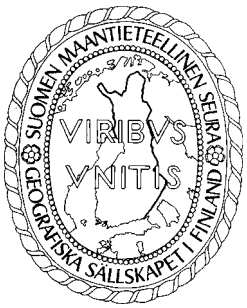
Dynamics of job creation, restructuring and industrialisation in rural Finland

MARKKU TYKKYLÄINEN



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This study analyses the socio-economic transformation of Finnish peripheral areas. Changes are scrutinised in the context of industrial restructuring in order to unravel the mechanisms that impact on rural transformation. A policy shift towards rationalisation of the primary sector commenced in the mid-1960s, and regional policy promoted rural industrialisation. In recent years depopulation combined with improving productivity in services has restricted the growth of public sector employment in the northern, north-eastern and eastern parts of the country. The analysis ends by scrutinising the impacts of the boom in the information and communication technology sector on the rural economic landscape at the turn of the millennium. Two geographically almost identical industrial development patterns are detected: the regional policy-based rural manufacturing boom of the 1970s and the reindustrialisation period at the turn of the millennium, led by the growth and spatial expansion of the information and telecommunication technology cluster.

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Formation of the rural economic landscape

Rural economic systems throughout the developed world are very much regulated by national policies and increasingly by global pressures of competition. Regulation theories argue that the main forces for socio-economic changes occur within national economies and that the world economy consists of relations between national economies and their institutions (Lipietz 1986). These theories emphasise that structural changes can be explained by specific national modes of production, and many research papers have demonstrated a greater readiness to address the social and institutional regulation of regional spaces as well (Collinge 1999; Krätke 1999; MacLeod & Jones 1999). Regulative principles are applicable to rural settings, as has been demonstrated by Marsden (1998), although the mainstream policies of the current era have been focused more on deregulation than on regulation in many countries. Emphasis now tends to be placed on explanations based on shifts towards new societal structures, influenced by such tendencies as post-productionism, post-Fordism, the information society, globalisation and competition between regions and localities. Changes in regulative regimes on any geographical scale are likely to lead to rural restructuring, but it is also obvious that various other economic and societal factors, such as globalisation, improvements in productivity, economic integration and competition, are having increasingly strong impacts on rural economic development.

Rural economies are affected by various institutions and development policies, e.g. land use planning, conservation, rural industrial policy and the provision of public services. Land ownership differs from country to country, leading to different agricultural and forest management systems. Furthermore, the composition of the farming system (i.e. size of farms, specialisation, etc.) is influenced by national legislation and institutions and the cultural and industrial legacy of each region. Rural development is deeply rooted in the history of each country, often originating from fundamental

political processes such as colonisation, land reforms or measures enacted in response to unemployment and migration.

Jones (1997) introduced the notion of spatial selectivity to interpret the dynamics of local change. If development in particular areas is supported by geographically varying policy measures, this concept of spatial selectivity could be useful when attempting to explain differences in development paths and societal structures between these areas. Spatial selectivity implies that the state has a tendency to confer privileges on certain areas through various development policy instruments, as has actually been the case in Finland and the EU. In this Finnish regulative environment the modes of production in the various branches of the primary sector (such as agriculture and forestry) are far from being market-based. In a parallel manner, rural industrialisation in remote areas is regulated by various policy measures such as regional and structural policies. Since the late 1980s industrial and regional development has been promoted in conjunction with universities and research and development activities, with the aim of helping Finland to develop into an advanced information society (Castells & Himanen 2001; Vuorinen et al. 2005).

The notion of path dependence has been proposed to enrich our understanding of the capacity of regions and rural areas to adjust to restructuring (Boschma & Lambooy 1999), although it has usually been applied to studies dealing with the problems of old industrial regions and transitional economies. These studies nevertheless illustrate how path dependence can create difficulties for regions in generating advanced production and adapting to new modes of institutional organisation. The notion of inertia, or negative lock-in, seems to be highly relevant for describing the lack of adaptability shown in this type of region. Such regions are too easily regarded as fairly homogenous entities, characterised by particular techno-industrial structures and institutional environments that are strongly geared towards their industrial past, so that sectors and even whole regions can become locked into rigid trajectories because their techno-industrial legacy from the past (in terms of resources, competences and socio-institutional structures) has eroded or weakened their ability to adjust to changes. This idea could also be specified to a rural setting.

On the other hand, the process of dependence can also work other way round. Path dependence can be a sequence of creative development (Park & Lee 2004). Knowledge creation depends on the knowledge already accumulated within the actors and organisations in a region, and is therefore cumulative and integrative. The accumulation of innovative knowledge leads to the formation of a path of lively industrial development. The cumulative nature of the technological process narrows down the range of potential choices, but it may lead to a trajectory entailing the accumulation of innovations, and can thus be regarded as self-reinforcing path creation, a situation of positive lock-in. Park and Lee (2004) employ this concept to explain the success of the Finnish economy, boosted by the national innovation system. From a rural perspective, however, the crucial issue is what the impacts of such a nationwide path creation process may be for rural areas, given that it is not endogenous from the beginning.

This article depicts and theorises upon the transformation of the Finnish rural areas from a nationally and spatially selectively controlled industrialising society into a part of the contemporary information society. Finnish regional and industrial regulative practices are discussed in the context of geographical changes in industry in order find the factors and dependences which impact on rural transformation. The article scrutinises the impacts of the boom in the information and communication technology sector on rural industrialisation at the turn of the millennium and analyses the role of service provision in geographical restructuring and demographic changes. The manifestations of recent developments indicate the competitiveness and potential that rural areas display.

National policies and rural transformation

Livelihoods in rural areas of Finland have been very much regulated by the national policy instruments governing agriculture, forestry and manufacturing during the 20th century (Palomäki 1980). Because of the country's geographical position, national self-sufficiency in food products and a dispersed settlement structure have been favoured in societal policy for decades (Katajamäki 1988; Granberg 1989). Finland is the European Union's most sparsely-populated country, where regional structures have largely been determined by the logistics of the resource-based sector until the recent

times (Kortelainen 2002; STV 2006: 606–608). The immense growth of the electronics and telecommunication industries has taken place very recently, in the 1990s (Tykkyläinen 2002).

The diversification of the Finnish economy has been proceeding gradually, in the context of policy changes. Because of its specialisation and export orientation, the economy was in urgent need of reliable trading connections, and it was for this reason, and in order to establish economic stability, that Finland opted for gradual integration into the European market. The country became an associated member of the European Free Trade Association in 1961, then a full member in 1986, and finally a member of the European Union in 1995. More recently, it has joined the Euro and Schengen areas.

EU membership entailed the introduction of Common Agricultural Policy financial support from the EU's Structural Funds and various local initiative programmes. These new tools are now been used in conjunction with national regional policy measures. At the same time support for research and development activities continued and the centres of expertise policy for promoting innovative industries was launched (OECD 2005: 67–147). The new policy regime combining national and EU tools became effective in the mid-1990s, just as the country was beginning to recover from the economic recession of the early 1990s.

Geography of rural settlements

The post-WWII settlement policy which boosted rural growth for a long time came to an end in the mid-1960s, leading to a new manufacturing-oriented growth policy. During the late 1960s and early 1970s the Finnish economy grew rapidly, and accelerated migration took place from the rural areas to the urban and urban-rural fringe areas. Increasing numbers of people were being employed in the manufacturing and service sectors. The expansion of the welfare state in particular provided jobs in the towns, and also in the centres of over 400 rural municipalities (STV 1973: 3). The municipalities adjacent to the larger cities were the most rapidly growing rural areas in Finland up to the 1990s, which this pattern changed along with the growth of the "new" economy. Economic growth in the 1990s directed the largest migration surpluses first towards the central districts of the major cities instead of the urban-rural fringe areas (STV 2004: 150, 2005: 152), with accelerating migration from peripheral areas during the recovery (Muilu & Rusanen 2004: 1507), after which urbanisation once more targeted the urban-rural fringe areas in the late 1990s.

The focus of this study is on the vast, intensely rural eastern and northern areas, which have traditionally posed problems for development (Yli-Jokipii & Koski 1995). The northern part of Finland (Lapland and the north-eastern parts of North Ostrobothnia), the eastern parts of Central Ostrobothnia, the northern parts of Central Finland and the majority of the east-central parts of the country (Etelä-Savo, Pohjois-Savo, North Karelia and Kainuu) constitute an Objective 1 area, which has been receiving economic support from the EU over the period 2000–06 (Fig. 1). Farms in the east and north are smaller than those in the south, and forestry is an important source of income in the rural areas of Pohjois-Savo, Etelä-Savo and North Karelia, and tourism in Lapland. The Objective 1 area constitutes the most peripheral part of the country and is the main target area for EU funding in Finland. In 2000–06 it belonged to the same category of less-developed areas as the Objective 1 areas in northern Sweden, the more remote parts of Ireland, large parts of Portugal and Spain, Southern Italy, the eastern part of Germany and Burgenland in Austria.

The geographical macro-regions of rural society in Finland consist of the relatively wealthy and industrialised southern parts of the country and the west-coast Ostrobothnian provinces characterised by small and medium-sized industries, including telecommunications industries, and farming. The inland part between 61 and 64 degrees of latitude consists of Lake Finland (Raivo 2002: 92–93), where the rural landscapes are characterised by forest, industrial localities and scattered settlements. The underprivileged areas are the north and north-eastern borderlands, which consist of sparse rural settlements and forests with few urban areas, thus matching the definition of an Objective 1 area (Fig. 1). Significant rural restructuring has been going on in the eastern and northern parts of the country for decades (Eskelinen & Fritsch 2006), and as a consequence, these areas have been a major focus of regional and rural development policy, even though production and population are concentrated in the southern regions. On the other hand, their rural manufacturing activities, for instance, are often linked to global production

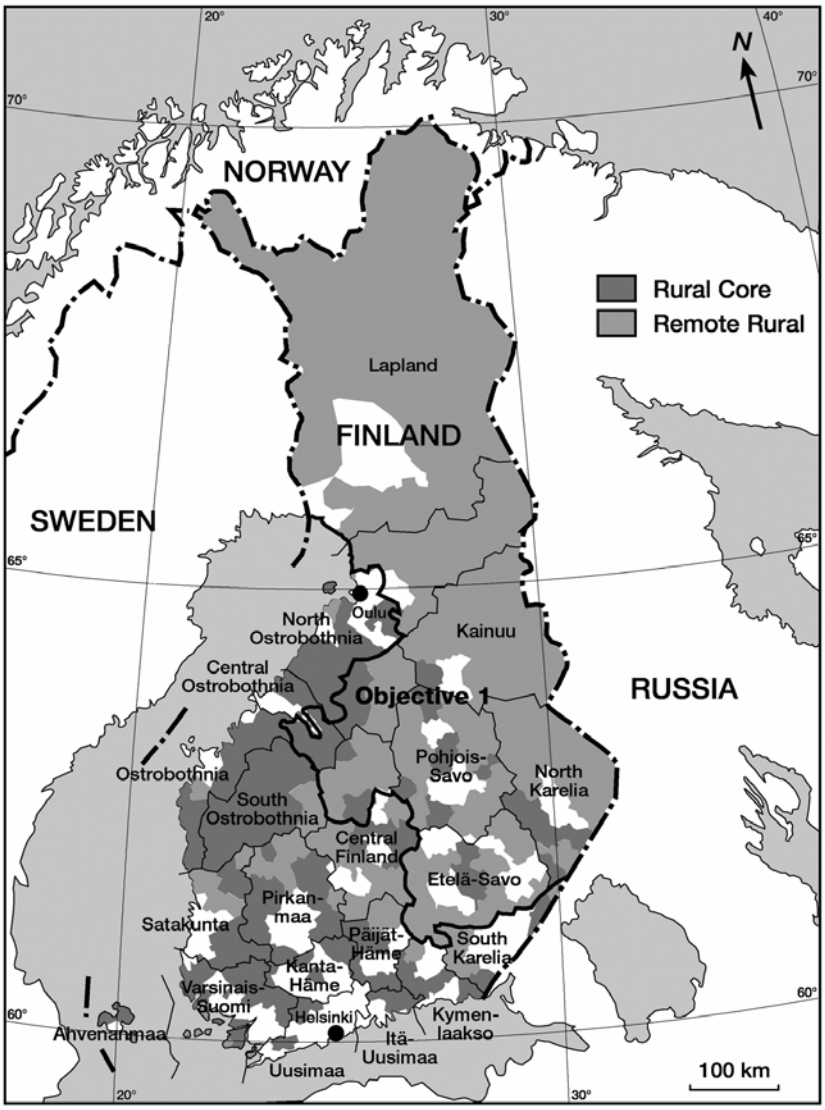

Fig. 1. NUTS 3 regions, rural core and remote rural areas, and the Objective 1 region.

chains and come up to modern technological standards, which is not shown in the statistical averages.

Degree of rurality: socio-economics by geographical classifications

When the Finnish regional planning system was revised in the late 1990s, a new urban-rural classification was introduced on the basis of travel-to-work areas and the socio-economic characteristics of municipalities. The traditional administrative divisions and the hierarchical classification of central places were set aside. In 1995 the official administrative division of municipalities into cities and rural districts was abolished, since when the concept of a rural community has become entirely a contractual matter; so that a municipality could declare itself either urban or rural. In 2001 there were 448 municipalities in the country, of which 338 considered themselves rural. According to this classification, about 36 per cent of the total population lived in rural areas. Whatever the classification is, the rural population in Finland is still large

in proportional terms compared with figures for other high-income countries.

A more specific classification of settlement structure gives more detailed results. According to Statistics Finland, 62.1 per cent of the population lived in urban municipalities in 2003, with 16.9 per cent in semi-urban and 20.3 per cent in rural municipalities. The definition of rural used here is rather complex (STV 2004: 77): municipalities are classified as rural if less than 60 per cent of their inhabitants live in urban settlements and if the population of the largest urban settlement is below 15,000, although the definition also includes areas where between 60 and 90 per cent of the population live in urban settlements, on condition that the largest urban settlement has fewer than 4000 inhabitants. The rural population defined in this way declined from 27.0 to 24.3 per cent between 1990 and 1995 and to 21.5 per cent (1,114,587 people) by 2000 (STV 2004: 77). In parallel with the economic recovery of the 1990s, migration accelerated and, in contrast to the situation in the 1980s, the larger cities absorbed a considerable proportion of the migrants (STV 2004: 150), although some went to suburban municipalities adjacent to cities. On a regional scale, out-migration hit the Objective 1 area hard, and it was outlying districts such as Kainuu that were most affected.

According to another classification (Keränen et al. 2000), the municipalities of Finland can be grouped as urban (58), urban fringe (84), rural core (181) and remote rural (129). The remote rural municipalities are mainly located in the Objective 1 area, while the rural core consists of the municipalities south of Oulu in the western parts of Finland (the Ostrobothnian regions). This classification thus basically divides rural Finland into two entities: the western and south-western *rural core* and the traditional forestry-based *remote rural areas* of the central, eastern and northern parts of the country. This classification was slightly revised in 2001, but the original version is still valid for depicting the rural core and remote rural areas in Finland (Elinvoimainen maaseutu 2004: 27–29). The classification into rural core and remote rural is used by Statistics Finland in its areal classification of rural indicators. In the newest classification, for the year 2006, the proportion of the land area assigned to remote areas has increased from 59.2 to 62.4 per cent compared with the classification of 2000 and the proportion of the population from 10.5 to 10.7 per cent (Suomen maaseututyypit 2006). Measured in the same way, the capacity of the rural core areas dwindled in favour of the rural remote areas and urban-rural fringe areas, reflecting ongoing spatio-economic restructuring.

The indicators reveal certain socio-spatial characteristics related to the remoteness and structures of rural areas in Finland (Table 1). The size of the inactive population is greater than the national av-

Table 1. Socio-economic indicators for rural Finland. Source: compiled from Keränen et al. 2000 and the Regional and industrial… 2005.

Indicator	Rural core	% of Finland	Remote rural	% of Finland	Finland, total
Number of municipalities	181	40.0	129	28.5	452
Population, 1999	891,240	17.2	544,471	10.5	5,170,900
Land area (sq. km), 1999	72,179	23.7	180,417	59.2	304,530
Number of jobs, 1998	306,879	14.4	171,486	8.1	2,125,535
Employed persons, 1998	342,151	16.1	184,376	8.7	2,125,535
Taxed incomes (mill. EUR), 1998	10,258	14.7	5,887	8.4	69,710
Active farms, 1998	45,916	52.1	20,402	23.2	88,069
Manufacturing (CDE) personnel, 1998	71,248	16.0	26,789	6.0	444,467
Avg. population per municipality	4,924		4,221		11,440
Population density, inh./sq. km	12.3		3.0		17.0
Inhabitants/jobs	2.9		3.2		2.4
Employed persons/jobs	1.11		1.08		1.00
Taxed income/inhabitants	11,600		10,812		13,481
Inhabitants/active farms	19		27		59
Land area (hectares)/active farms	157		884		347

erage, and incomes are below the national average. The ratio of employed persons to the number of jobs indicates that at least one-tenth of those who were employed had to commute to urban areas (Table 1). Remote rural municipalities are increasingly encountering problems with providing services because of the costs related to low population densities.

Considerable geographical differences between the rural core and remote rural areas exist in the composition of production in all economic sectors. Most of the active farms are located in the rural core areas, and the farms in south and west-central Finland are bigger and more productive than those in the peripheries. The average field area per farm in 2003, for instance, was about 40 hectares in the southern and south-western NUTS 3 regions (Uusimaa, Itä-Uusimaa, and Varsinais-Suomi) but only 21 hectares in Lapland and Etelä-Savo (STV 2004: 158). The sizes of forest holdings show precisely the opposite of this spatial pattern, being more than 100 hectares per farm in Lapland and over 80 hectares in Kainuu in contrast to 25 hectares in Varsinais-Suomi (Seutukunta- ja maakuntakatsaus 1998: 47). Farms in the rural core and the urban-rural fringe municipalities – most of which are located in Varsinais-Suomi, Uusimaa, Satakunta, Ostrobothnia and South Ostrobothnia – concentrate on food production, whereas those in the remote rural areas still combine agriculture and forestry. In the north the role of the public sector is especially important, so that the public sector accounted for one-quarter of the value of GDP in Kainuu and Lapland, for instance, in the late 1990s as compared with only 15 per cent in the south (Seutukunta- ja maakuntakatsaus 1998: 75).

From farming colonisation to efficient production

Economic development is very much dependent on past economic decisions, which form the chain of development stages referred to as path dependence. Finland was highly rural at the beginning of the 20th century, and its economy was greatly dependent on natural resources. Agriculture and forestry provided work for 70 per cent of the active population up to 1920, and this proportion declined to below 50 per cent only during World War II (Niinisalo 1974: 218). The number of farms reached its maximum, almost 300,000 holdings of arable land ≥ 2 hectares, in the mid-1960s (Granberg 1989: 199), at the same time as the post-war settlement policy came to an end. The decline in employment in primary production gained momentum in the 1970s, when it decreased by an average of 5.2 per cent annually. The post-1965 restructuring of agriculture was a result of more efficient production on farms on the one hand, and of the fact that thousands of small farmers ceased production on the other. The decline continued during the 1980s and later (Table 2), during which time restructuring has been rapid.

While the overall number of farms has declined due to rationalisation pressure and will continue to do so, the number of larger farms has increased. The number of farms with over 50 hectares of field area, for example, was 2952 in 1980, and rose to 4764 in 1990, 10,897 in 2000 and 13,394 in 2005 (STV 2000: 136, 2006: 160).

In spite of the decline in labour, agricultural production has remained high (STV 2004: 166). On the whole, politicians still give priority to national production, implying that the principles of the country's agricultural policy have not changed fundamentally with EU membership, since increased efficiency at the farm level had already been set as a major political target in the mid-1960s, when the colonisation phase had finally come to an end. This policy has continued into the new millennium.

Rural industrialisation

Rural growth patterns

The number of people working in the manufacturing sector in rural areas increased by 46 per cent in the 1970s, followed by a decline in the 1980s and a recovery in the 1990s. During the last decades rural areas have acquired an increasing share of total employment in manufacturing (Table 3). Thus some of the jobs lost in the primary sector have – at least numerically – been compensated for by industrialisation.

The geographical pattern of rural industrialisation in the 1970s operated partly according to the well-known production cycle model, which presupposes that an advanced industry will originate in the core and move to the periphery as its product goes into mass production (Norton & Rees 1979). Empirical data on rural industrialisation in

Table 2. Persons employed in agriculture and forestry, 1990–2005. Source: STV 1992: 370, 1996: 334, 2000: 348, 2004: 158, 381 and 2006: 160, 408; Labour force statistics 2001: 24; Yearbook of farms statistics 2001: 55.

	Agriculture and forestry: self-employed and employed persons (1000 persons)	Agriculture and forestry: employees as % of persons employed in the sector	Agriculture and forestry as % of the total in the economy	All industries (1000 persons)	Number of active farms
1990	207	24	8.4	2,467	129,114
1991	198	26	8.5	2,340	126,084
1992	187	25	8.6	2,174	121,349
1993	173	25	8.5	2,041	116,281
1994	178	24	8.7	2,054	114,510
1995	170	26	8.1	2,099	99,964
1996	159	25	7.5	2,127	94,114
1997	153	24	7.1	2,169	90,203
1998	144	27	6.5	2,222	88,070
1999	144	28	6.3	2,296	…
2000	142	28	6.1	2,335	79,783
2001	135	28	5.7	2,367	77,320
2002	127	28	5.4	2,372	75,474
2003	120	28	5.1	2,365	73,714
2004	116	29	4.9	2,365	72,054
2005	116	31	4.8	2,401	69,517

Note: Employees in 1990–1993 according to the Standard Industrial Classification 1988 (SF), other labour data according to the Standard Industrial Classification 1995 (SF). Including 893 farms possessing less than 1 hectare of arable land in 2000, 1001 farms in 2001, 1148 in 2002, 636 in 2003, 793 in 2004 and 570 in 2005.

Finland nowadays nevertheless demonstrate that new industries start mainly in peripheral areas, with the shift of existing activities from the south playing a minor role (Jatila 2001). Thus the main mechanism of rural industrialisation has been based on the development of new (but often mature-stage) light industry rather than relocation. This boom in the manufacturing sector has been supported by regional policy, but in spite of the rapid percentage increase it has not been able to prevent the considerable out-migration of population from rural areas.

Employment in manufacturing declined in almost all localities in the 1980s, although output grew. Rural areas also suffered from deindustrialisation and more than one-tenth of the manufacturing jobs were lost in the 1980s. The decade ended in an economic boom, soon to be followed by a deep economic crisis in the early 1990s which was concomitant with that experienced in East Central Europe, leading to a decline in both manufacturing production (by 10 percent) and employment (by 20 percent).

The industrial decline was especially severe in the sectors producing traditional consumer goods, such as shoes, clothes and ceramic ware, and the spatial outcome of the crisis was a drop in employment in most localities. Manufacturing output gradually recovered from 1992 onwards, however, through a trend that originated predominantly in the high-tech sectors, while the losers were the traditional labour-intensive sectors, many of which had exported goods to the CMEA countries during the 1970s and 1980s. A considerable part of this light industry was located in old industrial towns and rural peripheries.

The growth of Finnish industry continued towards the end of the 1990s, i.e. the number of manufacturing jobs increased, as did output, and Finland returned to the growth rates of the 1960s and early 1970s, when the first wave of rural industrialisation had taken place. This was in effect a reindustrialisation. The leading growth sectors were now electronics and related industries, as the electronics sector (SIC 32: Communication equipment and apparatus) alone grew by an amazing

Table 3. Employment in the manufacturing sector. Source: Industrial statistics (various years); StatFin 2001–2006; Altika 2005; Regional and industrial… 2005.

	Personnel in the manufacturing sector (wage earners, salaried persons and owners)					
	Rural municipalities		Urban municipalities		All municipalities	
Year	Persons	%	Persons	%	Persons	%
1970	82,711	17.0	405,092	83.0	487,803	100.0
1980	121,018	21.4	443,309	78.6	564,327	100.0
1990	105,110	22.9	354,351	77.1	459,461	100.0
1995	98,966	24.0	313,413	76.0	412,379	100.0
1998	111,360	26.1	315,051	73.9	426,411	100.0
Change		Δ in %		Δ in %		Δ in %
1970–1980	38,307	46.3	38,217	9.4	76,524	15.7
1980–1990	–15,908	–13.1	–88,958	–20.1	–104,866	–18.6
1990–1995	–6,144	–5.8	–40,938	–11.6	–47,082	–10.2
1995–1998	12,394	12.5	1,638	0.5	14,032	3.4
1970–1998	28,649	34.6	–90,041	–22.2	–61,392	–12.6

Note: The figures include all municipalities having at least three manufacturing establishments. Data for 1970–1990 include establishments with at least 5 employees, and those for 1995–1998 smaller establishments. The classification of the municipalities as urban or rural is based on the situation in 1998. The new classification system is explained in the text (STV 2004: 73).

	Numbers of jobs in the manufacturing sector							
	Rural municipalities		Semi-urban municipalities		Urban municipalities		All municipalities	
Year	Jobs	%	Jobs	%	Jobs	%	Jobs	%
1998	60,310	14.1	76,290	17.9	289,823	68.0	426,423	100.0
2002	61,597	14.5	74,411	17.6	287,733	67.9	423,741	100.0
Change		Δ in %		Δ in %		Δ in %		Δ in %
1998–2002	1,287	2.5	–1,879	–2.5	–2,090	–0.7	–2,682	–0.6

Note: The new definition of rural municipalities is explained in the text. In semi-urban municipalities between 60 and < 90% of the population live in urban settlements and the population of the largest urban settlement is at least 4000 inhabitants but less than 15,000. In urban municipalities at least 90% of the population live in urban settlements or the population of the largest settlement is at least 15,000 inhabitants (STV 2004: 79).

	Personnel in the manufacturing (CDE) sector (wage earners, salaried employees and owners)					
Year	Rural core Persons	% of Finland	Remote rural Persons	% of Finland	Finland, total Persons	% of Finland
1995	63,765	15.3	24,831	5.9	417,597	100
2000	72,744	16.0	27,961	6.2	454,005	100
2003	70,764	16.2	26,465	6.1	435,043	100
Change		Δ in %		Δ in %		Δ in %
1995–2000	8,979	14.1	3,130	12.6	36,408	8.7
2000–2003	–1,980	–2.7	–1,496	–5.4	–18,962	–4.2
1995–2003	6,999	11.0	1,634	6.6	17,446	4.2

371 per cent from 1995 to 2000 (StatFin 2001–2006).

The most successful growth industries were narrow in scope, however, the information and communication technology (ICT) cluster being composed of the Nokia Company and enterprises supplying semi-finished products, subcontracting and investment goods and services (Ali-Yrkkö 2001;

Leinbach & Brunn 2002: 494–495). The success of Nokia boosted related industries such as components and contract manufacturers, the manufacturers of mobile phone covers, the producers of circuit boards and the suppliers of production automation and telecom services. These contract manufacturers established their assembly lines in areas, where inexpensive premises and labour were available, i.e. often in low-cost rural environments.

The geographical distribution of the leading ICT firms and their research and development centres in the late 1990s was a highly clustered one centred in largish travel-to-work areas such as the urban regions of Helsinki, Oulu, Turku, Salo, Tampere and Jyväskylä (OECD 2005: 96). Such a pattern often prevails in a developing industrial sector where industries at their growth or innovative stages remain in close proximity to the sources of skilled labour and specialised inputs, as indicated in the American study of Barkley (1988). A Finnish manifestation of this process was that components were manufactured all over the Finland, partly boosted by the centres of expertise, which could enlist the services of universities and polytechnics in addition to businesses (Castells & Himanen 2001; Husso & Raento 2002). The networking of the ICT industry can be interpreted as being based on competitive advantage, which is dependent on each product and production process, corporate purchasing policies and the type of final market; all factors that are unique, so that specific location patterns are produced (cf. Glasmeier 1988). As a result, this system of producers and localities constitutes a spatially optimised network of industrial actors (Bathelt et al. 2004). The spatial configuration of the ICT cluster can also be explained in part by the fact that usually only a rather limited number of companies expand greatly, which results in an uneven spatial pattern. Both distributional explanations have the same impact: the trickle-down effects are spatially limited and network-like, and thus the direct spin-offs from the ICT cluster are spatially selective.

As a result of success in suitable low-cost environments, manufacturing employment grew in many rural municipalities in the late 1990s and up to 2002 (Table 3). Part of the growth was indirectly linked to the growth of the electronics industry or was induced (i.e. generated by growing domestic consumption). Factories belonging to the ICT cluster were established in competitive localities throughout the country, and although many rural industrial establishments did not offer white-collar jobs (such as head office or research and development activities) to the same extent as those in the urban-oriented ICT firms did, their contribution to employment was clearly a positive one during the ICT boom. This latest trend reveals how many remote areas can still possess potentials for industrialisation. The companies succeeded in increasing the number of manufacturing jobs in both the rural core and remote rural areas more than in the rest of Finland during the boom years (Table 3). This geographically extensive growth was possible because of the supply of labour in various rural localities, obviously assisted by the provision of higher education and vocational training all over the country.

Core-periphery settings in the growth of manufacturing

Rural industrialisation has prevailed during the last three decades, and employment in manufacturing in the surroundings of cities has grown particularly rapidly. But how has the growth manifested itself in the core-periphery relations existing in the country? What geographical macro-structures can be found?

Growth in the manufacturing sector diffused to the rural peripheries, as happened in many other advanced countries at that time (e.g. Haynes & Machunda 1987). A trend surface analysis, which can be used to reveal spatial macro-structures in employment changes, shows that the growth decade of the 1970s favoured peripheral locations (Tykkyläinen 2002), and that the further north or east a place was, the higher was the increase in the number of jobs at that time. The fact that the surface is inclined more steeply towards the east than towards the north indicates that an easterly location was even more beneficial.

The deindustrialisation of the 1980s and early 1990s resulted in the largest job losses in the industrialised southern parts of Finland, although the industrialised areas in the eastern parts of the country declined as well and suffered more than the western parts in relative terms at a latter stage in that period (during the depression of the early 1990s), as many companies in the western parts of the country were more flexible in adapting to the new conditions. Also, the information society which produced new mobile technologies originated in the west and south.

The spin-offs from the rise of the new economy in the 1990s gradually spread to the rural areas, and manufacturing expanded particularly in Ostrobothnia (on the west coast), South Ostrobothnia and North Ostrobothnia. Rural areas on the whole benefited from the boom in the Finnish economy and experienced a virtual re-industrialisation. Thus the net increase in industrial jobs in rural areas between 1995 and 1998 was 12,400, or 88 per cent of the national total (Table 3). The growth in employment in manufacturing in many western localities (e.g. Ostrobothnia) indicates that the industrially diversified economic areas in the west, with many small and medium-sized companies, were responsive to these newly induced growth impacts.

From 1994 to 2000 the Finnish economy grew strongly, and this led to a continuous rise in employment in manufacturing up to 2001. The NUTS 3-level figures for 1995–2002 indicate that the most intense growth took place in Central Ostrobothnia, South Ostrobothnia and North Ostrobothnia (over 20 per cent; StatFin 2001–2006), with increases of over 10 per cent in North Karelia (19%), Ostrobothnia (16%) and Pirkanmaa (12%), while the greatest decrease in jobs was in Kainuu, by 10 per cent. Other areas with a decline were South Karelia (–3%), Satakunta (–2%) and Kymenlaakso (–1%), all regions with traditional high-volume production. Lapland also showed below-average growth (2%; StatFin 2001–2006).

Contrary to the situation in the 1970s and 1980s, revival of employment in manufacturing during the late 1990s took place in the early phase of growth in many major urban areas, such as Oulu, Helsinki, Tampere, Jyväskylä and Joensuu (Fig. 2). Much of this growth can be explained by the ICT boom, which, unlike the growth in the 1970s, started from the hi-tech sector developing mainly in dense research and development environments. The growth in manufacturing employment peaked in 2000, but the number of jobs continued to increase in some remote rural areas. The geographical pattern of growth became rather sporadic in the Objective 1 area after the boom (Fig. 2).

As indicated in Fig. 2, the balance of the re-industrialisation period was positive. The net increase in manufacturing jobs was over 17,000 in 1995–2003 (Table 3), and in percentage terms employment in the rural core and remote areas clearly benefited from the ICT boom (Table 3). But how did the boom manifest itself as a function of distance? Did the southern parts benefit more than the more peripheral ones? The hypothesis that the changes in employment in manufacturing were not dependent on distance has to be rejected at the 0.05 level of significance (Fig. 3). Growth was higher the more peripheral the location was, but the relationship was far from being a one-to-one correspondence, as there was considerable variation between municipalities, and as seen in Fig. 3, the majority of this variation was not connected with distance, i.e. the geographical location of the municipality relative to the capital city. The data indicate that growth was slightly greater the more northerly the location is, although the high error variance leads to the qualification that even this dependence is very weak and irregular. If stricter levels of significance ($P < 0.01$ and $P < 0.001$) are used, the causal relationship can be said to be a result of chance. Poor development in the very north and Kainuu is also reflected in a downward turn in the trend in the extreme north, indicating poor success on the part of the small municipalities in the remotest peripheral area (Fig. 3).

The geographical pattern of growth in rural areas in the 1990s resembled in its later stage that of the 1970s, as growth diffused all over the country, although the growth in manufacturing jobs had not been as strong in relative terms in the north and east as it had been in the 1970s. Nevertheless, most non-metropolitan localities succeeded in increasing the number of jobs in manufacturing, and the three-tier classification of settlements indicates that employment in the manufacturing sector grew in the rural municipalities in the late phase, 1988–2002, when it was already declining in the semi-urban and urban municipalities (Table 3).

Employment in manufacturing grew in the central parts of the country, in Etelä-Savo, Central Ostrobothnia and Pirkanmaa, in the declining phase of the growth cycle, from 2000 to 2003 (StatFin 2001–2006), and also in some remote municipalities in Eastern Finland. This geographical development reveals a spin-off effect of growth extending selectively to the competitive peripheral localities. In general, employment went into decline most rapidly in the remote rural municipalities, as shown in the figures for the years 2000–2003 (Table 3). During this shrinking phase the change in employment in manufacturing was not dependent on distance at any statistically significant level ($P = 0.232$), for in parallel with this decline in employment in rural areas, declining trends also prevailed in former growth areas such as the Greater Helsinki area, Oulu and many regional centres (Fig. 2).

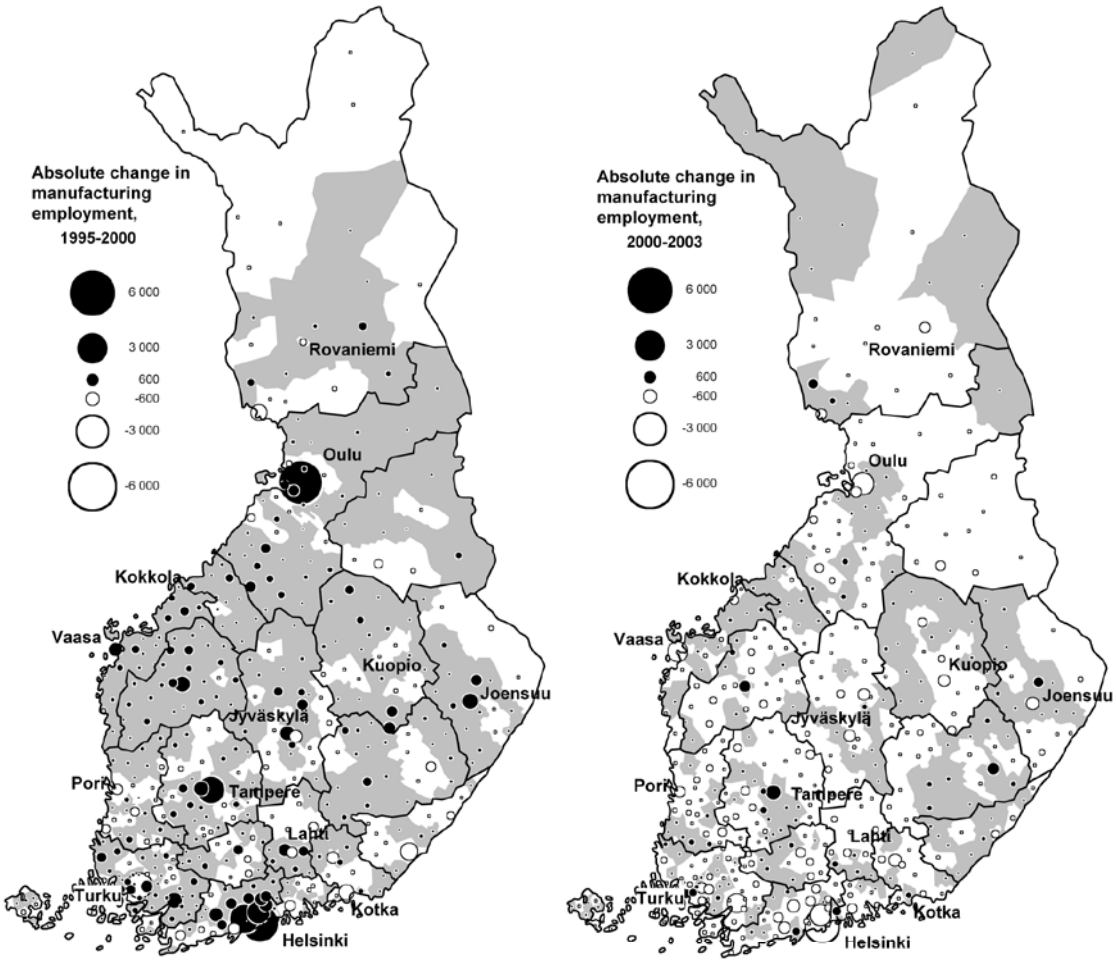

Fig. 2. Growth and decline in employment in manufacturing during the economic boom of the late 1990s and the saturation of the boom from 2000 to 2003. Municipalities where employment in manufacturing grew are marked by grey shading. Source: Regional and industrial… 2005.

In the latest phase, after 2003, many assembly-line investments abroad show that companies were eager to look for low-cost environments globally rather than increasing production in low-cost domestic environments.

The comparison of growth processes in time and space reveals how different driving forces can bring about new economic landscapes (cf. Essletzbichler 2004). In Finland the late-stage diffusion of ICT-based growth was comparable to the boom of the 1970s and revealed that the rural areas were able to offer competitive industrial locations towards the end of the millennium. There are now signs of slower growth performance, however, in the most remote areas, such as the remote rural areas (Table 3), northern Finland (Lapland) and the eastern border zone (Kainuu and part of North Karelia) (Fig. 2). It is obvious that the latest country-wide boom was affected by growth derived from the geographically scattered pattern of expansion in the ICT industry, namely the emergence and expansion of firms in centres such as Oulu, Salo, Tampere, Jyväskylä, etc. This multi-nodal geographical growth has been considered beneficial to ICT companies due to the lower costs in regional centres relative to the Greater Helsinki area, but even so, the ICT sector is underrepresented in rural areas (Elinvoimainen maaseutu 2004: 136), and

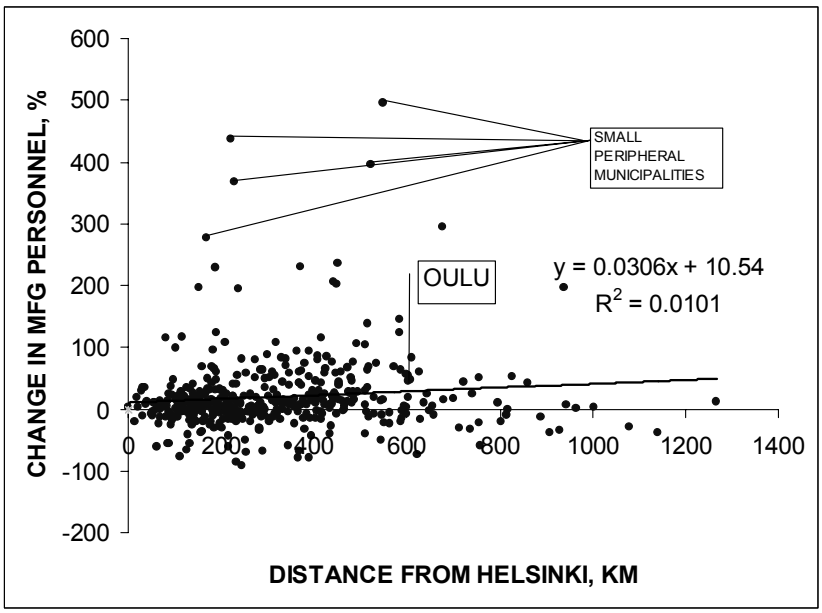

Fig. 3. Changes in manufacturing personnel in 1995–2003 as a function of the shortest road distance from the capital city. H0: $\rho = 0$, H1: $\rho \neq 0$, $t = 2.082^*$, df = 426, H1 = true. Source: Regional and industrial… 2005 and Eniro 2006.

rural industrialisation has been largely the result of indirect and induced diffusion effects. There are nevertheless several rural localities which have been benefited from greenfield investments in the ICT sector.

Public sector employment

The shift from a welfare state to the market-led provision of services has affected remote communities in the European north (Persson 1998). In the past, public services (education, health care, social welfare, etc.) were provided in all regions of Finland on an equal basis. This deliberate maintenance of services in remote regions was based on a system of subsidies and reimbursements, but it generated jobs and to a certain degree counterbalanced regional disadvantages. In fact, many social reforms from the late 1960s onwards were first implemented in remote areas such as Lapland, Kainuu and North Karelia and gave a certain developmental boost to these regions.

The economic crisis of the early 1990s led to budget cuts and rationalisation in the public sector, and at the same time the entire paradigm of the welfare state was re-evaluated, leading to an emphasis on efficiency and the market-led provision of services. The rationalisation of public services has had severe impacts on remote areas. The northernmost regions were in the most vulnerable position because of the relatively large size of the public sector, which accounted for more than 26 per cent of GDP in Kainuu and Lapland in 1997, and for 24–25 per cent in Etelä-Savo, Pohjois-Savo and North Karelia. In all the southern regions, however, its contribution to GDP was clearly below the national average of 18 per cent (STV 2000: 290).

Local and regional development in remote rural areas is greatly dependent on what happens in the public sector, and during the ICT boom the number of jobs in the public sector grew only slowly in Eastern and Northern Finland (see Fig. 4 and Table 4).

The increase in employment in the public sector varied by region during the seven-year period, from 2 per cent in Lapland to 28 per cent in Itä-Uusimaa (Fig. 3). Employment grew fast in the southern regions, which have been the magnets for migration, so that, logically, new public sector jobs have been created to serve the growing populations. The recovery of the Finnish economy, the growth of the new ICT sector and the decline in primary production in the peripheries have resulted in self-reinforcing growth and decline processes. The changes in the public sector have had considerable impacts on the labour market and its geography. Over 110,000 new jobs were created

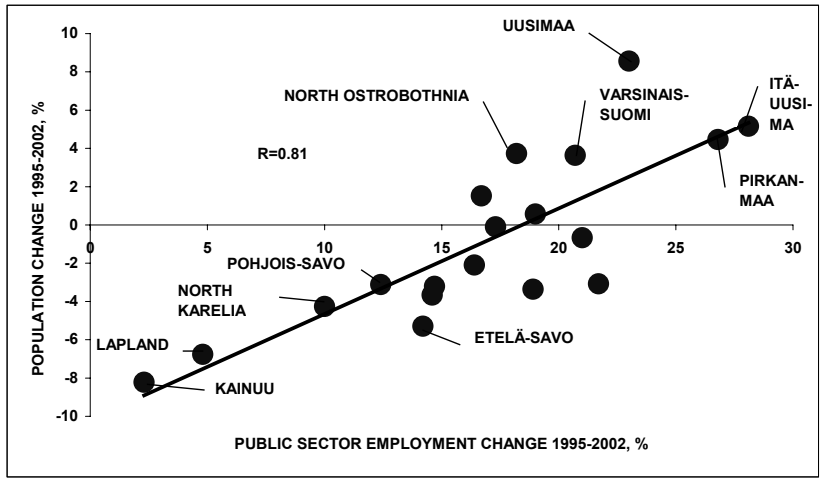

Fig. 4. Population changes and changes in public sector employment (classes L–Q) by regions at the NUTS 3 level; H0: $\rho = 0$, H1: $\rho \neq 0$, $t = 5.69^{***}$, df = 17, H1 = true. Source: StatFin 2001–2006.

Table 4. Persons employed in public services in the provinces of Eastern Finland and Lapland. Source: StatFin 2001–2006.

	Persons employed in public services, etc. (L–Q)					
	Pohjois-Savo, Etelä-Savo and North Karelia		Lapland and Kainuu		Finland, total	
Time	1000 persons	% of all employed	1000 persons	% of all employed	1000 persons	% of all employed
1995	69,483	34	35,544	37	601,250	31
2002	77,952	35	36,968	37	715,232	32
Growth in %	12		4		19	

in the public sector between 1995 and 2002, which is ten times more than in manufacturing during the same period, but the growth in public sector employment could not have been possible without revenues from the booming manufacturing industries.

Population changes

Migration and population changes can be used as rough aggregate indicators of the relative socio-economic success of the Finnish regions. Migration has continued during the EU era. People have left the northern and eastern regions as unemployment has plagued the whole Objective 1 area and the level of incomes has clearly remained below the national average. By contrast, Uusimaa and the areas to the east, north and west of the capital, constituting the NUTS 3 regions of Itä-Uusimaa, Pirkanmaa, Varsinais-Suomi, Central Finland and Kanta-Häme, have received in-migrants, resulting in clear population gains (Fig. 5). Oulu, with 32 per cent of the population of North Ostrobothnia, and its adjacent municipalities formed the only distinctive growth area outside the southern core.

Finland is still very rural compared with many other countries, with a regional system consisting of a network of regional centres, towns and scattered rural settlements. Certainly, many Finnish socio-spatial structures such as the provision of services, the scattered network of universities and polytechnics and the system of over 400 local government bodies, etc. have contributed to the persistence of rural settlement structures over the last decades. This infrastructure has been an important seedbed for rural industrialisation.

Two factors dominate rural depopulation today: the on-going decline in primary sector employment and the reorganisation of the public (and private) service sector. Both are pushing people out of the countryside. There are signs of counteractive developments in remote areas, such as the expansion of tourism (Lapland), the emergence of small enterprises and the growth in teleworking (often combined with the more extensive use of holiday

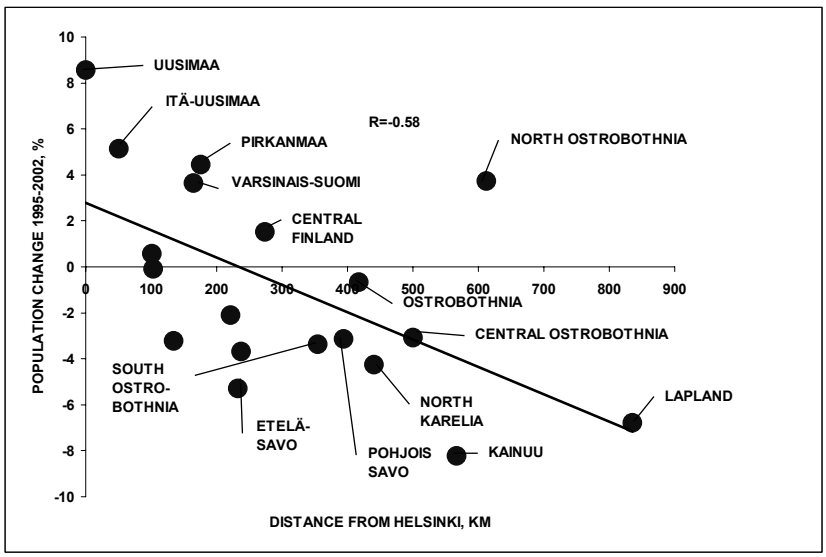

Fig. 5. Population changes by regions at the NUTS 3 level and distances of the regional centres from the capital; H0: $\rho = 0$, H1: $\rho \neq 0$, $t = 2.936^{**}$, $df = 17$, H1 = true. Source: StatFin 2001–2006 and Eniro 2006.

homes), but these counteractive forces play only a minor role and are not strong enough to stop depopulation. It is also evident that the fastest-growing branches of the economy, the service industries, do not boom in the peripheries to the same extent as in the metropolitan areas. This circumstance accelerates migration (Hanell & Lähteenmäki-Smith 2006).

The lesson learned from history is that regional policy measures have been more or less powerless to prevent depopulation of the countryside. This does not mean that the current depopulation trend will have to continue unabated. As was said about the spin-offs from the ICT industry in Finland in the late 1990s, local development is based on competitive advantages, which depend on various factors related to companies themselves and local business environments.

Conclusions

This study has presented evidence for substantial divergent tendencies in the development of rural areas in Finland over the past decades. Rationalisation and the movement towards more efficient agriculture since 1965, the late-Fordist manufacturing boom in the 1970s, deindustrialisation, the spin-offs of the new ICT economy and the implementation of market-led doctrines regarding the provision of public services have brought about geographical transformations in the socio-economic structures of rural areas. The findings indicate that there are factors such as industrial and demographic structures which lead a region to become locked in to a vicious circles of economic decline, depopulation and rationalisation of the service sector. At least in the Finnish case, there is not much evidence that rural areas fail to be susceptible to manufacturing growth. Many people have attributed this geographically extensive competitiveness at the latest stage in development, to the Finnish regional innovation system and the provision of comprehensive education all over the country. The innovative attributes of a region are certainly path-creating measures in general (Bowen 2006), but in the Finnish case they are strongly facilitated by public and private actors working jointly and systematically.

Rural depopulation continued after Finland joined the EU in 1995, and the less-favoured areas have suffered even though the EU structural funds have provided support for rural actors and infrastructure. This period starting from 1995 is merely a moment in the long-term transformation of the rural areas of Finland, in the sense that the principles of rural policy espoused from the mid-1960s onwards are still being adhered to. The persistent decline of the remote rural areas over the last decades indicates that the restructuring forces of the market economy and government policy can easily override sheltering regional or local policy

measures. Only active, path-creating measures can ensure efficient and more sustainable self-reinforcing positive results. It is therefore imperative for local actors, such as local authorities, policy makers and entrepreneurs, to adjust continuously to the changing conditions of competitiveness and to make full use of the comparative advantages of their locality. This is economically more sustainable in the long run than any external intervention which tries to maintain employment in peripheral areas artificially.

The changes in the geographical pattern of rural socio-economic circumstances can be explained in part by a variety of policy-related factors, e.g. the promotion of efficiency in agricultural production, changes in macro-economic and regional subsidies, and the facilitation of the emergence of new industries associated with the information society, etc. Moreover, changes in the competitive advantages of rural areas have also played a decisive role. The manufacturing boom of the 1970s, for instance, was related to the labour advantage of peripheral areas and the intensification of regional policy. It was more profitable for firms to expand production in peripheral areas, with government support, than in the industrial core regions, given that there was a substantial measure of political will in Parliament to reinforce the competitiveness of remote and rural areas.

The latest growth phase, the rapid growth in the ICT sector in the 1990s, benefited the urban agglomerations and diffused into rural localities both directly and via increases in intermediate demand and consumption. The industrial boom dispersed into the rural areas in a manner that resembled the geographical pattern of the boom based on regional policy in the 1970s, except that this time growth took place more vigorously in the western and southern parts of the country and the boom was based on the participation of growing industries in the industrial networks rather than on growth in the branch plant economy combined with relatively standard low-tech production. The vast remote rural areas succeeded in increasing their numbers of jobs in the manufacturing sector, although more vigorous growth took place in the more prosperous rural core areas.

Rural areas in Finland have been dependent on three basic factors in recent times: their primary production has been dependent on national and EU policy measures, rural manufacturing has been able to become part of the supply chains of advanced industrial networks and to benefit from the spin-offs of economic growth, and the development of the service sector has been greatly regulated by political considerations, with integration processes and policy shifts almost abolishing national guidelines such as the doctrine of equally distributed services and the strategic demands for maintaining settlement in the remote areas. The restructuring of the rural areas of Finland over the last decades indicates that no short-term policy can really be sufficient to arrest the depopulating forces there. It is a more complex and embedded issue than can be managed by regional policy only. Rural socio-economic patterns are the results of numerous, mostly long-acting and often supra-local, factors and intentions, and these processes are subject to change.

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