national brand names") dominates the loadings on this component. The fact that the question of product substitution is also loaded on this component is considered to be perfectly logical. The large buyers may not be expected to have loyalty to any specific wood-based material, and may easily adopt "new lines" of goods which use other materials (e.g.

steel or plastic) which may be competitively prices, or temporarily "in fashion".

Danish, Swedish and German organisations regarded this market development (the "IKEA-effect") as a major trend, compared with Italian, Austrian and Irish organisations. However, it has to be noted that these three countries' average scores are not strongly negative. The "neutral " position of the U.K. is perhaps explained by the fact that the role of large buyers and brand-names are already well established and "taken-for-granted", a response which may also apply to Finland and Italy. This interpretation is supported by Table 7.3, which shows these countries gave "no change" responses.

Correlating the scores of this principal component model with the labour input intensity coefficient (LIIC) did not produce significant correlations. On the other hand, averaging the scores for the SME- and LSE-dominant countries (Table 7.5) demonstrates the "openness" of the SME economies (PC91 – Open markets), whereas the LSE-dominant countries are were regarded to be less "open". The average scores of the two remaining components (PC92 & PC93) show no significant differences between SME- and LSE-dominant countries.

Table 7.5. Perceived market trends, average component scores by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$.
PC91: Open market component	0.52	-0.31	0.00
PC92: Domestic Demand Component	-0.01	0.00	0.95
PC93: Large buyers and substitution components	-0.06	0.03	0.71

$2t_{prob}$ = Two sample t-test

7.4. Direction of industrial development during next five years

The frame of reference discussed the question of post-Fordian production regimes, and how production networks based on flexible specialisation have become a central feature of production structures. This process has been identified throughout European woodworking industries to a greater or lesser degree. Thus, countries in which the

woodworking branches are strongly adjusting to this new production regime can be considered to in a more favourable position than those in which adjustments are not seen to be so important.

The questionnaire sought to determine branch organisations' attitudes to those changes that would maintain or improve competitiveness. The question: *"In what direction(s) do you think industrial production will develop in your branch during the next five years in order to maintain or improve its competitiveness*?" is examined in Table 7.6.

Increased specialisation (10a) is seen to be most probable course of development in Denmark, Finland and Austria, where as JIT and flexible production (10d) are the most likely developments in Austria, Denmark and Germany. The increased manufacture of semi-finished goods (10c) can be considered to be part of the specialisation process. Here, firms produce components for other firms, e.g. in it simplest form, sawmills may produce specialised lengths to reduce wastage disposal costs of the main customers. Finland has so far not been very strong in this field, and this lack of development can be seen from the table. Austria seems set to intensify its production of semi-finished goods. According to the literature on the Italian woodworking industry, component manufacture is already very well developed, which would explain the very low expectations concerning its (further) development in Italy. That having be said, it is very interesting to note that the regional concentration of production (10g) is expected to

Table 7.6. Woodworking industry's development in next five years. (% of total responses per country). The first figure in each cell is "*probable*" development, the second figure is "*possible*" development

Direction of change	Au	Dk	Fi	Ge	Ir	It	Se	UK	Chi -square[1]	Prob.
10a) Increased specialisation	80/20	100/0	83/16	50/25	57/28	46/38	40/40	11/44	24.2	0.27
10b) Increased diversification	60/40	33/0	16/66	50/25	28/57	30/38	60/20	33/22	26.1	0.19
10c) Increased production of semi-finished goods	80/20	0/100	50/50	42/0	14/14	23/30	40/20	0/33	40.2	0.00
10d) Increased JIT & flexible production	80/20	100/0	66/16	87/12	42/42	53/15	60/20	33/44	20.8	0.46
10e) Increased networking	60/20	66/0	66/33	28/28	14/57	16/33	60/20	22/33	23.0	0.34
10f) Increased centralised marketing	40/40	66/0	50/33	37/25	0/71	7/30	0/60	11/11	34.0	0.03
10g) Increased regional concentration of production	0/20	0/66	0/16	0/37	0/14	23/7	0/0	0/22	33.7	0.03

[1]Chi-square for all classes of the variable in each row

increase even further in Italy, even though this is already well developed in that country.

The specialisation and manufacture of semi-finished goods, by definition, implies networking arrangements in which systems of producers are linked to produce a common good or range of goods. Here again, it is well documented that Italy, in particular, has made considerable progress in networking, and so it is not surprising to note Italy's low expectations in this line of development.

In Denmark, which is often considered to be partially modelled on the Italian model (Lorenzen 1998b), the woodworking industry organisations consider that the development of networking (10e) in the next five years is the most probable line of development.. Given Denmark's international success in the furniture industry in particular, this result is particularly interesting. This result supports more thorough investigations into the Danish woodworking industry by Maskell (1998b) and Lorenzen (1998b). The woodworking organisations in Austria, Finland and Sweden also consider that networking will be a significant line of development in their industries during the next five years. In Sweden, IKEA has done much to advance networking arrangements, which in turn promotes business-to-business (intra-firm) learning. In Finland, such arrangements are still poorly developed, despite such woodworking industry development programmes as *Puu Suomi*.

Centralised marketing is also a key element in some manufacturing regimes. The advantage of this arrangement can be that a "brand name" is associated with a given quality and/or price range, but not necessarily a product. Such outlets can provide a wide range of good (from high quality builders' carpentry and joinery products to garden furniture, as well as primary goods such as sawn and planed timber). In the furniture industry, similar arrangements can be found. Table 7.6 shows responses by woodworking industry organisation to the question of centralised marketing (10f) are very varied. In fact, the low responses occur in those countries were centralised marketing is already well developed (Valtonen et al 1997). Denmark seems set to extend its centralised marketing arrangements, but the few observations from Denmark means that the figure has to be interpreted with caution.

Product diversification (10b) is, of course, very dissimilar to product specialisation. It is therefore interesting to note that diversification is considered by some respondents to be a likely development in Austria and Sweden.

The question of diversification was raised during the planning stage of the questionnaire during an interview with the president of

the Padova area Builders' Carpentry and Joinery Manufacturing Association. The president was an economist who had returned to the family firm to continue it into the third generation. He presented a very firm case for diversification of production. His arguments were that specialisation can lead to inefficiencies during lulls in the market, as well as an in ability to react swiftly to changes in the market. JIT and flexible production demanded diversification, not specialisation. By having several production lines, labour could be transferred from one line to another as orders dictated. His own firm had diversified from three to seven lines of goods, and during his presidency, he was intending to try to encourage other enterprises to diversify.

Finally comes the question of regional specialisation. The development of industrial agglomerations and Marshall-type industrial districts can secure considerable external economies from networking arrangements. However, as discussed in the frame of reference, full benefits from networking are gained only when a whole region becomes specialised in producing a particular range of goods together with self-supporting services. A collective knowledge base is built up with time and institutionalised in economic, social, political and cultural structures. Given the well-documented evidence of the benefits of regional concentration of production and the formation of industrial districts, as well as the fact that such regions are still not common in the case countries, it is very significant that only in Italy, where woodworking industrial districts are very well developed, did the respondents to the questionnaire (10g) consider that this production structure advantage would continue to be important in the future.

Given that the none of the development directions under discussion are mutually exclusive, it is necessary to try to identify specific combinations of these trends. Principal components analysis was again employed, and four interpretable components could be constructed, Table 7.7. The model extracted 88% of the total variance.

PC101 – Re-orientation of production: As this component strengthens, it is expected that there will be increased specialisation (*x10a*), increased production of semi-finished goods (*x10c*), and increased JIT (which might also be considered a form of specialisation) (*x10d*). The component is therefore considered to represent the "production reorientation" which is an essential element of the post-Fordian ethic, and pre-requisite for SME development (see discussion n chapter 2). According to the averaged country-wise scores (Figure 7.4), production re-orientation is perceived to be likely to increase in Austria, Denmark, Finland, Germany and Italy and to be less likely in Ireland, Sweden and the U.K.

Table 7.7. Principal Components model of the expected direction of development of woodworking industry

	PC101	PC102	PC103	PC104
Eigenvalues	*3.16*	*0.97*	*0.62*	*0.52*
Oblimin[1] rotated loadings			*	*
x10a – Increased product specialisation	0.87	*	*	*
x10c – Increased production of semi-finished goods	0.70	*	*	*
x10g – Increased regional concentration of production	*	0.93	*	*
x10f – increased centralised marketing	*	*	0.94	*
x10d – Increased JIT and flexible production	0.45	*	0.58	*
x10e – Increased networking	*	*	*	0.96
Variance explained (%)	*27.74*	*17.81*	*23.47*	*19.14*

* loadings below .400 omitted for the sake of clarity

[1] Correlations between oblique components

	PC101	PC102	PC103	PC104
PC101	1.00			
PC102	0.14	1.00		
PC103	0.43	0.22	1.00	
PC104	0.44	0.06	0.44	1.00

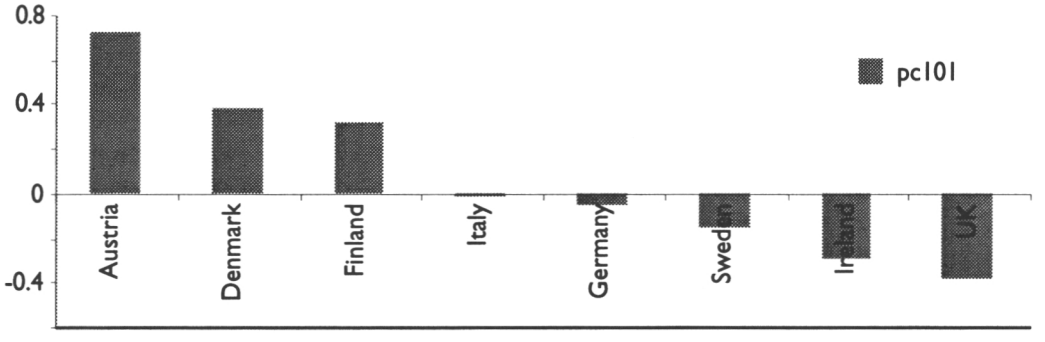

Figure 7.4. Country-wise average scores for PC101 – Production re-orientation.

PC102 – Increased regional concentration: The second component has only one strongly loaded variable (*x10g*– increased regional concentration of production). This variable captures the expectancy that industry will form regional concentrations, or industrial districts. The averaged results are shown in Figure 7.5. Being essentially a single variable model, the distribution of component scores is very similar to that of the original variable (x10g). Most countries receive score very close to the mean, and it can be considered that regional concentration is in those countries not a major issue. A significant result is that countries that already have regional agglomerations of wood products industries, Denmark, Italy and Germany, seem likely to further increase regional concentration. Organisations in Austria, Finland, Ireland, Sweden and the U.K. seem to consider that regional concentrations are less likely to occur.

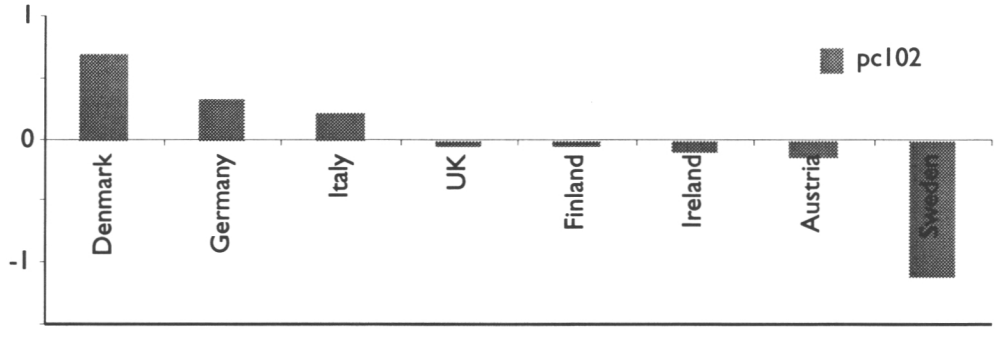

Figure 7.5. Country-wise average scores for PC102 – Increased regional concentration.

PC103 – Market orientation: The third component finds increased central marketing (x10f) loaded with increase JIT production (*x10d*). The dual loading is logical. If an industry is to be customer (market) oriented, then JIT arrangements must become increasing important. The component is in clear agreement with current trends in the global economy and post-Fordian production structures. It is slightly surprising to find Italy with a negative score for this component. Given that Italy already has well developed marketing structures and customer orientation, it is likely that respondents no longer perceive this activity as one which will "develop" in the future.

Market orientation was considered to be more likely in Austria, Denmark, Finland and Germany, and less so in Ireland, Italy, Sweden and the U.K. (Figure 7.6).

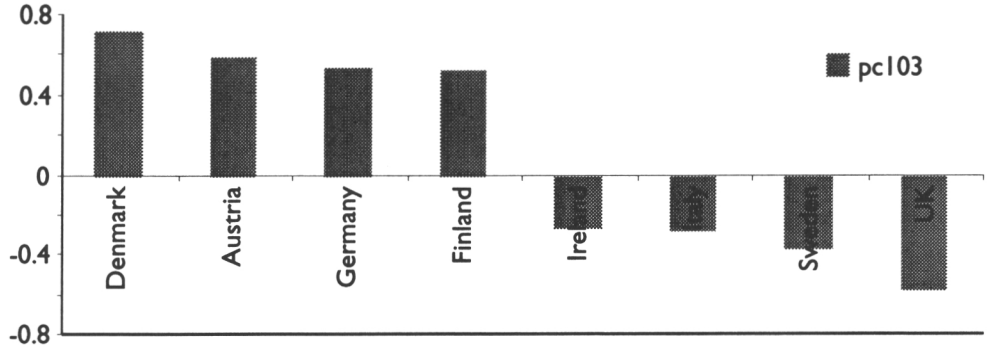

Figure 7.6. Country-wise averaged scores for PC103– Market orientation.

PC104 – Increased networking: The fourth component is essentially based on a single variable (*x10e*) and so the component could be substituted by the original variable. Examining the country-wise average scores for this component it would seem that at least in Italy and Germany, where networking is well developed, this direction of development was perceived to be less important. The Scandinavian countries, even including Denmark, perceived the need for greater efforts in networking. The result largely corresponds to the results of the original variable as shown in Table 7.6.

According to the averaged scores (Figure 7.7) Increased networking was considered to be the more likely development in Austria, Denmark, Finland and Sweden, but less so in Germany, Ireland, Italy and the U.K.

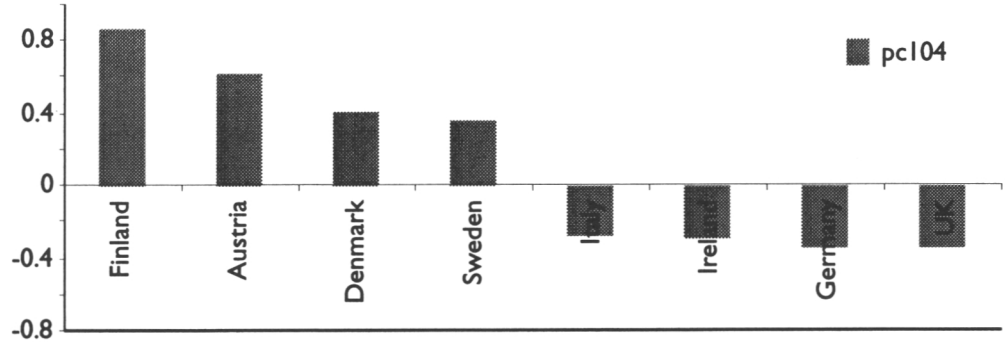

Figure 7.7. Country-wise averaged scores for PC104–Increased networking.

Rank correlations between labour input intensity coefficients and the component scores for PC101–104 were not significant. LIIC/PC102 (increased regional concentration) (0.595) was nearly significant at 5% risk. This result goes some way to support the evidence in the literature concerning the importance of regional concentrations of enterprises in any given branch (industrial districts). Another nearly significant correlation (–0.524) for LIIC/PC104 (increased networking) was, surprisingly, negative. However, upon examining figure 7.7, it is clear that the correlation has to be negative, as countries with low or relatively low LIICs, such as Austria, Finland and Sweden, scored highest with respect to the need to develop networking. Countries with higher LIICs, such as Italy and Ireland, which, according to the literature, have reasonably well established networks, naturally report less need for such developments.

The countries component scores were averaged for SME- and LSE-dominant country groups (Table 7.8). The increase product specialisation (PC101) was considered to be the probable development in the SME-dominant countries, but less probable in the LSE-countries (the group average score is negative) – the difference being c. 0.5 standard deviations. Similarly, regional specialisation (PC102), market orientation (PC103) and increased networking (PC104) were each considered to be a likely development in SME-dominant countries (positive score averages), and less likely in LSE-dominant countries (negative average scores). However, the differences between the two country groups in the case of PC104 and PC104 are very small. However, it may be significant that the average scores are positive for the SME-dominant countries and negative for the LSE-dominant ones, which means that the SME-oriented countries are more likely to become market oriented and to increase networking.

The results of this analysis indicate that the woodworking branches in the SME-dominant countries appear to be reacting more strongly to

Table 7.8. Expected direction of development of the woodworking industry. Average component scores by size-dominance classes

	SME-dominant	*LSE-dominant*	$2t_{prob.}$
PC101 – Increased production re-orientation	0.32	-0.19	0.03
PC102 – Increased regional concentration	0.21	-0.12	0.27
PC103 – Market orientation	0.06	-0.04	0.69
PC104 – Increased networking	0.04	-0.02	0.81

F=1.308 d.f. 4 51, prob.=0.27

changes in the global industrial production regime than in the LSE-dominant countries.

7.5. Business problems of woodworking SMEs

To assess the nature of the problems that were perceived to be facing SMEs, the question was asked *To what extent are the following issues seen as problems in small businesses in your industrial branch?*

Table 7.9 shows the proportion of those responses in each country that reported the problem in question to be a major one. As can be seen, there is considerable variance. At one end of the scale, little difference was perceived between the countries concerning the level of business competence (12a), labour costs (12d), profitability (12f), level of technology (12h) and both product substitution alternatives (12j&k), each of these variables receiving low Chi^2 values, and therefore high probabilities that they belong to the same grouping. Labour costs were perceived by most of the countries to be problematic, although least so in Germany, the U.K. and Austria, and more so in Italy, Denmark, Sweden and Ireland. The least serious problems seem to be coping with changing industrial standards (12c), and substitution (12j&k), each of which receive low percentages., but not necessarily low Chi-square values.

Table 7.9. Woodworking industry associations' opinions concerning the *major problems* facing SMEs (% of total responses per country)

Perceived SME problem	Au	Dk	Fi	Ge	Ir	It	Se	UK	Chi-Square[1]	Prob.
12a) Level of business competence	20	33	33	0	42	69	60	22	22.9	0.34
12b) Coping with administration	60	33	33	62	71	61	0	55	32.9	0.04
12c) Coping with changing industrial standards	40	0	16	25	42	69	0	33	30.3	0.08
12d) Labour costs	40	66	50	25	57	76	60	33	19.3	0.56
12e) Availability of skilled labour	0	0	33	37	85	100	80	44	37.9	0.01
12f) Profitability	60	66	66	75	42	38	100	55	20.9	0.46
12g) Raw material acquisition	0	33	16	25	0	53	20	0	35.5	0.02
12h) Level of technology	0	0	0	12	14	38	20	22	19.0	0.58
12i) Competitiveness	25	100	50	50	28	61	0	55	38.3	0.01
12j) Product substitution (wood)	40	0	16	0	28	30	0	11	21.5	0.42
12k) Product substitution (nonwood)	20	0	33	12	28	30	20	22	18.7	0.60

[1]Chi-square for all classes of the variable in each row

On the other hand, Coping with administration (12b), coping with changing industrial standards (12c), the availability of skilled labour (12e), raw material acquisition (12g) and competitiveness (12i) each receive very high Chi-square values, thus indicating considerable variations between countries. Coping with administration (12b and industrial standards (12c) is perceived to be problematical in most case countries, except Denmark, Finland, and Sweden. An interesting result, possibly related to high levels of basic education in those countries.

Problems concerning the availability of skilled labour (12e) were perceived to be a problem in Italy, Ireland and Sweden, but not in Austria or Denmark. Raw material acquisition (12g) was seen as a problem in Italy, but not at all in Austria, Ireland or the U.K. Note that some respondents in Finland perceived raw material problems, despite the fact that Finland has the greatest forest reserves of the case countries. Denmark and the U.K., for example, import considerable quantities of wood products from Finland (Petäjistö *et al.* 1997). Competitiveness (12i) was perceived to be a problem in Denmark, and to some extent in Italy, the U.K., Finland and Germany.

As the problems facing SMEs are not singular, principal component analysis is again employed to examine the inter-relations between sets of problems (Table 7.10). Variable x12h c Level of technology, was omitted due to its complex loading on several components, i.e. its low variance.

Table 7.10. Principal component model of perceived small business problems

	PC121	PC122	PC123	PC124
Eigenvalues	*3.27*	*1.80*	*1.21*	*0.93*
Varimax rotated loadings				
x12b – Coping with administration	0.88	*	*	*
x12c – Coping with changing regulations	0.87	*	*	*
x12j – Product substitution (wood)	*	0.86	*	*
x12g – Raw material supply	*	0.75	*	*
x12k – Product substitution (non-wood)	*	0.69	*	*
x12i – Competitiveness	*	*	0.84	*
x12f – Profitability	*	*	0.79	*
x12e – Availability of skilled labour	*	*	*	0.78
x12a – Level of business competence	*	*	*	0.76
x12d – Labour costs	*	*	*	0.65
Variance explained (%)	*18.06*	*19.73*	*17.04*	*17.38*

* loadings below .40 omitted for the sake of clarity

PC121 – Coping with admin & regulations: As component PC121 strengthens, the variables concerning coping (*x12b & x12c*) gain in importance. The component is therefore identified with the problems associated with administration and regulations.

Coping with regulations was considered to be a problem in Austria, Ireland, Italy and the U.K., but less so in Denmark, Finland, Germany and Sweden (Figure 7.8).

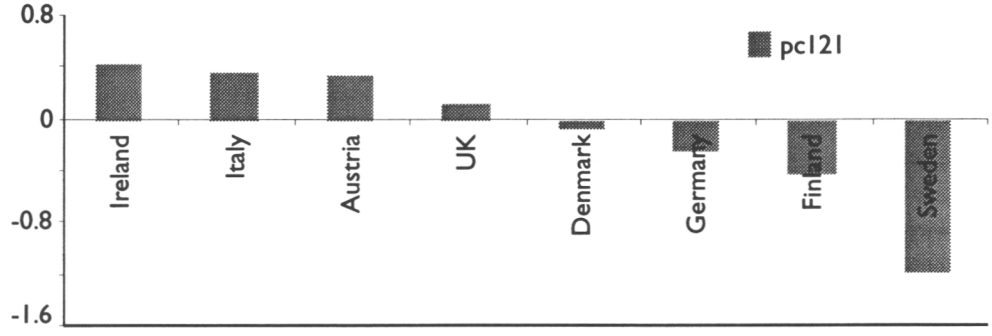

Figure 7.8. Country-wise averaged scores for PC121–Coping with admin. & regulations.

PC122 – Product substitution and raw material supply: The component is characterised by the strongly loaded variables concerning substitution by wood (*x12j*) and non-wood (*x12k*) products, as well as the variable concerning problems over raw material supply (*x12g*), each of which becomes more significant as the component strengthens. The combination of these variables (i.e. concerning supply and substitution) is logical in that if wooden products are to be a viable industrial activity which can compete against substitutes, there should be no concern over raw material supplies (either in qualitative or quantitative terms).

The country-wise averaged scores (Figure 7.9) show that product substitution and raw material supply problems were perceived to be a problem in Austria, Germany and Italy, but less to in Denmark, Finland, Ireland, Sweden and the U.K.

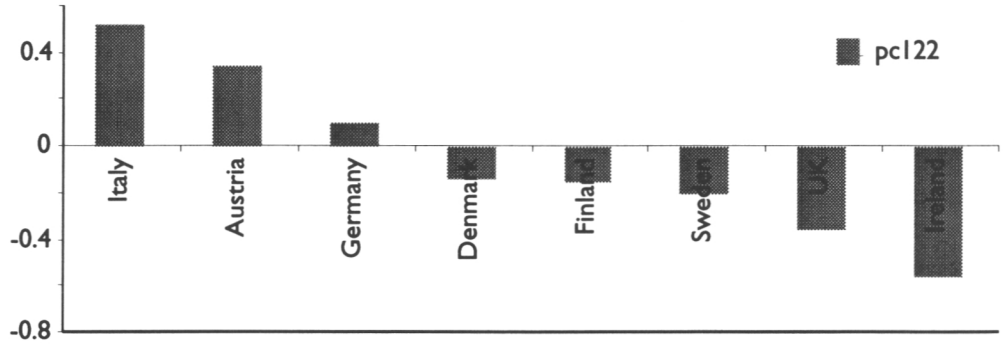

Figure 7.9. Country-wise averaged scores for PC122– Product substitution and raw material supply.

PC123 – Competitiveness: The organisations' concerns over business competitiveness and profits receive high loadings on this component. The interpretation is therefore unambiguous.

According to the country-wise averaged scores (Figure 7.10) competitiveness was perceived to be a problem in Denmark, Finland, Germany and Sweden, but less so in Austria, Ireland and Italy. The U.K. was located very close to the mean.

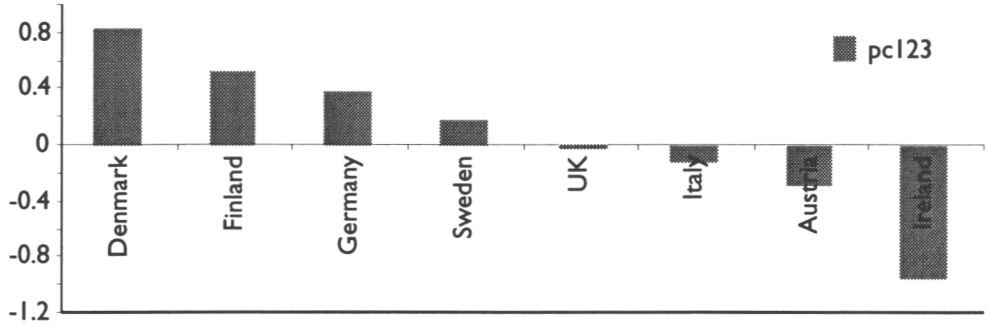

Figure 7.10. Country-wise averaged scores for PC123 – Competitiveness.

PC124 – Human resource problems: As the component strengthens, concern over the availability of skilled labour force, and labour costs increase. The strong loading of "level of competence" (*x12a*) on this component also suggests that the people answering the questionnaire understood the meaning of "business competence" specifically in human resource terms, rather than in the business economic sense. The component is therefore termed "Human resource problems".

Figure 7.11 shows that human resources were perceived to be a problem in Ireland, Italy and Sweden, but less so in Austria, Denmark, Finland, Germany and the U.K.

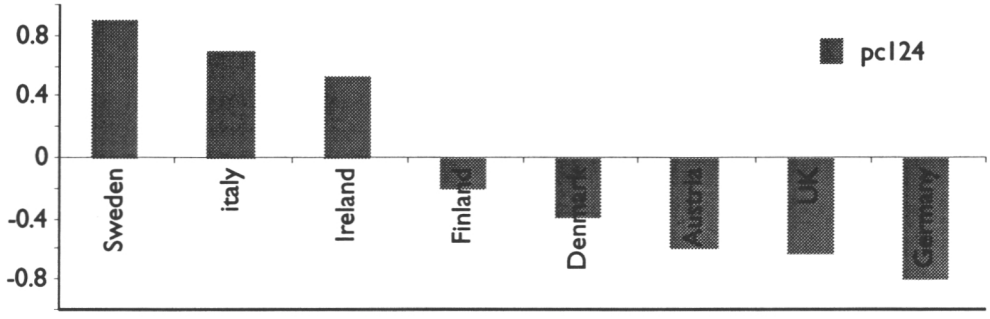

Figure 7.11. Country-wise averaged scores for PC124–Human Resource problems.

Correlation coefficients for LIIC and the scores of component PC121–124 were non-significant at 5% risk, although LIIC/PC121 (coping with admin. & regulation) was nearly significant (0.524). The relationship between SMEs and this coping process is never the less more clearly revealed in Table 7.11. The table shows that organisations in countries which are LSE-dominant perceive fewer business problems (negative average scores) for SMEs than their counterparts in countries which are SME-dominant. The difference between SME- and LSE countries in the case of PC123 is insignificant.

Table 7.11. Perceived business problems of SMEs in the woodworking sector. Average component scores by size-dominance classes

	SME-dominant	*LSE-dominant*	$2t_{prob}$
PC121 – Coping with admin. & regulation	0.30	-0.18	0.04
PC122 – Product substitution and raw material supply	0.38	-0.23	0.02
PC123 – Competitiveness	-0.02	0.01	0.89
PC124 – Human resource problems	0.23	-0.14	0.14

F=2.837 d.f. 4 51, prob.=0.03

7.6. Vocational education and entrepreneurial training requirements in woodworking SMEs

Entrepreneurs' requirements with respect to advice and training should ideally be examined at the entrepreneurial level. Nevertheless, during the planning phase, interviews with some branch leaders had shown that they possessed an accurate perception of their members problems and requirement. It was therefore considered justifiable to enquire of the branch organisations how they perceived the question of entrepreneurial training.

Table 7.12. Organisations' perceptions of vocation education (% of total responses per country)

	Au	DKr	Fi	Ge	Ir	It	Se	UK
Strongly prohibitive	0	0	0	12	0	23	0	0
Mildly prohibitive	40	0	66	12	0	76	0	12
Neutral	20	0	16	0	42	0	100	37
Mildly supportive	40	100	16	50	28	0	0	50
Strongly supportive	0	0	0	25	28	0	0	0
	100	100	100	100	100	100	100	100

Chi-square = 68.0 d.f. 28 prob.=0.00

The vocational education systems in the case countries appear to vary widely with respect to the way in which they support small business interests (Table 7.12). Vocational education in Finland and Italy here seem to fair rather poorly. There is historical evidence to support this. Both countries have practised post-war industrial policies which have favoured large-scale industry. In the Italian case, the inefficient administration of this policy led to local initiatives which supported the development of small-scale enterprise (Brierley 1995), while in Finland the efficient administration of this policy has effectively reduced the "institutional space" for small scale enterprise, and the education system is geared up to produce employees not entrepreneurs (Passila 2000).

Table 7.13. Organisations' opinion concerning urgent and very urgent entrepreneur training requirements for SMEs. (% of total responses per country)

		Au	DKr	Fi	Ge	Ir	It	Se	UK	Chi-square[1]	Prob.
22a)	Improving business acumen	80	100	83	87	56	76	100	55	18.2	0.63
22b)	Improving financial skills	80	66	100	100	80	91	100	55	27.6	0.15
22c)	Making and benefiting from business plans	80	100	100	100	70	53	80	55	25.9	0.20
22d)	Developing new technical skills	60	100	83	24	73	92	60	66	30.0	0.09
22e)	Developing marketing skills	80	100	100	100	100	85	80	77	26.8	0.17
22f)	Coping with national/ EU bureaucracy	80	33	66	50	86	84	40	89	31.7	0.06
22g)	Implementing industrial standards & regulations	80	100	83	62	85	84	0	77	40.7	0.00
22h)	Business-to-business learning (networking skills)	60	100	100	75	84	45	60	44	25.1	0.24

[1]Chi-square for all classes of the variable in each row

Table 7.13 shows the percentage of organisations in each country which considered that the educational or advisory topic in question to be urgent or very urgent. The topics were chosen with reference to international literature on business training. In Table 7.13. two classes, *urgent and very urgent* are summed. The use of only the *very urgent* class resulted in a somewhat distorted image of the perceived priorities.

Improving business acumen (22a) was generally seen to be a key issue for entrepreneurial training. In other words, the SME entrepreneurs in each country were perceived to have serious weakness in business acumen. Unfortunately, this ability may not lend itself readily to training, as it will have much to do with the personality of the entrepreneur (e.g. Koiranen 1993). This was seen to be less of a problem in the U.K., and Ireland.

The improvement of SMEs financial skills (22b) was generally reported to be of considerable importance, although slightly less so in the U.K. and Denmark. The making of and benefiting from business plans (22c) was also generally accepted as a key issue in most countries, but least in Italy and the U.K.

Business-to-business learning (22h), while resulting in a relatively low Chi^2-value, showed a greater variance that the previous attributes, with Danish and Finnish organisations reporting this to be an important issue, whereas in the U.K. and Italy business-to-business learning

was considered to be less of a priority for SME training. This result is logical given the well-developed networking already found in Italy, and to a certain extent in the U.K. The development of marketing skills (22e) was also generally seen to be an area when SMEs would gain considerable benefits from training and advisory activities. Developing new technical skills (22d) produced answers with considerable variance between countries (high Chi^2-value). Urgent training in this areas was considered to be particularly necessary by the Danish, Italian and Finnish organisations. Coping with nation and EU bureaucracy (22f) was less of a problem than anticipated, with most organisations reporting lower urgencies in this respect. The need for training and advice was nevertheless perceived to be fairly high in the U.K., Ireland, Italy, and Austria.

The greatest difference between countries concerned the question of the advice and training with respect to the implementation of industrial standards and regulations (22g). All three Danish respondents considered this to be an urgent or very urgent training and advisory requirement for SMEs, whereas none of the Swedish respondents considered this topic to be of importance. Finnish, Italian and Irish respondents generally gave this topic high priority.

The principal components model for business training requirements produced a simple two-component solution (Table 7.14).

Table 7.14. Principal components model of business training requirements

	PC221	PC222
Eigenvalues	*2.99*	*1.74*
Varimax rotated loadings		
x22c – Making and benefiting from business plans	0.90	*
x22b – Improving financial skills	0.82	*
x22a – Improving business acumen	0.81	*
x22h – Business-to-business learning (e.g. networking skills)	0.67	*
x22g – Implementing industrial standards & regulations	*	0.85
x22d – Developing new technical skills	*	0.82
x22f – Coping with state/EU bureaucracy	*	0.75
Variance explained (%)	*38.22*	*29.51*

* loadings below .400 omitted for the sake of clarity

PC221 – Business management training: As this component strengthens those aspects of everyday, routine business management skills, (*x22c, x22b, x22a*), together with learning and negotiating skills which are embodied in *x22h*, also strengthen. The component therefore concerns the need for training in "business management skills".

PC222 – Technical training: The second component concerns the need for training in technical standards and regulations as well as new technical skills, but it also includes the question of the skills needed to cope with state and EU bureaucracy (*x22f*). The context of this component suggests that this educational requirement is associated with such questions as ISO 9000 and ISO 14000, and therefore overlaps somewhat the skills under consideration in *x22g*.

Danish, Finnish, German and to some extent Austrian organisations perceived an urgent need for training in business management skills among SMEs (PC221), Figure 7.12. SMEs or training in technical skills (PC222) was perceived to be high in Italy and Ireland, but less so in U.K. (close to the mean), Finland, Denmark, Austria, Germany and Sweden (Figure 7.13).

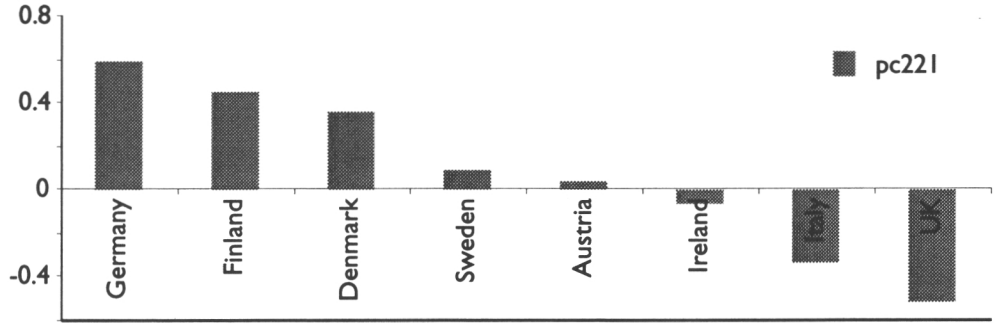

Figure 7.12. Country-wise averaged scores for PC221– Business management training.

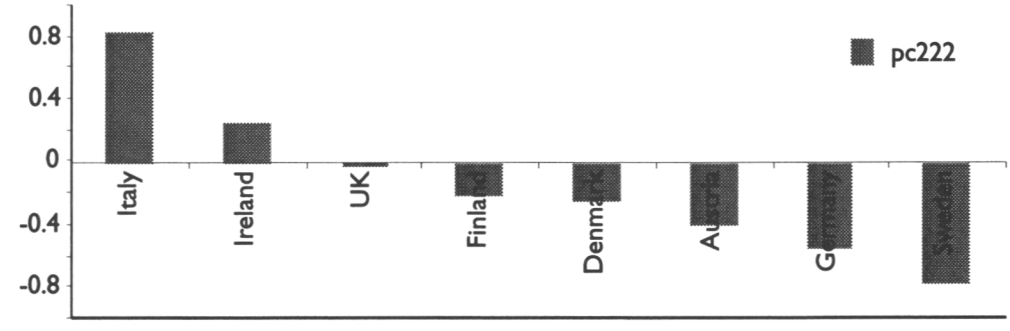

Figure 7.13. Country-wise averaged scores for PC222 – Technical training.

Table 7.15. Business training requirements of SMEs in the woodworking industrial sector. Average component scores by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$
PC221 – Business management training	-0.14	0.08	0.40
PC222 – Technical training	0.38	-0.22	0.04

F=2.955 d.f. 2 53, prob.=0.06

The group average scores by size-dominance classes are shown in Table 7.15. With respect to business management skills (PC221), the differences between the average scores for the groups are small. However, the SME-dominant group shows a negative average score compared to the (weak) positive score for the LSE-group. This suggests that organisations representing SMEs in LSE-dominant countries at least *perceived* their managerial weaknesses more readily (perhaps because of the need to compete in an LSE-dominant environment).

A greater difference between the class average scores occurs with respect to coping with changing technical standards and technologies (PC222). Here, the SME-representative organisations in SME-dominant countries perceived a greater training need than was the case in LSE-dominant countries. This result suggests that a lead may be taken by LSEs with respect to adapting new technical standards, etc., which in turn act as positive examples for the SMEs who then become aware of their deficiencies – especially where they are acting as subcontractors to LSEs.

7.7 Industrial organisations' perceptions of the institutional position of SMEs

As demonstrated by *Business Cultures in Europe* (Randlesome *et al.*1995), it is not easy to compare, let alone quantify, a "business culture". But, as has already been made clear in this report, where LSEs dominate an industrial economy, it is not difficult for the various elements of the corporate state to reinforce this dominant position. The questionnaire to the woodworking industrial organisations in this investigation therefore inquired as to how they perceived attitudes in their country towards SMEs development. The assumption being that where institutional attitudes towards SMEs are perceived to be favourable (or at least neutral), then a branches interac-

tion with the institutions of the corporate state should lead to institutional structures which support SMEs, e.g. via policy instruments favourable to SMEs. On the other hand, where institutional attitudes are unfavourable, then it is likely that the institutional position of SMEs will be perceived to be weak. Table 7.16 presents a summary of the responses, presenting the percentages of only the "positive attitude" replies. The Chi-square figures reveal considerable variations. The largest variation (Chi-square = 44.3) concerns how organisations perceive the attitudes of large-scale woodworking industries (*x16a*). These are perceived to be strongly supportive in Italy (83%) and unsupportive in Denmark (0%).

Table 7.16. Organisations' perceptions of institutional attitudes towards SME development. Figures are the "positive attitude" percentage of the total response

Organisation	Au	Dk	Fi	Ge	Ir	It	Se	UK	Chi-Square[1]	Prob.
a) Large-scale woodworking federations	60	0	17	75	14	83	20	11	44.3	0.00
b) Artisan woodworking federations	80	33	66	75	28	75	60	0	35.4	0.02
c) Forestry policy makers	20	33	33	25	28	54	20	44	21.2	0.44
d) Industrial policy makers	20	33	33	25	14	31	0	22	12,2	0.93
e) Labour organisations	20	0	17	25	14	8	40	11	35.7	0.02
f) Employers' organisations	40	66	17	50	14	46	60	0	32.8	0.04
g) Financial institutions	0	0	17	25	43	25	0	11	26.6	0.18
h) Chambers of commerce	40	0	17	12	14	38	20	11	19.6	0.54
i) Local authorities	20	0	50	12	14	46	20	11	30.3	0.86
j) Regional/local development agencies	20	66	83	37	57	58	40	44	32.9	0.04

[1]Chi-square for all classes of the variable in each row

If the "positive attitude" responses are averaged, then it would appear that Italy enjoys the most supportive institutional environment for SMEs (average 46%), followed by Germany (36%), Finland (35%), Austria (32%), Sweden (28%), Ireland (24%), Denmark (23%) and the U.K. (16%). Given its low return rate, the figures for Denmark cannot be regarded as representative. However, to model the combined effect of perceived institution support, the responses were modelled using oblimin principal components, Table 7.17. two well defined components were achieved, and these accounted for 66% of the total variance in the data matrix.

Table 7.17. Principal components model of woodworking organisations' perceptions of institutional attitudes towards SME development

	PC161	PC162
Eigenvalues	4.35	0.94
Oblimin rotated loadings[1]		
x16a – Large-scale woodworking industrial federations	0.85	*
x16e – Labour organisations	0.84	*
x16f – Employers' organisations	0.81	*
x16d – Industrial policy makers	0.56	*
x16j – Regional/local development agencies	*	0.94
x16i – Local authorities	*	0.85
x16g – Financial institutions	*	0.64
x16h – Chambers of commerce	*	0.58
Variance explained (%)	*33.79*	*32.46*

* loadings below .400 omitted for the sake of clarity

[1]Correlation between oblique components PC161 & PC162 = 0.573

PC161 – National political support: As PC161 strengthens, increased perceived support for SMEs perceived to come from large-scale woodworking industrial federations, labour organisations, employers' organisations and industrial policy makers. Assuming that in a modern corporate state, the large-scale industrial federations, labour and employers organisations are each forceful players in national policy making, the component is considered to represent a national political support dimension.

The strongest national political support for woodworking SME development was found in associations in Denmark, Germany, Italy, Austria and Sweden, and less so in Ireland, Finland and the U.K. (Figure 7.14) The averaged scores for PC161 follow a very similar pattern to that of the average percentages of the non-negative (positive + neutral) perceptions of support for SME development revealed by the original variables (Table 7.16).

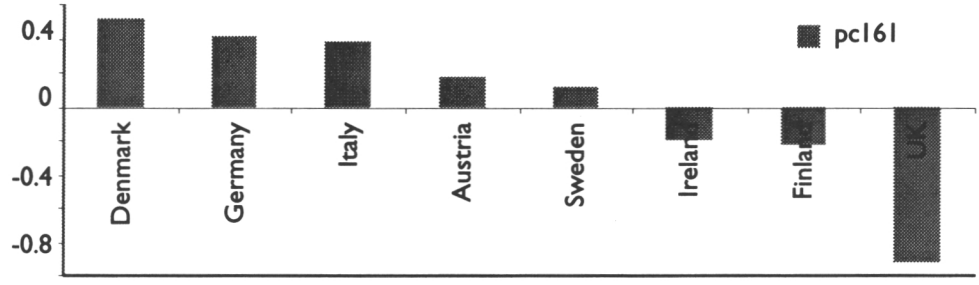

Figure 7.14. Country-wise averaged scores for PC161 – National political support.

PC162 – Local/practical support: As this component strengthens, support for woodworking SME development was perceived to come from regional development agencies, local authorities, financial institutions (which often act locally). The variable representing chambers of commerce (which also act locally) is also loaded on to this component. The component therefore represents local support for SMEs, but also practical support, e.g. development agencies provide knowledge resources, financial institutions provide capital resources, and local authorities provide infrastructure and other forms of support.

Local/practical support for woodworking SME development by industrial associations was found to be strongest in Finland, Italy, Denmark and Germany, and less strong in Ireland, Sweden, Austria and the U.K. (Figure 7.15)

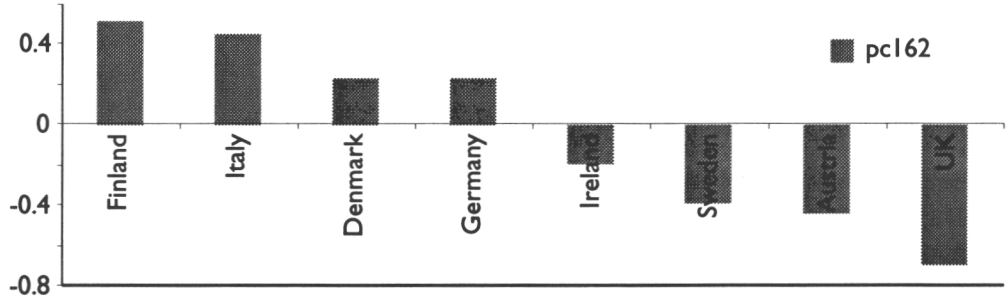

Figure 7.15. Country-wise averaged scores for PC162 – Local/practical support.

The average scores for industrial organisations' perception of the institution position of SMEs in their country are shown in Table 7.18. The figures in this table are particularly interesting, and lend strong support to the contention that countries in which LSEs are dominant have developed institution environments which support large scale

Table 7.18. Branch organisations' perceived institutional support for SME-development. Average scores by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$
PC161 – National political support	0.35	-0.20	0.03
PC162 – Local/practical support	0.21	-0.13	0.16

F=2.132 d.f. 2 53, prob.=0.12

industry to the detriment of SMEs. Thus, both in terms of national political support (PC161) and local/practical support offered by the institutional environment (PC162) the LSE-dominant countries possess average scores which are unambiguously negative, while the scores for the SME-dominant countries are similarly positive. Correlations between PC161 and PC162 and the countries' LIIC's were non-significant.

7.8. Industrial organisations' branch development activities

The functions of industrial organisations are many and varied. They include providing support to members, representing and developing their members' interests, as well as developing their industrial branch or sector. The questionnaire addressed the nature of these activities with several questions. One of the questions concerned how the organisation was organised – regionally or nationally. The hypothesis being that regional branches of such organisations should be better informed of their members situation, as well as being in a better position to forward information to their membership. Notwithstanding the low number of organisations per country, the figures show considerable variance, with Finland being most content to accept a top-down structure (no region branches reported). Other countries had various degrees of regional branch activity, notably Sweden and Italy, but also Denmark and Austria.

A set of activities likely to be undertaken by branch organisations was presented to the participants in the survey. The list of activities was established as a result of consultations and literature reviews at the planning stage. Open-ended alternatives were also available, but few chose to add specific activities. The proportion of responses per country are given in Table 7.19, From the long-term standpoint,

Table 7.19. Organisations' assessment of own input into branch and membership advancement/extension activities (% of total responses per country considering that a major input has been made)

	Au	DKr	Fi	Ge	Ir	It	Se	UK	Chi-square[1]	Prob.
a) Lobbying of senior state officials	60	66	16	50	28	15	0	66	28.0	0.13
b) Lobbying of other public officials	20	0	16	37	28	53	0	33	31.7	0.06
c) Lobbying of NGO, etc.	40	0	16	57	0	38	40	33	29.6	0.10
d) Promoting wood-related campaigns	40	33	16	62	28	30	40	33	33.2	0.04
e) Assisting members with national/EU projects & funding	0	0	0	0	28	15	40	22	24.4	0.27
f) Assisting with set-up of networks	20	0	0	0	28	15	20	25	25.2	0.23
g) Promoting/ marketing branch via exhibitions, etc.	20	0	16	62	14	53	20	33	36.0	0.02
h) Implementing product development programmes	0	0	0	0	0	0	0	11	24.4	0.66
i) Implementing quality management systems (e.g.ISO9000)	40	0	0	12	14	30	40	44	27.4	0.15
j) Implementing environment-management systems (e.g. EMAS)	0	0	16	0	0	15	20	33	42.3	0.00
k) Providing benchmarking services	0	0	0	12	14	61	0	22	30.4	0.83
l) Developing strategic plans for branch	20	0	0	0	28	15	40	22	31.9	0.06
m) Financing R&D	20	0	16	28	0	23	40	22	34.2	0.03
n) Encouraging young people to enter branch	80	66	33	12	42	15	20	22	32.2	0.05

[1]Chi-square for all classes of the variable in each row

perhaps the most revealing response is the one concerning *Encouraging young people to enter the branch*. Only Austria and Denmark seem, upon this evidence, to take this aspect of the future development of the woodworking industry seriously. The principle components model for this set of variables is given in Table 7.20.

PC151 – Future oriented activities: The component is characterised by strong loadings of a number of variables associated with the future of the industry. Thus, as the component strengthens, *x15n – Encouraging young to enter branch* and *x15i – Implementing quality management systems* become more important. These two variables alone suggest a commitment to the future, one in terms of labour force and youthful creativity, the other in terms of maintaining or improving the quality of wood-based products, i.e. guaranteeing one aspect of competitiveness. The other loadings concern investments in R & D and strategic planning for the industry, both of which support the first two loadings, while the fifth variable concerns implementing environmental management systems (e.g. ISO

Table 7.20. Principal components model of organisations' activities

	PC151	PC152	PC153	PC154	PC155
Eigenvalues	3.50	1.66	1.50	1.19	1.02
Varimax rotated loadings					
x15n – Encouraging young to enter branch	0.75	*	*	*	*
x15i – Implementing quality management	0.73	*	*	*	*
x15m – Financing R&D	0.64	*	*	*	*
x15l – Developing strategic plans for branch	0.53	*	*	*	*
x15j – Implementing ecological management systems	0.52	*	*	*	*
x15b – Lobbying public authorities	*	0.84	*	*	*
x15ac – Lobbying politicians and state officials	*	0.74	*	0.40	*
x15c – Lobbying NGOs	0.40	0.70	*	*	*
x15g – Producing promotional material	*	*	0.80	*	*
x15k – Providing bench-marking services	*	*	0.72	*	*
x15f – Assisting networking arrangements	*	*	0.52	*	*
x15d – Campaigns to promote wood use	*	*	*	0.92	*
x15h – Creating product development schemes	*	*	*	*	0.89
x15e – Assisting access to national and EU projects and funding	*	*	*	*	0.59
Variance explained (%)	18.08	13.42	11.92	9.32	10.75

* loadings below .400 omitted for the sake of clarity

14000 and EMAS), again essential for the future of the industry. Finally, *x15c – Lobbying NGOs* is weakly loaded on the component (it is a major feature of component PC152), which suggests a connection with ISO 14000 and its implications and implementation. The component is concerned with future oriented activities. Future oriented activities by branch associations (PC151) were strongest in Denmark, Sweden and Austria, around average in Germany and the U.K., and less well developed in Finland, Ireland and Italy (Figure 7.16)

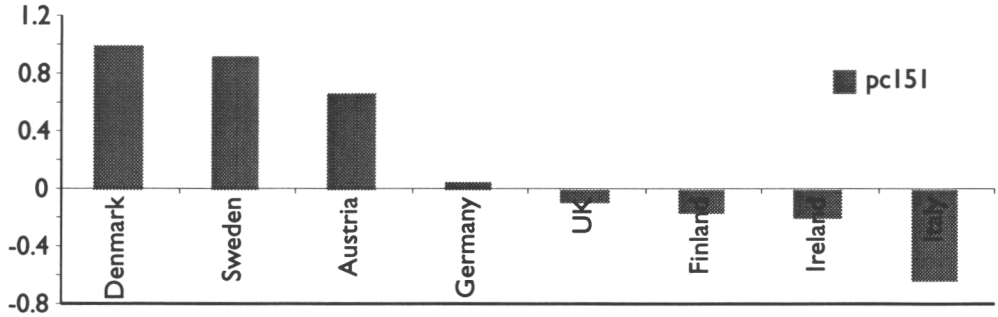

Figure 7.16. Country-wise averaged scores for PC151 – Future oriented activities.

PC152 – Lobbying activities: The component brings together the three variables concerned with lobbying, and it is interpretationally straight forward. Lobbying activities were given greater importance by German, British, Austrian and Danish organisations, and less importance by Irish, Italian, Swedish and Finnish organisations (Figure 7.17).

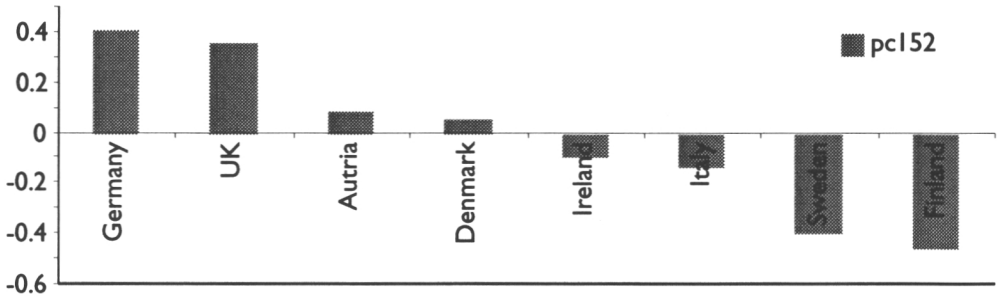

Figure 7.17. Country-wise averaged scores for PC152 – Lobbying activities.

PC153 – Practical extension tasks: The component is characterised by variables associated with practical marketing services and promotion work: the production of promotion videos, organising trade fair demonstrations, and other marketing initiatives (*x15g*), the offering of bench-marking services (to ensure entrepreneurial standards) (*x15k*) and assisting with the establishment of networking arrangements (*x15f*). The component represents associations with "hands-on" approaches to the services they provide. Associations offering practical advisory services were more likely to be found in Italy, the U.K., Germany and Ireland, and less so in Finland, Sweden , Austria and Denmark (Figure 7.18).

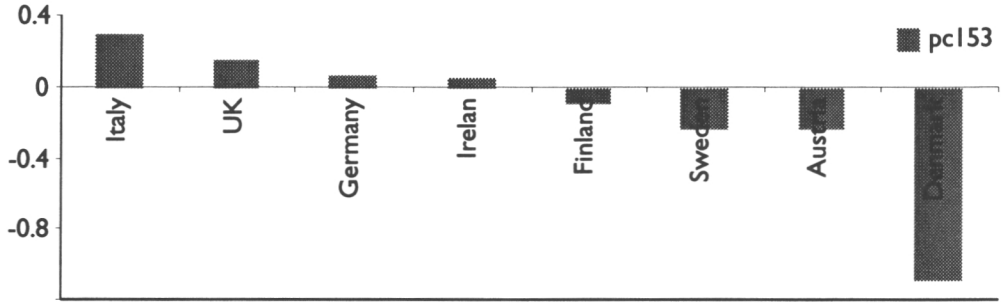

Figure 7.18. Country-wise averaged scores for PC153 – Practical extension services.

PC154 – Wood promotion campaigns: This is essentially a single-variable component, as (*x15d*) is very strongly loaded onto this component. Why this should be, and why this variable is not associated with other aspects of the organisations' activities is not clear at this juncture. A clue may be the weak loading of *x15a – Lobbying politicians and senior state officials* which suggests the question was associated with lobbying rather than promotional campaigns as such.

The importance of such promotion work was generally accepted, as shown in Figure 7.19, with only Sweden and Italy gaining lower than average scores. While this is a single variable component, comparing this result with the original variable (x15d) in Table 7.17. shows some discrepancy. This is because the table only gives the percentages of those associations which considered they made a "major input" into this activity.

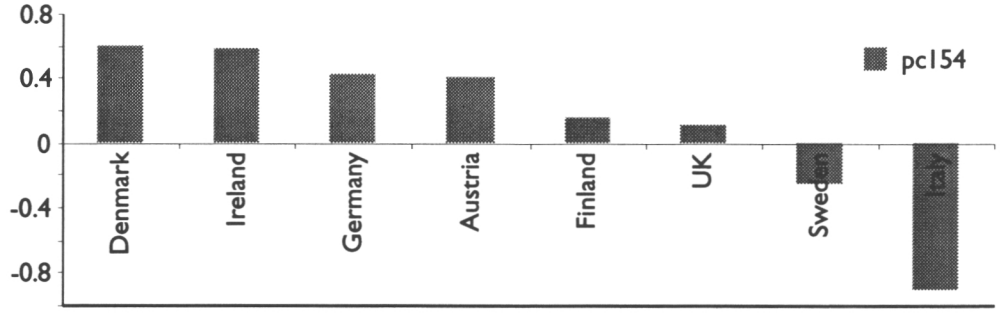

Figure 7.19. Country-wise average scores for PC154 – Wood promotion campaigns.

PC155 – Product development: As this component strengthens, variables associated with creating and implementing product development (*x15h*), and assisting access to national/EU project and funding (*x15e*) gain in importance. Note that *x15h* concerns *active* product development by the association. This is not very common, as much R&D is done elsewhere, even if it is partially financed by industrial associations (see Table 7.18, above). Associations were more involved in product development in the U.K., Ireland, Finland and Austria, and less so in Italy and Germany. Denmark and Sweden received average scores very close to the mean (Figure 7.20).

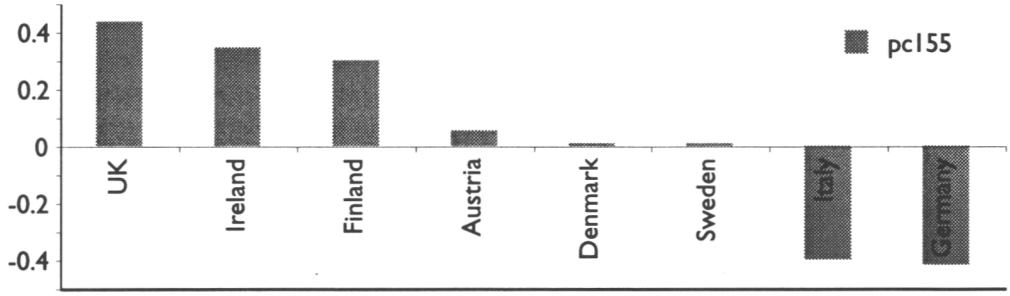

Figure 7.20. Country-wise averaged scores for PC155 – Product development.

With the exception of PC 154 and PC155, the average scores for size-dominance classes in Table 7.21 do not reveal a large variance. The common difference is that all the average scores for the SME-dominant countries are negative, while for LSE-dominant countries they are positive. This suggests greater activity, at least relatively, on the part of organisations in LSE-dominant countries. Correlations between these components and the countries' LIICs were all non-

Table 7.21. Branch organisations' industrial development activities in the wood-working industrial sector. Average component scores by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$
PC151 – Future oriented activities	-0.08	0.05	0.64
PC152 – Lobbying	-0.05	0.03	0.75
PC153 – Practical extension tasks	-0.02	0.01	0.88
PC154 – Wood promotion campaigns	-0.37	0.22	0.04
PC155 – Product development	-0.23	0.14	0.11

F=1.459 d.f. 5 50, prpb.=0.21

significant at 5% risk, the highest correlation (0.500) being between LIIC/PC152 (lobbying).

The two areas of greater contrast arise in the case of wood promotion campaigns (PC154) which has a fairly high positive average score in the case of the LSE-dominant, and a negative fairly strong score in the case of the SME-dominant. Similarly, organisations engagement in product development activities (PC155) seems to be weighted towards the LSE-dominant compared to the SME-dominant of countries. This would seem to be contrary to the ideal situation, assuming that SMEs have less opportunity for their own product development (e.g. R&D) and would benefit from external assistance, whereas LSEs may well have whole departments dedicated to product development consequently less in need of external assistance. A good case in point here is the development role played by the British Woodworking Federation which has developed standards for the products that its (mainly SME) members can adopt (www.bwf.org.uk).

7.9. Organisations' attitudes towards branch development issues

The theoretical frame posed a number of issues that could not be measured directly. To capture some aspects of the attitudes the organisations might have towards such issues or values, a set of statements were presented to the respondents, to which they were asked to react (Question 27 in the questionnaire). The statements themselves were derived from the international literature on SME development in Europe in the current environment of structural reorganisation. Elements of Porterian "competitive advantage" are also included.

The statements were designed for use in principal component analysis, as it was hoped that they would combine to form identifiable and logical "dimensions" or components. Various PC models were constructed, including models with five and six components. While they each produced serviceable results, there was a persistent problem of high communality, that is to say, certain variables were fairly strongly loaded on two or more components. In order to keep the components as unambiguous as possible, a reduced number of variables was eventually used to produce a four component model (Table 7.22). The model's eigenvalue for the fourth component just falls below unity, but this was not considered to be a major problem. The variance explained by the model is 72%.

Table 7.22. Principal components model of organisations' attitudes towards branch development issues

	PC271	PC272	PC273	PC274
Eigenvalues	*5.48*	*1.22*	*1.06*	*0.92*
Varimax rotated loadings				
x27c	0.85	*	*	*
x27i	0.80	*	*	*
x27d	0.70	*	*	*
x27f	*	0.82	*	*
x27n	*	0.74	*	*
x27o	*	0.69	*	*
x27l	*	*	0.77	*
x27b	*	*	0.72	*
x27k	*	*	0.53	*
x27q	*	*	*	0.78
x27e	*	*	*	0.70
x27p	*	*	'	0.66
Variance explained (%)	*20.8*	*18.3*	*16.8*	*16.6*

* loadings below .400 omitted for the sake of clarity

Where:

27b) Competition is forcing firms are co-operating both nationally and internationally in more inventive and varied ways

27c) The creativity of individual workers is increasingly important in the woodworking industry

27d) Investments in human capital are increasingly important in the woodworking industries

27e) Building regulations increasingly encourage the extensive use of wood materials

27f) Flexible, just-in-time production favours the development of small businesses

27i) Negative attitudes to business failure are a barrier to small business start-ups

27k) Small businesses have widely participated in "benchmarking" and "best-practice" schemes

27l) Small businesses have benefited from the Single Market

27n) The creation of specialised industrial districts is essential for sustaining business viability

27o) Eco-labelling is essential for the future market success of wood-based consumer products

27p) Consumers are increasingly interested in wooden products

27q) Consumers are increasingly quality conscious concerning wood-based products

PC271 – Recognition of the human element The first component brings together the statements:

> 27c) The creativity of individual workers is increasingly important in the woodworking industry
>
> 27d) Investments in human capital are increasingly important in the woodworking industries
>
> 27i) Negative attitudes to business failure are a barrier to small business start-ups

The first two statements (27c, 27d) concern human capital, whereas the third statement (27i) also deals with attitudes to entrepreneurship.

As the component strengthens, creativity of workers and investments in human capital are seen to be increasingly important, while attitudes to business failure also need to be addressed. The component therefore recognises the human element of SME development.

The human aspects of SME developments in the woodworking sector are shown to receive greater value in Sweden, followed by Finland (Figure 7.21). Ireland, Austria and Italy also have average scores which are (weakly) positive. Denmark and Germany have weakly negative average scores, while the U.K. has a much stronger negative score. The result is very much in line with the ethic of Taylorism, which is still found in the U.K.

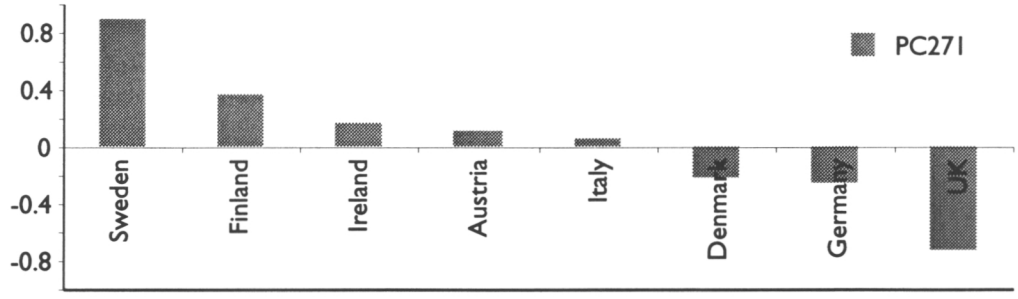

Figure 7.21. Country-wise averaged scores for PC271 – Recognition of the human element.

PC272 – Recognition of changing production structures. This component brings together the statements:

27f) Flexible, just-in-time production favours the development of small businesses

27n) The creation of specialised industrial districts is essential for sustaining business viability

27o) Eco-labelling is essential for the future market success of wood-based consumer products

As the component strengthens, flexible production, industrial districts and eco-labelling are seen to be increasingly important. These attributes can be considered as fulfilling some of the preconditions for SME survival and development in the climate of production restructuring. The component therefore represents awareness of some of the changing production structures that are associated with industrial reorganisation.

The averaged score for Italy is considerably higher than those of other countries, Figure 7.22. Indeed, Ireland and Finland were the only other countries receiving (weak) positive average scores. The

other countries received negative average scores, suggesting that the new production structures and pre-conditions for SME development are less well perceived in those countries. This would suggest that these countries have production structures that are more rigid than those in Italy, Ireland and Finland. This interpretation is supported by the fact that Italy gains such a strong and positive average score. Italy, as this study has demonstrated several times, is a country where the pre-conditions for flexible production and regional concentrations of SMEs in the woodworking sector are already well developed.

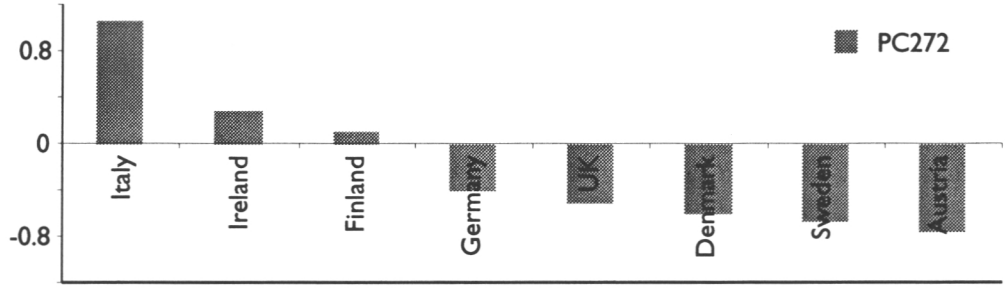

Figure 7.22. Average scores for Component PC272– Recognition of new production orientations.

PC273 – Recognition of the need for competitiveness. In this case, the statements loaded onto the component are

27l) Small businesses have benefited from the Single Market
27b) Competition is forcing firms to co-operating both nationally and internationally in more inventive and varied ways
27k) Small businesses have participated in "benchmarking" and "best-practice" schemes

This component represents the recognition for the need for competitiveness. As this component strengthens, three aspects of how firms can develop competitiveness are seen to be of increasing importance: one from the access point of view (*x27l*), one from the inter-firm co-operation point of view (*x27b*), and the third in terms of guaranteeing entrepreneurial standards (*x27k*).

Denmark received the highest average score, Figure 7.23, but it has to be recalled that only three Danish organisations replied to the questionnaire. That fact notwithstanding, it seems that in Denmark, SMEs are considered by their associations to have developed their level of competitiveness satisfactorily. Italy and Finland also received relatively high average (positive) scores, while Ireland's score was positive, but very close to the mean. The U.K., Sweden, Austria

and Germany all receive fairly strong negative average scores for this component. This supports the results of PC272 – New production direction with respect to the rigidity of these countries' production structures.

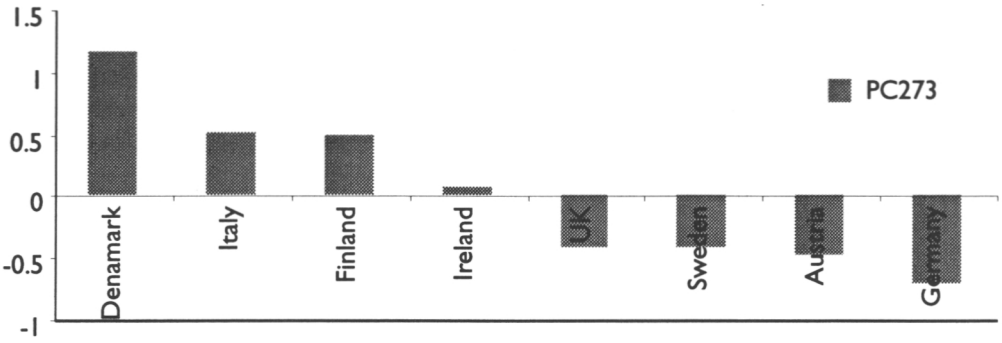

Figure 7.23. Country-wise averaged scores for PC273– Recognition of the need for competitiveness.

PC274 – Perceived wood-consciousness of consumers. The three variables loaded onto the component are

27q) Consumers are increasingly quality conscious concerning wood-based products
27e) Building regulations increasingly encourage the extensive use of wood materials
27p) Consumers are increasingly interested in wooden products

As component PC274 strengthens, variables dealing with consumer preferences (27p) and demands (27q) and the re-valuing of wood as a building material (27e) are seen by the respondents to become increasingly important. The component can be considered to represent the perceived "wood-consciousness" of consumers, or the image of wood as a consumer good.

The strong performance of Ireland, Denmark and Germany on PC274 (Figure 7.24) is not surprising. Ireland is experiencing rapid economic growth and a concomitant consumer boom which is placing high priority on quality. Wood products are visibly part of this priority[6]. Denmark and Germany are also countries that have traditionally placed considerable importance on the use of wood and so place a high intrinsic value on wooden goods. There have been recent moves to further increase the use of wood in new buildings, especially public buildings, in those countries. In a recent consumer study,

Valtonen *et al.* (1997;135–137) reported a number of factors to be more important than price when consumers purchased furniture. German consumers placed the highest value on environmental friendliness, followed by appearance and quality, English and Finnish consumers place the their highest preference on appearance, followed by comfort and quality.

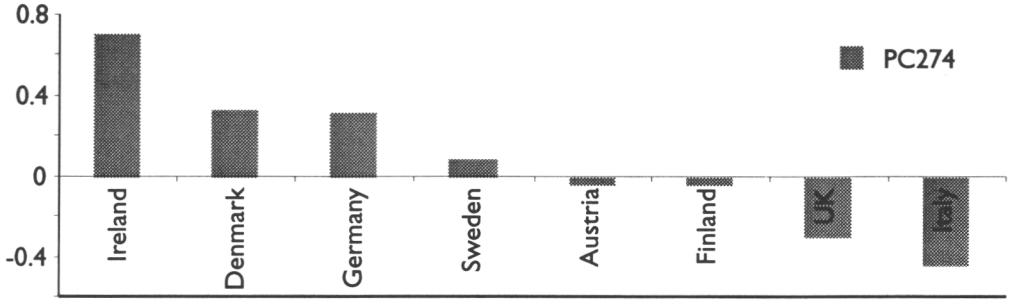

Figure 7.24. Country-wise averaged scores for PC274 – Perceived wood-consciousness of consumers.

With respect to PC274, Finland and Austria have (negative) average scores which are close to the average for the whole sample. The larger, negative average scores for the U.K. and Italy are perhaps surprising. In the U.K. much attention is being given to wood construction[7], although the attitude of the public towards wooden houses varies regionally, being negative in England and Wales and positive in Scotland[8]. The cause of the negative scores for Italy is hard to explain, although Italy received a negative average score for component PC154 – Wood promotion campaigns, and also a strong loading on PC122 – Product substitution and raw material supply. These two loadings suggest that the Italian domestic market is less wood-product oriented than is perhaps assumed, or that quality wooden goods are taken for granted.

The above component scores were averaged for SME- and LSE-dominant country groups, Table 7.23

Component PC271 shows little difference between the country groups, but the other three components reveal distinct differences. The SME-dominant countries have positive averaged scores for PC272

[6] Witnessed during a meeting of the EU FAIR Project CT)(-4223 – Multifuctional Forestry as a Means to rural Development, Leitrim & Wicklow, Ireland 20–25 May 1999

[7] TRADA, in personal communication 1/1999

[8] Chief Conservator for Scotland, Forestry Commission, in personal communication 1/1999

Table 7.23. Organisations' attitudes towards branch development issues. Averaged scores by size-dominance classes

	SME-dominant	LSE-dominant	$2t_{prob}$
PC271 – Recognition of human element	0.03	-0.01	0.85
PC272- Recognition of new production orientation	0.40	-0.23	0.02
PC273- Recognition of need for competitiveness	0.37	-0.22	0.02
PC274 – Perceived wood-consciousness of consumers	-0.24	0.14	0.17

F=3.598 d.f. 4 51, prob.=0.01

and PC273, which indicates these countries greater awareness of the needs for SMEs to adjust to the new global production regime. The LSE-countries have negative averaged scores for these components, which as noted above, reflects production-structure rigidity. Wood-consciousness on the part of consumers seems to be more developed in the LSE countries, but the strong performance of Ireland, and weak performance of Italy on this component would largely account for this difference.

7.10. Relative strengths and weaknesses of woodworking branches and their organisations in the case countries

The analyses in the previous sections represents the views of each countries' organisations concerning the relative strengths and weakness of their branches SMEs and the support provided by both the organisations themselves and some of the countries' institutions. Using several multivariable techniques, an attempt was made to identify groups of organisations or countries in order to construct a rudimentary typology of organisations. This was to be achieved by seeking systematic variances between sets of component scores. In the event, no systematic similarities were recognisable, and so a typology could not be meaningfully constructed.

Each attribute or set of attributes (principal components) was considered individually, and country-wise comparisons were made on that basis in sections 7.3 to 7.9 (Figures 7.1 to 7.24). This being the case, it was possible to extract information by bringing together each countries' perceived relative strengths and weakness into a diagnostic table. In this way, it is possible to gain an over all impression of each country's organisations and branches *relative strengths and weaknesses* with respect to the attributes or concepts in question. The

country-wise tables of relative strengths and weaknesses are presented in Appendix 2. Where a country's average score for a particular component is above the average for all the countries (i.e. positive average score), then this is considered to be that country's relative strength. Similarly, where the country's average score is below the mean (i.e. negative average score), then that attribute is considered as a relative weakness. Where a country's organisations' average score for a given attribute is close to the mean for all countries' organisations, that attribute is not included in the table for that country.

The tables can therefore be employed to assess relative competitive advantages and disadvantages of a country's woodworking SMEs. Similarly, the tables can be used to indicate those areas where policy instruments, or organisations' activities, might be focussed to assist SME development.

As already stated, over all no systematic variation could be found which might lead to a typology. Nevertheless, the tables in Appendix 2 reveal interesting similarities or differences which support the theoretical frame, or which supports the SME versus LSE dichotomy in terms of the institutional regime or environment under which SMEs operate.

For example, the perceived directions of industrial development of woodworking SMEs (PC101, 103 & 104) are the same in Austria, Denmark and Finland, and similar in Germany. Being positive in scoring (i.e. relative strengths), it is clear that these countries' woodworking SMEs are on similar development curves. In the case of Ireland and the U.K., the development indicators are often negative and therefore can be regarded as a relative weakness.

National level policies and local support systems (PC161 & 162) are perceived in a similar way by Austrian and Swedish organisations: namely that national level policies support SMEs (relative strength) and that local level support is unsatisfactory (relative weakness). Both attributes are positive (i.e. strengths) in the case of Denmark, Germany and Italy. Finnish organisations considered national policies to be unsupportive (i.e. weakness), whereas local level support was satisfactory (strength). In Ireland and the U.K. organisations generally considered both of these institutional attributes to be negative (weaknesses).

Vocation education and training requirements also differed between countries. Several countries considered that technical competence (PC222) was satisfactory (strength) – Austria, Denmark, Finland, Germany and Sweden. Technical competence was considered to be a problem in Ireland and, surprisingly, Italy.

Business management education (PC221) was considered to be

required, i.e. seen as a relative weakness, in Denmark, Finland, Germany. Such education was considered less important (relative strength) in Italy and the U.K.

Perceived business problems (PC121–124) and branch organisations' activities showed considerable variation between countries. Italy, with its strong tradition of branch organisations (see Box #2), surprisingly revealed a string of relative weaknesses regarding branch activities. Against this must be borne the relative strength of PC153 (practical extension activities), which in turn supports PC162 (local-level support) that was reported to be supportive in Italy. Branch organisation's activities seem to be particularly supportive in the United Kingdom.

With respect to general attitudes towards branch development issues (PC271–274), the U.K. returned the weakest responses (all attributes relatively weak). Finland and Ireland's responses were the most positive.

8. CONCLUSION

8.1. Summary discussion

The principal aims of the investigation was:

a) to outline the structures of the forest sectors of the case countries from the standpoint of wood consumption, production structure, employment and the role of small businesses in value added, secondary manufacturing of wooden products;

b) to identify factors which encourage the success and development of forest– and woodworking small businesses in selected European countries.

c) to assess trends and developments in the Finnish wood products SME-sector in the light of a) and b).

The investigation was stimulated by record high unemployment in Finland in the mid-1990s, and the public debate on the need for an increasing use of domestic wood in value-added production in small enterprises. Both the public and political debate at that time suggested that the environment for small- and medium enterprises in Finland was less favourable than in other countries. Similarly, the public debate also suggested that enterprise and entrepreneurship was lacking in Finland. The debate on woodworking SMEs in the 1990s also opined that Finland's strength and comparative advantage was embodied in the paper sector (e.g. Lammi & Rouvinen 1996), and that there was little place for small, high value added woodworking artisans in this industrial environment (e.g. Kärkkäinen 1996).

Business environments

A key issue in this investigation has been whether SMEs operate in business environments which are "sympathetic" to their needs, or not. In the frame of reference, it was argued, following Porter (1990), that government still play a key role in determining the conditions under which firms operate. Throughout the analysis, the wood products and furniture branches in the SME-countries performed more robustly than the same branches in the LSE-dominant countries. The implication is clear. Namely that the institutional environment for SME activities in countries which are dominated by LSEs have failed to take into consideration the special requirements of small-scale enterprise. In LSE countries, powerful lobbies have ensured that condition for large industrial establishments are optimal, be it the labour mar-

ket, financial market, raw material market, and energy market. Rules and regulations aimed at the environment of the large-scale enterprise will generally be a burden on SMEs.

Branch organisations in countries considered to be SME-dominant perceived more positive environments for SMEs at both local and national levels, whereas the organisations in the LSE-dominant countries perceived more negative environments in both cases. The result strongly suggests that institutions have at least an indirect effect on SME development (at the national level), and perhaps a direct one (at the local level).

Role of branch organisations

Branch organisations can be efficient channels of information, and can be instrumental in setting standards in their industry, as well as lobbying for policies to support the industry. A significant result of the present study was the fact that in some countries the organisations practised considerable regional activities (e.g. Italy and Sweden), where as in some countries there were few or no regional activities (e.g. Ireland and Finland).

An analysis of branch organisations' activities suggested that each had its own policy and practises, "standard national models" were not discernible. The average scores for each activity component were below average in the case of the SME-dominant countries, and above average for the LSE-dominant group. This suggests that branch organisation activities are more developed in the LSE-dominant countries than in the SME-dominant countries, but the case of Italy already warns that this result is a generalisation.

Branch organisations' *future-oriented* activities were strongest in Denmark, Sweden and Austria, and weakest in Italy. *Lobbying* activities were strongest in Germany, the U.K. and weakest in Finland and Sweden. *Practical extension* services were slightly more prevalent in Italy and least developed in Denmark. *Product development* was a strong characteristic of British, Irish, and Finnish organisations, much less so of Austrian, Danish and Swedish organisations, while Italian and German organisation received below average scores.

The possible importance of wood promotion campaigns was revealed in a separate analysis in which the wood-consciousness of consumers was identified. This component brought together variables describing consumers' wood-consciousness, building regulations supportive of wood-use and consumers increasing interest in wood products. This component received above average scores in the case of Ireland, Denmark, Germany and Sweden, and below average scores

in Finland, Austria, Britain and Italy. The average score for this component in the LSE-dominant countries were considerably higher than the (negative) average score for the SME-dominant countries.

Regional convergence or divergence?

The question was raised in the frame of reference whether the post-Fordian global restructuring of production would result in regional convergence or divergence. Regional *convergence* could occur where restructuring weakens the traditional location constraints, while *divergence* could occur if the core areas strengthen at the expense of the periphery (i.e. regional differences would strengthen) (e.g. Krugman 1993, Rodríguez-Pose 1994, Martin & Sudley 1996).

The evidence from the present investigation favours the divergence argument. Divergence is observable at both the national and the international levels. There are three strong arguments for this conclusion. First, the core areas of the value-added wood products and furniture sectors are located in SME-dominant countries, and secondly within those countries further core areas are found in the form of industrial agglomerations and industrial districts. Thirdly, bulk wooden semi-finished goods are found in a separate set of core regions (e.g. Finland, Sweden and Austria). The only likelihood of convergence occurring is where countries take advantage of incipient industrial agglomerations, which can bring new players into the market for value-added wood products and wooden furniture (e.g. Ireland and Finland). Finland possesses well defined incipient woodworking agglomerations, but they lack the social cohesion, or embeddedness, which is a key element in the functioning of industrial districts. Ireland, on the other hand, has less well defined agglomerations, but those which exist have stronger cohesion.

SME development policy for the regions?

Regional and local clusters are considered to provide empirical proof of the importance of external economies. Further, it is considered that clusters also define what industries should be supported by policy. Indeed, according to Krugman, the *only justifiable industrial (trade) policy is in fact a regional industrial development policy* (Krugman 1993, cited by Martin & Sundley 1996;282–3). Market-size effects need to be created, and this can often be achieved by seeking collective efficiency (external economies) where traders connect the industrial district or agglomeration to sizeable markets (Krugman 1993, see also IDS at www.ids.ac.ik/ids/global/coleff.htm).

Further support for the development of industrial districts has

recently come from a series of robust economics investigations concerning the competitive advantages of industrial districts (Bagella & Becchetti (eds.) 2000). Some of the key conclusions of the study are as follows:

- firms prefer a decentralised small-medium firm network to vertical integration when Marshallian externalities generated by the proximity of potential competitors are higher than costs from increased competition (Bagella & Becchetti 2000;40);
- the "district effect" on firms' profitability is quite strong, varying between two and four percentage points , depending upon the measure of profitability and the period in the business cycle (Fabiani et al. 2000;65–6);
- Public intervention is more effective in industrial districts where positive externalities within a geographically limited area may enhance and propagate the benefits of limited state intervention because subsidised firms in districts show relative medium-term improvements in their return on investments that firms not in districts, and district subsidised firms seemed to obtain better borrowing terms (Becchetti & Rossi 2000a;88);
- The evidence supports the view that industrial policy may be more effective on "fertile grounds" where infrastructures and co-operation among firms are already developed. The evidence also provides support for the new industrial policies of the EU and Italy, which aim to concentrate intervention on start-ups and innovation in targeted areas (Becchetti & Rossi 2000a;8);
- Industrial districts have a relative advantage over other forms of industrial organisation when complementarities prevail over substitution effects. In other words, an industrial district's firm's product quality improvements, stimulated by enhanced spatial competition, may represent a positive (and not a negative) externality for the neighbouring firm (Becchetti & Rossi 2000b;143);
- The benefits on export performance from geographical agglomeration are higher for smaller firms and for firms belonging to Traditional and Specialised sectors. Economic findings indicate that agglomeration significantly increases export intensity and export participation and that the effect is larger when only firms with less than 100 employees are considered (Bagella et al. 2000;112, Becchetti & Rossi 2000b;143)

On the other hand, Heanue & Jacobson (2000), in a study of organisational proximity and institutional learning in the Irish furniture industry, report that while spatial (geographical) proximity plays an important role in accelerating the processes of inter-firm learning and innovation, these processes are not excluded from geographically dispersed firms. Perhaps more importantly with respect to how small firms react to globalisation, Heanue & Jacobson (2000) report that the

network of furniture firms which was the object of their study required ten years to put into place the necessary relational, interpersonal and institutional dimensions upon which such networks depend.

Finally, the importance of including SME-supportive policies in the national raft of industrial policies, rather than merely as a part of local development *politics*, gains importance from the fact that many countries are becoming aware of the advantages of industrial clusters and industrial districts (which are in fact "mini clusters") as a means to cope with globalisation. Urry (1984;53) observed that the allocation of economic activity (whether public or private) is very much a question of political organisation. Thus, regionally-based, or sector-oriented organisations can play a strong role in the process of economic change.

8.2. Results in a Finnish context

Finland, with its large forest resources, has long been a strong player in the global forest industry. This relative strength is set to continue in the foreseeable future (e.g. Hetemäki 1997, Seppälä 2000). However, success in the Finnish forest industrial sector is based on the production and export of primary manufactured goods. The export of bulk, primary-manufactured products for secondary, value-added manufacturing elsewhere, is a *de facto* exportation of jobs. Further it can be questioned whether bulk, low value goods sustain transportation costs any better than higher value-added products (e.g. sawn timber versus wood components, rolls of paper versus paper-products and printed matter, etc.).

Employment in the Finnish forest sector has fallen steadily since the Second World War. Elovirta (1995) reports that in 1945 10% of the total labour force was employed in forestry, but by the mid1990s the figure had fallen to c.1%. Employment in the Finnish forest industries rose to a peak in the mid-1970s, but it, too, has steadily declined since that time. During the period 1985–1996, over 11000 jobs (32%) were lost in the wood products sector, and 2800 jobs (24%) were lost in the furniture industry. These were the second highest absolute losses and highest proportional losses of the countries in this investigation. The figures compare very badly with the 73% increase in employment in Denmark's wood products sector, and 35% increase in its furniture sector. Finland was also the only country in the study to show a negative (-0.4%-points) change in the wood products sector's share of total manufacturing employment

during the period 1985–1996.

Despite being classified as a country dominated by large-scale enterprises, Finland nevertheless has a relatively large number of woodworking enterprise units, proportionally second only to Italy of the countries in this study. This was the fact whether calculated per 1000 inhabitants, or as a proportion of all enterprises. Finland therefore seems to have a basis for the development of SMEs in the woodworking sector. The challenge is how to capitalise on this knowledge and experience base.

Sector developments

The qualitative investigation of branch organisations' activities revealed that Finnish woodworking SME representative organisations were aware of the need for the re-orientation of production to meet the challenges created by the business environment. Finnish organisations' average scores on two components dealing with aspects of production re-orientation were well above the average of the total scores of all the organisations in the eight countries in the study. Similarly, Finland scored well on components concerning market orientation and increased networking. These results indicate that Finnish organisations have recognised the necessary directions of development. However, competitor countries Austria and Denmark also performed well on the same components. On the other hand, Finnish organisations did not consider that increased regional concentration of production was likely to occur. Given that the formation of industrial districts is a key element in the success of woodworking branches in Italy, Denmark, and Ireland, this can be seen as a distinct weakness in the Finnish position; especially as Danish and Italian organisations considered that more regional concentration of production was likely to occur.

Finnish regional and industrial policy makers should take seriously the regional development implications of the competitive advantage(s) secured by industrial agglomerations and industrial districts. The geographically fragmented approach to SME development in any branch or sector, as found in Finland, is likely to be ineffective, simply because such an approach fails to build on the critical factors of external economies, social commitment and embeddedness, and localised learning. The absence of the co-operative ethic in Finnish entrepreneurs noted above is also a serious problem which needs to be addressed in future entrepreneurial education and training programmes (see e.g. Uusitalo 1995).

An analysis of the distribution and location of employment and enterprise in Finland's wood products and furniture SMEs indicated

that regional concentrations already occur in certain branches. The analysis also indicted that although branch organisations work satisfactorily at the local level, they did not consider it likely that industrial agglomerations would develop in the future under Finnish conditions. A major obstacle here would seem to be regional development policies which seek an even distribution of SMEs across the country, rather than seeking strong, globally competitive agglomerations.

Business problems

Of the various types of business problems facing woodworking SMEs, Finnish organisations main concern was the general problem of competitiveness and profits. With respect to other problems, such as coping with administration & regulations, product substitution, and human resources (availability, competence and costs), Finnish concerns were below the average of the eight countries in the investigation. However, concerning a second component that addressed human factors (creativity and investments in human capital), Finland's score was above average (second to Sweden). This would seem to be a contradiction of Finland's poor performance on the component "future oriented activities" noted above. However, the latter component concerned the branch organisations' activities, not the overall state of the branch. It would seem that Finnish firms consider that they are investing in human capital.

Knowledge

Reflecting their concern over competitiveness, Finnish organisations considered that woodworking entrepreneurs required training in business management skills. In this respect, Finland was second to Germany in receiving above average scores for this training component. With respect to technical training, Finnish organisations' scores were below the eight-country average, indicating that technical issues are not considered a major problem for entrepreneurs. This result is supported by other investigations (e.g. Selby & Petäjistö 1992, Petäjistö et al. 2000 & 2001) that showed entrepreneurs to be technically proficient even when their business acumen was poorly developed.

Institutional issues and industrial organisations

Finland's woodworking organisations were fairly satisfied with the institutional environment for business. Finland nevertheless ranked only fourth in terms of overall satisfaction, following Italy, Germany and Austria.

On the issue of whether there was national political support for

woodworking SMEs, Finnish organisations replies were more negative than the average for the eight countries investigated. Finland's score was the second lowest. Danish, German and Italian organisations perceived the greatest national-level political support for their industry. On the issue of local-level, practical support, on the other hand, Finnish organisations received the highest average scores (despite the organisations' lack of local branches), followed by Italian Danish and German organisations. Finnish organisations should continue to develop this relative strength. The result also lends support to the concept of local concentration of industry, as such agglomerations or industrial districts would further assist the local spread of knowledge.

Organisations' activities

The main means by which representative organisations advance their branch and members' interests varied from country to country. Finland performed rather weakly on the factor concerned with "*future oriented activities*" which included encouraging youth into the branch or sector. This poor performance must give cause for concern, especially as Danish, Swedish and Austrian organisation scored well on this component. In terms of *lobbying activities*, Finland came last of the eight countries, which may be a reflection of the institutional dominance of LSE in Finland (cf. Passila 2000). In terms of practical extension services, Finnish organisations performed just below average, while in terms of wood promotion campaigns, Finnish organisations also performed surprisingly weakly, at least compared with Denmark, Ireland, Germany and Austria. Finally, in terms of product development activities, Finnish organisations' average scores placed them third of the eight countries, following only the U.K. and Ireland, and well above the average for the other countries.

Regional development

In section 2.3, it was argued that while traditional location constraints may be losing their relevance, other location constraints that used to be unnoticed or ignored may come to the fore. In particular, social circumstances, with their ability to reveal persistent forces, have largely been ignored in the regional convergence-divergence discussion (Rodríguez-Pose 1994;329). Kautonen's (1998) pessimistic analysis of the lack of embeddedness in the Lahti furniture agglomeration lends strong support to Rodríguez-Pose's contention.

As noted in section 2.3.2, much of the current debate concerning region divergence has parallels with the theory of cumulative and

circular causation (Myrdal 1957). The external economies that are characteristic of Marshallian industrial districts can be seen as examples of the positive, cumulative, region effects typical of Myrdal's growth regions or regions with spread effects. Similarly, the social structures (or their absence, as noted by Kautonen 1998), are clearly linked to Myrdal's "non-economic" cumulative processes.

The current quasi-agglomerations of wood products and furniture enterprises, and their labour force, in Finland can be seen as expressions of the cumulative process at work. Whether the lack of cohesion and embeddedness in these regions of concentration will prevent them developing further into industrial districts along Marshallian lines remains to be seen. Regional policies that are attempting to create wood products enterprises in areas where woodworking industrial skills are lacking might be seen as attempts to halt the Myrdalian process of cumulative decline. Whether such efforts are sufficiently powerful to halt decline, let alone reverse it on a sustainable basis, can be questioned. The risk in such a regional development policy is that it would employ scarce resources that would be better spent on efforts to increase the coherence and development of localisation effects that would accrue from increased agglomeration effects in the current areas of specialised wood products production. However, it is the failure of SME entrepreneurs, their branch organisations and their communities to stimulate embeddedness and localisation effects in the core areas of wood products and furniture production that needs to be most urgently addressed.

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APPENDIX 1. QUESTIONNAIRE TO WOODWORKING BRANCH ORGANISATIONS

FOREST & WOODWORKING SMALL BUSINESS DEVELOPMENT INVESTIGATION

Name and address of organisation _____

_____

Contact person_____e-mail _____

Tel._____ Fax_____ _____

Branch of industry to which your answers apply: (NACE) _____

A – SOME DETAILS CONCERNING YOUR INDUSTRIAL BRANCH

1. How many enterprises are operating in your industrial branch? *(including those not affiliated to your organisation)*
_____ establishments

2. Please estimate what proportion of these are small businesses? _____**%** The definition of *"small business"* varies from country to country, and indeed, from branch to branch. Please use the standard concept of "small business" as understood in your branch, and indicate the maximum number of employees where it differs from 20:
_____employees

2a. Has the number of small business operating in your industrial branch changed over the past five years?

Ñ No Ñ Yes, increased Ñ Yes, decreased

3. Where are the main markets for your industrial branch's products, and how has the demand in those markets changed over the past five years?

	% of value	Increasing	Static	Decreasing
Domestic market	_____	Ñ	Ñ	Ñ
EU market	_____	Ñ	Ñ	Ñ
World market (excl. EU)	_____	Ñ	Ñ	Ñ
	100			

4. To what extent are the producers in your industrial branch regionally concentrated?

Ñ Strong concentration (enterprises concentrated into a few, clearly defined industrial districts or regions)

Ñ Moderate concentration (enterprises concentrated into a several fairly well defined industrial districts or regions)

Ñ Little or no concentration (scattered distribution - no well defined industrial districts or regions)

5. How have the demand conditions in your industrial branch changed over the past five years?

- Ñ More buyers/diversification of buyers
- Ñ No significant change in demand situation
- Ñ Fewer buyers/concentration of buyers

6. How have the supply-side conditions of your industrial branch changed over the past 5 years?

- Ñ More suppliers/diversification of suppliers
- Ñ No significant change in supply situation
- Ñ Fewer suppliers/concentration of suppliers

7. What has been the level of profitability in your industrial branch during the past five years?

Ñ Very good Ñ Good Ñ Acceptable Ñ Poor Ñ Very poor

7a. What is the outlook for profitability in your industrial branch over the next five years?

Ñ Improving Ñ Static Ñ Weakening

7b. What is the outlook for profitability in *small businesses* in your industrial branch over the next five years?

Ñ Improving Ñ Static Ñ Weakening

8. How has the employment situation in your industrial branch changed over the past five years?

Ñ Increased employment Ñ Static Ñ Decreased employment

8a. What is the employment outlook in your industrial branch over the next five years

Ñ Increased employment Ñ Static Ñ Decreased employment

8a. What is the employment outlook in *small businesses* in your industrial branch over the next five years

Ñ Increased employment Ñ Static Ñ Decreased employment

9. How are the following demand factors likely to develop in your branch over the next five years?

	Increase	No change	Decrease	Cannot say
a) Domestic demand	Ñ	Ñ	Ñ	Ñ
b) Export demand	Ñ	Ñ	Ñ	Ñ
c) Competition from imports	Ñ	Ñ	Ñ	Ñ
d) Competition from product substitutes	Ñ	Ñ	Ñ	Ñ
e) Production structure increasingly dictated by large buyers (e.g. Ikea, B&H)	Ñ	Ñ	Ñ	Ñ

10. In what direction(s) do you think industrial production will develop in your branch during the next five years in order to maintain or improve its competitiveness?

	Probable	Possible	Unlikely	Cannot say
a) Increased product specialisation	Ñ	Ñ	Ñ	Ñ
b) Diversification of production	Ñ	Ñ	Ñ	Ñ
c) Increased production of semi-finished components for other branches	Ñ	Ñ	Ñ	Ñ
d) Increase in just-in-time and flexible production	Ñ	Ñ	Ñ	Ñ
e) Increase in networking arrangements	Ñ	Ñ	Ñ	Ñ
f) Increased use of centralised marketing organisations	Ñ	Ñ	Ñ	Ñ
g) Increased regional concentration of production	Ñ	Ñ	Ñ	Ñ

h) Other significant development _____

i) Other significant development _____

11. What do you consider to be the potential for development of small businesses in your industrial branch in the next five years?

Ñ Excellent Ñ Good Ñ Reasonable Ñ Poor Ñ Cannot say

12. To what extent are the following issues seen as problems in small businesses in your industrial branch?

	Large problem	Mild problem	Not a problem
a) Level of business competence in small firms	Ñ	Ñ	Ñ
b) Coping with *administrative* bureaucracy and business regulations	Ñ	Ñ	Ñ
c) Coping with changing *industrial* regulations & standards	Ñ	Ñ	Ñ
d) Labour costs	Ñ	Ñ	Ñ
e) Availability of qualified labour force	Ñ	Ñ	Ñ
f) Profitability	Ñ	Ñ	Ñ
g) Raw material acquisition	Ñ	Ñ	Ñ
h) Level of technology	Ñ	Ñ	Ñ
i) Competitiveness of businesses	Ñ	Ñ	Ñ
j) Product substitution by other wooden goods	Ñ	Ñ	Ñ
k) Product substitution by non-wooden goods	Ñ	Ñ	Ñ

l) Other significant problem, what? _____

m) Other significant problem, what? _____

B – ASPECTS OF YOUR ORGANISATION'S ACTIVITIES

13. Does your organisation have regional branches? Ñ No Ñ Yes, how many? _____

14. How many enterprises are directly or indirectly affiliated to your organisation (e.g. via membership organisations)?

_____ **14a. What proportion of these members are** *small businesses*? _____%

15 What has your organisation been doing to advance the interests of your industrial branch and its members?

	Major input	Minor input	No such input to date	Not in our brief
a) Direct lobbying of politicians and other senior state officials	Ñ	Ñ	Ñ	Ñ
b) Direct lobbying of other public authorities (local or regional authorities, etc.)	Ñ	Ñ	Ñ	Ñ
c) Direct lobbying of NGOs, industrial associations, trades unions, etc.	Ñ	Ñ	Ñ	Ñ
d) Promoting campaigns to encourage the use of wood and wooden products	Ñ	Ñ	Ñ	Ñ
e) Assisting members to gain access to national/EU projects and funds	Ñ	Ñ	Ñ	Ñ
f) Assisting in the establishment and co-ordination of networks of producers	Ñ	Ñ	Ñ	Ñ
g) Producing promotion videos, organising trade fair demonstrations, and other marketing initiatives	Ñ	Ñ	Ñ	Ñ
h) Creating and implementing product development programmes (e.g. "Product Accreditation" schemes)	Ñ	Ñ	Ñ	Ñ
i) Implementing Quality Management Systems (e.g. ISO 9000) in the industry	Ñ	Ñ	Ñ	Ñ
j) Implementing Eco Management Systems (e.g. EMAS, ISO14000) in the industry	Ñ	Ñ	Ñ	Ñ
k) Providing bench-marking and best-practice services to members	Ñ	Ñ	Ñ	Ñ
l) Developing strategic plans for your industrial branch	Ñ	Ñ	Ñ	Ñ
m) Financing Research & Development projects	Ñ	Ñ	Ñ	Ñ
n) Encouraging young people to enter your industrial branch	Ñ	Ñ	Ñ	Ñ
o) Other important initiative? _____	Ñ	Ñ		
p) Other important initiative? _____	Ñ	Ñ		

16 How does your organisation perceive other organisations'/groups' attitudes with respect to developing the preconditions for *small*, forest & woodworking businesses?

	Positive Attitude	Neutral attitude	Negative attitude	Cannot say
a) Large-scale woodworking industry federations	Ñ	Ñ	Ñ	Ñ
b) Artisan woodworking federations	Ñ	Ñ	Ñ	Ñ
c) Forest policy-makers	Ñ	Ñ	Ñ	Ñ
d) Industrial policy-makers	Ñ	Ñ	Ñ	Ñ
e) Labour organisations	Ñ	Ñ	Ñ	Ñ
f) Employers' organisations	Ñ	Ñ	Ñ	Ñ
g) Financial institutions	Ñ	Ñ	Ñ	Ñ
h) Chambers of Commerce	Ñ	Ñ	Ñ	Ñ
i) Local authorities	Ñ	Ñ	Ñ	Ñ
j) Regional/local development agencies	Ñ	Ñ	Ñ	Ñ

C - SOME ASPECTS OF THE INSTITUTIONAL ENVIRONMENT FOR BUSINESS

17 How supportive is this country's business legislation towards:

a) Large-scale industry? Ñ Strongly supportive Ñ fairly supportive Ñ neutral Ñ not supportive Ñ hostile

b) Small businesses? Ñ Strongly supportive Ñ fairly supportive Ñ neutral Ñ not supportive Ñ hostile

18 Have the following types of public sector support for *small businesses* been actively taken up in your industrial branch?

	Not available	Strong uptake	Moderate uptake	Little uptake	Cannot say
a Tax relief on capital investments	Ñ	Ñ	Ñ	Ñ	Ñ
b) Lower corporate taxation for small businesses	Ñ	Ñ	Ñ	Ñ	Ñ
c) Soft loans/Loan guarantees	Ñ	Ñ	Ñ	Ñ	Ñ
d) Start-up grants/subsidies	Ñ	Ñ	Ñ	Ñ	Ñ
e) Assistance for acquiring sites/buildings/etc	Ñ	Ñ	Ñ	Ñ	Ñ
f) Marketing grants	Ñ	Ñ	Ñ	Ñ	Ñ
g) Relocation grants/subsidies	Ñ	Ñ	Ñ	Ñ	Ñ
h) Grants/subsidies for training and education	Ñ	Ñ	Ñ	Ñ	Ñ
i) Employment/wage subsidies	Ñ	Ñ	Ñ	Ñ	Ñ
j) Product development/innovation grants/loans	Ñ	Ñ	Ñ	Ñ	Ñ
k) Other significant incentive?_____		Ñ	Ñ	Ñ	Ñ
l) Other significant incentive? _____		Ñ	Ñ	Ñ	Ñ

19. Has your industrial branch benefited from public sector intervention policies for *small businesses*?

Ñ Real benefits from intervention (*additionality*; e.g. more firms, more jobs, increased output)

Ñ No real benefits from intervention (*dead weight effects*, positive changes in the industrial branch would have taken place anyway)

Ñ Mainly disadvantages from intervention (*displacement effects*, support for some firms have driven other firms out of business)

20. To what extent is the national industrial development policy, as it effects your branch, regionally weighted?

Ñ Strong regional industrial development dimension
Ñ Moderate regional industrial development policy
Ñ Weak regional industrial development dimension
Ñ No significant regional industrial development dimension

21. In your experience, is the vocational education system supportive of *small businesses*?

Ñ Strongly supportive Ñ Mildly supportive Ñ Neutral Ñ Mildly prohibitive Ñ Strongly prohibitive

D – CONCERNING THE DEVELOPMENT OF SMALL BUSINESSES IN YOUR BRANCH

22. What areas of further training do you consider to be urgent for small-scale businessmen in your branch?

	Very Urgent	Urgent	Not urgent
a) improving business acumen	Ñ	Ñ	Ñ
b) improving financial skills	Ñ	Ñ	Ñ
c) making and benefiting from business plans	Ñ	Ñ	Ñ
d) developing new technical skills	Ñ	Ñ	Ñ
e) developing marketing skills	Ñ	Ñ	Ñ
f) coping with state/EU bureaucracy and business regulations	Ñ	Ñ	Ñ
g) implementing of industrial standards and regulations	Ñ	Ñ	Ñ
h) business-to-business learning (networking skills)	Ñ	Ñ	Ñ
i) Other, what? _____	Ñ	Ñ	Ñ

23. Have measures been taken to increase young people's interest in careers in the woodworking industries?

Ñ No significant measures Ñ Public sector measures Ñ Industry (private sector) sponsored measures

24. Please estimate to what extent your industrial branch invests in Research & Development *(either directly, or by purchasing R&D results and other services).*

a) Large-scale industry ____ % of annual turnover
b) Small businesses ____ % of annual turnover

25. What are the main channels by which small businesses in your industrial branch gain access to R&D and designer services (e.g. research & development establishments, universities, polytechnics, design schools, etc.) **and how effective are these channels?**

	Very effective	Effective	Not very effective
1. _____	Ñ	Ñ	Ñ
2. _____	Ñ	Ñ	Ñ
3. _____	Ñ	Ñ	Ñ

26. Have national campaign(s) to increase the use of wood and wooden products achieved the desired results? (answer based on a) recent investigations, if any, or b) according to your own experience or intuition)

a) Recent investigation(s)
Ñ Demonstrably, yes
Ñ Demonstrably, no

b) Personal opinion
Ñ In my opinion, yes
Ñ In my opinion, no

Ñ Cannot say/no recent campaigns

27. Finally, from the standpoint of your organisation, what is your reaction to the following statements in the context of your industrial branch? *(Please tick one box per row)*

	Strongly agree	Mildly agree	Neutral	Mildly disagree	Strongly disagree	Cannot say
a) New technologies increasingly determine the competitiveness of firms	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
b) Competition is forcing firms are co-operating both nationally and internationally in more inventive and varied ways	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
c) The creativity of individual workers is increasingly important in the woodworking industry	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
d) Investments in human capital are increasingly important in the woodworking industries	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
e) Building regulations increasingly encourage the extensive use of wood materials	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
f) Flexible, just-in-time production favours the development of small businesses	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
g) Barriers-to-entry to the branch are too low	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
h) Small businesses have failed to upgrade their factors of production	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
i) Negative attitudes to business failure are a barrier to small business start-ups	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
j) Small woodworking businesses have benefited from "product accreditation" schemes	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
k) Small businesses have widely participated in "benchmarking" and "best-practice" schemes	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
l) Small businesses have benefited from the Single Market	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
m) Small businesses are product oriented rather than customer oriented	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
n) The creation of specialised industrial districts is essential for sustaining business viability	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
o) Eco-labelling is essential for the future market success of wood-based consumer products	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
p) Consumers are increasingly interested in wooden products	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
q) Consumers are increasingly quality conscious concerning wood-based products	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ
r) Society no longer values small businesses	Ñ	Ñ	Ñ	Ñ	Ñ	Ñ

APPENDIX 2: Relative strengths and weaknesses of woodworking branches and their organisations in the case countries (see section 7.10 for explanation)

AUSTRIA

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Perceived open market (PC91)	
	Less likelihood of market domination by large buyers and/ or product substitution (PC93)	
DIRECTION OF INDUSTRIAL DEVELOPMENT	Likelihood of re-orientation of production (PC101)	
	Likelihood of increasing market orientation (PC103)	
	Likelihood of increased networking (PC104)	
BUSINESS PROBLEMS OF WOODWORKING SMES	Perceived competitiveness (PC123)	Lack of ability to cope with admin. & regulations (PC121)
	Few human resources problems (PC124)	Threat from product substitution or problems with raw material supply (PC122)
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for technical training (technical competence perceived to be satisfactory)(PC222)	
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	National-level policies perceived to be supportive (PC161)	Local-level/practical support perceived to be unsupportive (PC162)
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENTACTIVITIES	Future oriented activities (PC151)	Lack of practical extension and advisory activities (PC153)
	Wood promotion campaigns (PC154)	
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of human element (PC271)	Lack of recognition of changing production structures (PC272)
		Lack of recognition of the need for competitiveness (PC273)

DENMARK

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Perceived open market (PC91)	Lack of strong domestic demand (PC92)
		Likelihood of market domination by large buyers and/or product substitution (PC93)
DIRECTION OF INDUSTRIAL DEVELOPMENT	Likelihood of re-orientation of production (PC101)	
	Likelihood of increased regional concentration of production (PC102)	
	Likelihood of increasing market orientation (PC103)	
	Likelihood of increased networking *(PC104)*	
BUSINESS PROBLEMS OF WOODWORKING SMES	Little threat from product substitution or problems with raw material supply (PC122)	Perceived lack of competitiveness (PC123)
	Few human resources problems (PC124)	
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for technical training (technical competence perceived to be satisfactory) (PC222)	Need for business management training (management competence perceived to be poor)(PC221)
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	National-level policies perceived to be supportive (PC161)	
	Local-level/practical support perceived to be supportive (PC162)	
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Future oriented activities (PC151)	Lack of practical extension and advisory activities (PC153)
	Wood promotion campaigns (PC154)	
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of the need for competitiveness (PC273)	Lack of recognition of human element (PC271)
	Perceived wood consciousness of consumers (PC274)	Lack of recognition of changing production structures (PC272)

FINLAND

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Open market (PC91)	
DIRECTION OF INDUSTRIAL DEVELOPMENT	Increasing re-orientation of production (PC101)	
	Increasing market orientation (PC103)	
	Increasing networking (PC104)	
BUSINESS PROBLEMS OF WOODWORKING SMES	Ability to cope with admin. & regulations (PC121)	Perceived lack of competitiveness (PC123)
	Little threat from product substitution or problems with raw material supply (PC122)	
	Less human resources problems (PC124)	
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Less need for technical training (technical competence perceived to be satisfactory)(PC222)	Greater need for business management training (management competence perceived to be unsatisfactory)(PC221)
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	Local-level/practical support perceived to be supportive (PC162)	National-level policies perceived to be unsupportive (PC161)
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Wood promotion campaigns (PC154)	Lobbying activities (PC152)
	Product development activities (PC155)	Lack of practical extension and advisory activities (PC153)
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of human element (PC271)	
	Recognition of changing production structures (PC272) Recognition of the need for competitiveness (PC273)	

GERMANY

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Perceived open market (PC91)	Likelihood of market domination by large buyers and/or product substitution (PC93)
DIRECTION OF INDUSTRIAL DEVELOPMENT	Likelihood of increased regional concentration of production (PC102)	Less likelihood of increased networking (PC104)
	Likelihood of increasing market orientation (PC103)	
BUSINESS PROBLEMS OF WOODWORKING SMES	Ability to cope with admin. & regulations (PC121)	Perceived threat from product substitution or problems with raw material supply (PC122)
	Few human resources problems (PC124)	Perceived lack of competitiveness (PC123)
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for technical training (technical competence perceived to be satisfactory)(PC222)	Need for business management training (management competence perceived to be unsatisfactory)(PC221)
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	National-level policies perceived to be supportive (PC161)	
	Local-level/practical support perceived to be supportive (PC162)	
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Lobbying activities (PC152)	Lack of product development activities (PC155)
	Practical extension and advisory activities (PC153)	
	Wood promotion campaigns (PC154)	
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Perceived wood consciousness of consumers (PC274)	Lack of recognition of human element (PC271)
		Lack of recognition of changing production structures (PC272)
		Lack of recognition of the need for competitiveness (PC273)

IRELAND

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Strong domestic demand (PC92)	Perceived lack of open market (PC91)
	Less likelihood of market domination by large buyers and/or product substitution (PC93)	
DIRECTION OF INDUSTRIAL DEVELOPMENT		Less likelihood of increasing market orientation (PC103)
		Less likelihood of increased networking (PC104)
BUSINESS PROBLEMS OF WOODWORKING SMES	Little perceived threat from product substitution or problems with raw material supply (PC122)	Lack of ability to cope with admin. & regulations (PC121)
	Perceived competitiveness (PC123)	Perceived problems with human resources (PC124)
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING		Need for technical training (technical competence perceived to be unsatisfactory)(PC222)
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES		National-level policies perceived to be unsupportive (PC161)
		Local-level/practical support perceived to be unsupportive (PC162)
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Satisfactory practical extension and advisory activities (PC153)	Lack of product development activities (PC155)
	Wood promotion campaigns (PC154)	
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of human element (PC271)	
	Recognition of changing production structures (PC272)	
	Perceived wood consciousness of consumers (PC274)	

ITALY

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Perceived open market (PC91)	
	Strong domestic demand (PC92)	
DIRECTION OF INDUSTRIAL DEVELOPMENT	Likelihood of increased regional concentration of production (PC102)	Less likelihood of increasing market orientation (PC103)
BUSINESS PROBLEMS OF WOODWORKING SMES		Low likelihood of increased networking[1] (PC104) Lack of ability to cope with admin. & regulations (PC121)
		Perceived threat from product substitution or problems with raw material supply (PC122)
		Perceived problems with human resources (PC124)
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for business management training (management competence perceived to be satisfactory) (PC221)	Need for technical training (technical competence perceived to be un-satisfactory)(PC222)
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	National-level policies perceived to be supportive (PC161)	
	Local-level/practical support perceived to be supportive (PC162)	
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Practical extension and advisory activities (PC153)	Lack of future oriented activities (PC151)
		Lack of wood promotion campaigns (PC154)
		Lack of product development activities (PC155)
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of changing production structures (PC272)	Lack of wood consciousness of consumers (PC274)
	Recognition of the need for competitiveness (PC273)	

[1]Understandable given Italy's current high level of networking

SWEDEN

	RELATIVE STRENGTH	RELATIVE WEAKNESS
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS	Strong domestic demand (PC92)	Perceived lack of open market (PC91)
		Likelihood of market domination by large buyers and/or product substitution (PC93)
DIRECTION OF INDUSTRIAL DEVELOPMENT	Likelihood of increased networking (PC104)	Less likelihood of increased regional concentration of production (PC102)
		Less likelihood of increasing market orientation (PC103)
BUSINESS PROBLEMS OF WOODWORKING SMES	Ability to cope with admin. & regulations (PC121)	Perceived problems with human resources (PC124)
	Little threat from product substitution or problems with raw material supply PC122)	
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for technical training (technical competence perceived to be satisfactory)(PC222)	
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES	National-level policies perceived to be supportive (PC161)	Local-level/practical support perceived to be unsupportive (PC162)
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Future oriented activities (PC151)	Lack of wood promotion campaigns (PC154)
		Lack of lobbying activities (PC152)
		Lack of practical extension and advisory activities (PC153)
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES	Recognition of human element (PC271)	Lack of recognition of changing production structures (PC272)
		Lack of recognition of the need for competitiveness (PC273)

UNITED KINGDOM

	RELATIVE STRENGTHS	RELATIVE WEAKNESSES
DEVELOPMENT OF THE DEMAND FOR WOODEN PRODUCTS		Perceived lack of open market (PC91)
		Lack of domestic demand (PC92)
DIRECTION OF INDUSTRIAL DEVELOPMENT		Less likelihood of production re-orientation (PC101)
		Less likelihood of increased networking[1] (PC104)
BUSINESS PROBLEMS OF WOODWORKING SMES	Little perceived threat from product substitution or problems with raw material supply (PC122)	
	Few perceived human resource problems (PC124)	
VOCATION EDUCATION AND ENTREPRENEURIAL TRAINING	Little need for business management training (management competence perceived to be satisfactory)(PC221)	
ORGANISATIONS' PERCEPTIONS OF INSTITUTIONAL POSITION OF SMES		National-level policies perceived to be unsupportive (PC161)
		Local-level/practical support perceived to be unsupportive (PC162)
INDUSTRIAL ORGANISATIONS' BRANCH DEVELOPMENT ACTIVITIES	Practical extension and advisory activities (PC153)	
	Lobbying activities (PC152)	
	Wood promotion campaigns (PC154)	
	Product development activities (PC155)	
ATTITUDES TOWARDS BRANCH DEVELOPMENT ISSUES		Poor recognition of human element (PC27)
		Lack of recognition of changing production structures (PC272)
		Poor recognition of the need for competitiveness (PC273)
		Lack of wood consciousness of consumers (PC274)

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