

# RURAL DEVELOPMENT WITHIN THE CONTEXT OF AGRICULTURAL AND SOCIO-ECONOMIC TRENDS – THE CASE OF FINLAND

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**Abstract:** The aim of this article is to explore the relationship between agricultural and socio-economic development in Finnish rural areas (later expressed as rural development) since 1995. The statistical analyses being employed are mainly based on municipal (i.e. LAU-2 level) income, employment and population indicators. The results show that agricultural and rural development and the relationship between them vary remarkably between regions. In addition, the regional structures and developments of agriculture and their links to rural development are multidimensional. In general, it can be stated that there is no significant correlation between agricultural and rural development. The results of this study support the demand for tailor-made agricultural and rural development policy for different rural regions.

**Key words:** agricultural development, rural development, Finland

**Abstrakti:** Tämän artikkelin tavoitteena on selvittää maatalouden ja maaseudun sosioekonomisen kehityksen suhdetta Suomen maaseutualueilla vuodesta 1995. Analyysit perustuvat pääosin kuntatason tulo-, työllisyys- ja väestöindikaattoreihin. Tulokset osoittavat, että maatalouden ja maaseudun kehitys ja niiden välinen suhde vaihtelevat huomattavasti alueiden välillä. Lisäksi maatalouden aluerakenteet ja kehitys sekä niiden kytkökset maaseudun muuhun sosioekonomiseen kehitykseen ovat moniulotteisia. Yleisesti ottaen voidaan todeta, että maatalouden ja maaseudun kehityksen välillä ei ole merkittävää korrelaatiota. Tulokset tukevat räätälöidyn maatalous- ja maaseudun kehittämispolitiikan tarvetta erilaisille maaseutualueille.

**Asiasanat:** maatalouden kehitys, maaseudun kehitys, Suomi

## 1. Introduction

Finnish rural areas have faced quite dramatic changes over the past decades. In the 1990s migration within the country reached the high levels last seen in the 1970s, leading to

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the depopulation of the countryside and the growth of population centres. In the 2000s, however, the concentration of the population has slowed down. The whole country suffered from mass unemployment after the exceptionally deep depression in the early 1990s (see more about the depression in Finland: Jonung *et al.*, 1996; Honkapohja & Koskela, 1999). Recovering from the depression was particularly difficult in sparsely populated rural areas and agriculturally-oriented poorer subregions (Kangasharju & Pekkala, 2004; Muilu & Rusanen, 2004). Since then, there has been continuous diversification in socio-economic development between rural areas.

While, as a result of the structural changes, the number of farms and jobs in primary production have decreased, the role of other rural industries has become increasingly crucial. Urban-adjacent rural areas have been able to respond to the structural changes in society quite well. The disappearance of jobs in primary production has been compensated for by the growth of processing and, especially, service sectors in a way that has not been possible in other types of rural areas. Sparse population poses great challenges for regional development, because the regional economies are weak and there is little demand for either products or services. It is difficult to develop and diversify the industries and ensure the provision of basic services.

The EU's Common Agricultural Policy, CAP, provides the basis for agricultural policy and is also an essential part of narrow rural policy<sup>3</sup> in Finland. With the integration of rural development policies, the CAP has also extended its objectives beyond a purely sectoral policy and became directly concerned with spatial development. Still, most of the subsidies are farm-based, and the possibilities of regions affecting the implemented policy measures remain limited.

The aim of this article is to explore the connections between agricultural and rural development in Finland during the period of Finland's EU membership, i.e. since 1995. As a result, conclusions regarding agricultural and rural development policy can be made.

The article is arranged as follows. First, based on earlier debates and studies, the connections between agricultural and rural development will be discussed. Secondly, the methods and data used in this article for exploring the agricultural and rural development and the relationship between them are described. Next, the empirical analysis and findings of the study are introduced and discussed. Finally, conclusions, also from the standpoint of agricultural and rural development policy, are drawn.

## Literature review

In Finland and other countries, agriculture has various kinds of socio-economic meanings depending on the type of rural area. Agriculture can also be understood in different ways in rural development. According to one view, agriculture will continue to play a key role in rural development, although its role may well change over time (see e.g. Knickel & Renting, 2000; van der Ploeg *et al.*, 2008). In fact, according to this view, rural development is in many ways based on agriculture. However, it is emphasised that rural development is not only sectoral, i.e. agricultural development. Agriculture and farms are in many ways directly connected to local and regional economies and more generally to other activities of rural areas. The new rural paradigm outlined by the OECD, in turn, emphasises more differentiated activities than purely agricultural ones (OECD, 2006b). Based on this view, the rural areas should be analysed in a holistic way, with agriculture being an 'equal' part. It is essential that rural development is region based, and rural policy is founded not on central control but rather on multi-level governance within and between different levels of government, civil society and private sector (Maaseutupolitiikan yhteistyöryhmä, 2009).

In the rural thinking of the European Commission there have been various stages. On the policy programme level the space thinking dominated by agriculture and regional thinking based on regional economies have coexisted side by side. Most of the concrete policy actions directed towards the countryside have originated from the reformulation of the agricultural policy, which

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<sup>3</sup> Narrow rural policy refers to actions whose specific and defined purposes are to promote rural development (Maaseutupolitiikan yhteistyöryhmä, 2009).

means that the farming aspects remain strong. The words *rural regions* or *countryside* are increasingly being used in EU contexts, but the criteria, political foundations and money flows continue to be intertwined primarily with agriculture (Maaseutupolitiikan yhteistyöryhmä, 2004). The relationship between agricultural and rural policy is discussed not only in EU contexts but also in other countries (OECD countries: see Diakossavvas, 2006; political discourses in Norway: see Cruickshank *et al.*, 2009).

As with the changing economic importance of agriculture in the regions, the socio-economic importance of agriculture has diminished all over the developed countries (see e.g. Diakossavvas, 2006; OECD, 2008b). In 2005, in OECD countries on average, the share of agricultural employment was 11% in predominantly rural areas and 7% in intermediate rural areas, while in 1995 the equivalent shares were 14.6% and 8.8%. As Bollman (2006) expresses it, the historically tight overlap between rural and agriculture no longer exists, at least in a demographic (or 'jobs') sense.

According to the comparative studies made between Portugal and Finland, development of agriculture and socio-economic development of other rural activities do not always at all interrelate (see e.g. Breman & Pinto Correia, 2003; Vihinen *et al.*, 2005; Breman *et al.*, 2010). As a result, for example, productive agriculture can not always prevent rural areas from becoming marginalised (Breman *et al.*, 2010). Additionally, the main message of several Finnish studies is that the structural development of agriculture differs between regions and this development can have notable different regional effects depending on the type of the region. From the viewpoint of regional development, the most challenging situation seems to be in remote rural regions, where the role of agriculture as an employer, for example, can still be crucial (see Häkkinen, 1991; Katajamäki, 1991; Kuhmonen, 1996a; 1998; Pyykkönen, 2001).

The rural has changed from a sort of 'national rural space', based on the central place of agriculture in both spatial and political terms, towards a 'differentiated set of regional formations' based on a range of functions and potentials, either within or outside the agricultural sector. This means that agriculture also has divergent roles between regions (van der Ploeg *et al.*, 2008; Breman *et al.*, 2010). The future of rural areas can be seen as being increasingly dependent on so-called post-productivist functions and multifunctionality of agriculture, no longer based on agricultural production (see more about productivism, post-productivism and multifunctionality in e.g. OECD, 2001; Wilson, 2001; Mather *et al.*, 2006; O'Connor & Dunne, 2009; Wilson, 2009a; Wilson, 2009b). While these functions and potentials and their exploitation differ between regions, rural territories are developing along diversifying trajectories (Breman *et al.*, 2010).

The dissociation of paths between agriculture and other rural activities is also recognised in rural policies, for example by the European Commission, illustrated by the recent policy orientations on rural development outside the domain of agriculture (Pillar II) and on the concept of multifunctionality (Breman *et al.*, 2010). In spite of notable socio-economic differences between regions within EU member countries, the weights of the separate measures of the EU's Common Agricultural Policy can be remarkably in the same direction between these regions. In addition, it has been stated that the regional differences between the relative weights of the measures cannot necessarily be explained by the differences between regional characteristics or by the regional differences between the needs for regional development (Terluin and Venema, 2003; OECD, 2006a; Dwyer *et al.*, 2007; see more about financial emphases in EU Member States' Rural Development Programmes based on the weights of each Pillar II Axis: Tietz & Grajewski, 2009).

## **Data and methods**

### **Confining regions in the analysis of agricultural and rural development**

In this article, the dynamics of agriculture and rural areas as a whole in Finland are analysed. The rural areas are defined by a territorial based descriptive definition. Here, rural areas are

rural municipalities (former NUTS<sup>4</sup> 5 areas, present LAU<sup>5</sup>-2 areas) according to the Finnish Rural Typology<sup>6</sup>. The typology is founded on multivariable analysis, using a range of different parameters and variables concerning rural characters such as degree of isolation and sparseness of population, rural employment structure, farm economies, and development problems (Bremán *et al.*, 2010; see more about the typology: Malinen *et al.*, 2006). The data used in this study are provided by Statistics Finland (Statistics Finland, a; b; c) and all the numerical data used in the article are total samples.

Finland has an extensive system of local self-government, in which the municipalities have the right of taxation, that is, right to determine the rate of municipal income tax for individuals and enterprises. The Finnish welfare system has to a large extent been implemented through a fine-grained system of municipalities, as an alternative to giving the task to regional councils, or having the central level running decentralised offices. The choice of municipalities in the implementation process has in its turn strengthened the societal role of the municipalities. The role of the municipality has become very crucial, especially in the periphery. This also means that it is relevant to analyse the regional development trends at the municipal level in Finland. Furthermore, using larger regional entities, e.g. NUTS 3 level regions used by the OECD in its regional typology, would hide remarkable socioeconomic differences within these regions in Finland.

In the first part of the empirical analysis, rural development and the role of agriculture based on the Finnish Rural Typology are briefly investigated. This typology is a good framework for the analysis because the rural types strongly differ from each other both in terms of the socio-economic conditions and the average role of agriculture in a given region (see Malinen *et al.*, 2006). Furthermore, the Finnish Rural Typology is largely used in Finnish rural policy.

#### **Four-fold typology of agricultural and rural development**

An important framework of the analysis being made in this article is based on the four-fold typology of agricultural and rural dynamics used in some earlier studies (Bremán and Pinto Correia, 2003; Tapio-Biström *et al.*, 2006; Bremán *et al.*, 2010). This framework can be useful for improving the understanding of development processes and thus offer support for policy formulation concerning a more diversified territorial approach at national and EU level.

#### **Indicators**

Rural development of each rural municipality will be measured by the following indicators:

- number of jobs excluding agriculture
- aggregate income of employees
- population.

Agricultural development of each rural municipality will be measured by

- number of jobs in agriculture
- aggregate agricultural income of the farms owned by natural persons<sup>7</sup>.

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<sup>4</sup> The NUTS (nomenclature of territorial unit for statistics) classification represents a standard framework for analysing economic and social developments in the EU's regions. The NUTS classification is largely based on institutional spatial divisions.

<sup>5</sup> For each [EU member country](#), two levels of Local Administrative Units (LAU) are defined: LAU-1 and LAU-2, which were previously called NUTS 4 and NUTS 5 respectively.

<sup>6</sup> The municipalities of Brändö, Sottunga and Velkua are excluded in the analysis because of the lack of data regarding the development of agricultural income in these municipalities.

<sup>7</sup> In Finland, approximately nine out of ten farms are owned by natural persons.

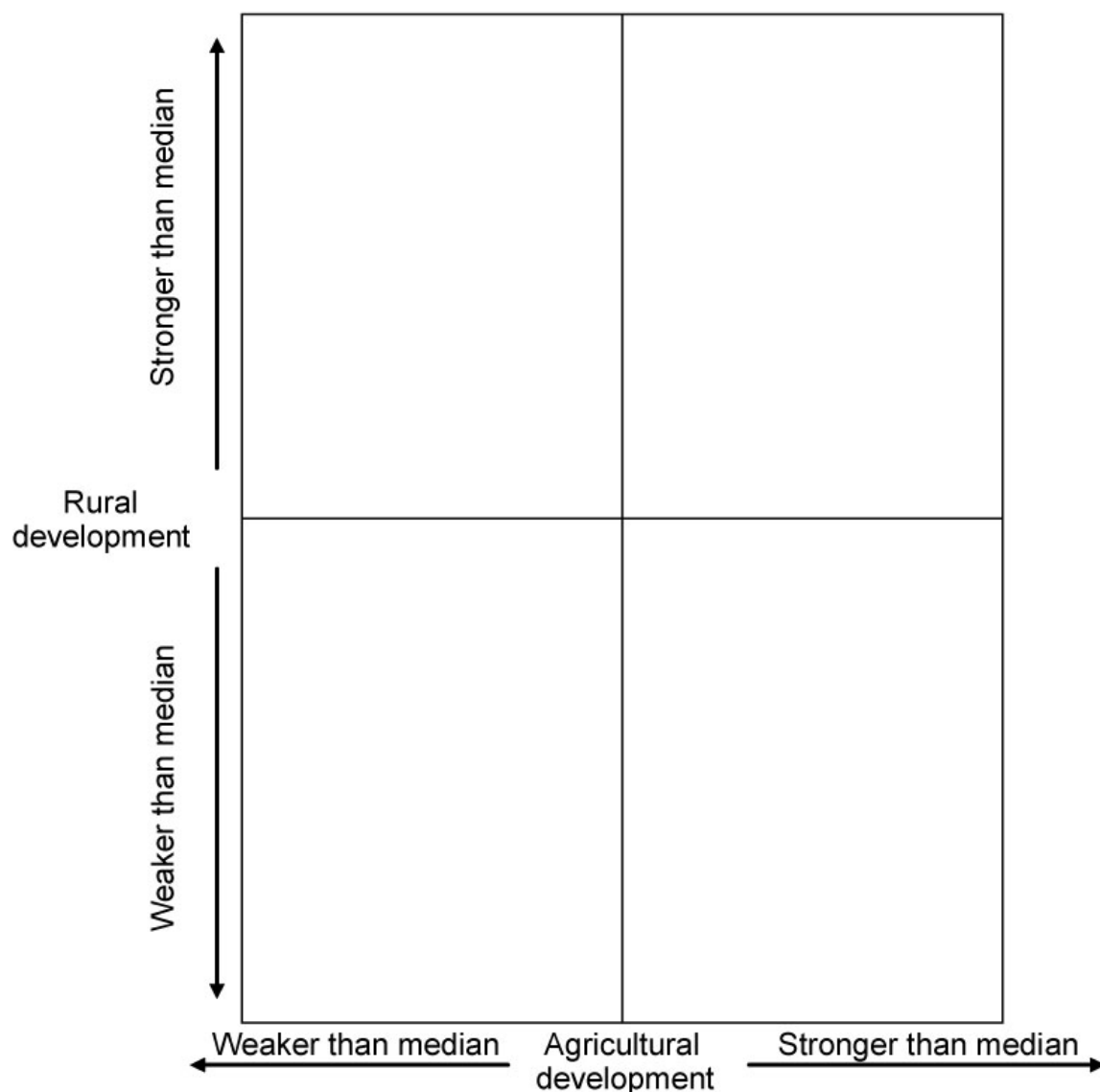


Fig 1. The dynamics of agricultural and rural development: a framework used in this study (following the idea of Breman & Pinto Correia, 2003; Tapio-Biström *et al.*, 2006; Breman *et al.*, 2010).

In the case of both agricultural development and rural development, each of these indicators has the same weight in the analysis when the separate indicators of agricultural and rural developments are conflated into one 'rank'. In addition, each indicator are analysed separately. The selected indicators mentioned above are aggregate level indicators; in other words, the socio-economic development of a region will be analysed at municipal level, not at individual or farm level. This is because the aim of this article is to analyse agricultural and rural dynamics from a regional point of view.

The OECD, for instance, has used aggregate level employment data when classifying rural regions into leading and lagging rural regions (OECD, 1994). The same kind of classification has also been used in a number of other studies (Terluin, 2001; 2003; Shucksmith *et al.*, 2005). The selection of indicators used in this article can be argued from the standpoint of their crucial relevance in regional economies and from the viewpoint of policy aspects. Incomes, jobs and population are all factors that essentially affect the vitality of every single region (see. e.g. Armstrong & Taylor, 2000; Terluin, 2003). From the viewpoint of agricultural and rural policy, these indicators are strongly included in the main objectives of the policy measures (see. e.g. Rural Development Programme for Mainland Finland 2007 - 2013: Maa- ja metsätalousministeriö, 2008; Ministry of Agriculture and Forestry, 2008).

## Municipal level time series analysis

When analysing agricultural and rural development in the municipal level, the time period used is 1995–2004. The development is analysed as an annual *proportional* development during the time period in question<sup>8</sup>. Log<sub>e</sub> transformation was made before analysis. Using the absolute levels of the values would have led to the problems of heteroscedasticity, i.e. the variables could have had notably different variances (see e.g. Gujarati 1978). However, by using a log transformation these problems can be effectively solved.

At the first stage of the municipal level analysis, the method of least square is used when estimating the development trend of the 'mean municipality', and the development trends of the separate municipalities are compared to the equivalent in the 'mean municipality'. In the second stage of the analysis, the linear regression model is applied for the residuals of each municipality. The method applied in the analysis provides slightly stronger weight for the starting year of the period than for the years after that but still decreases the importance of the value of starting point and takes all the years during the time period into account (Draper & Smith, 1966). In the last stage of the analysis, the municipalities are ranked based on the values of the slopes, i.e. their annual developments as defined above. In addition, Spearman rank order correlation coefficient is employed for analysing the relationship between the components of agricultural and rural development.

The end point of the time period used in the municipal level analysis is 2004 and the municipal classification used stems from 2006. It can be stated that during the period used, 1995–2004, the most notable adoption of agriculture to the EU membership has taken place. Whilst the data used are provided in the municipal level, the main problem regarding the more updated data (the years after 2004) are the numerous mergers of municipalities and hence different municipal borders compared to the municipal classification primarily used in this article. In 2006, the number of municipalities in Finland was 431, while the equivalent number in 2010 and 2011 were 342 and 336 respectively. This also means that the data is now much more aggregated from a spatial point of view.

In general in Finland, regarding the socio-economic indicators, the differences between regional values are often relatively regular and there are no strong, sudden changes in development trends between regions, at least if it comes to more aggregated regional levels than municipal (LAU-2) or subregional (LAU-1) level (see Malinen *et al.* 2006, for instance). However, in this article, updated numbers regarding agricultural and rural development are presented based on the Finnish Rural Typology, which divides Finnish municipalities into four classes. In connection with municipal mergers the typology is generally updated so that the type of rural area to which the new municipality is placed is the category to which the more population-rich of the former municipalities belonged. Because an individual municipality cannot belong to more than one type of rural area, municipal mergers weaken the regional accuracy of the typology.

## 4. Results

### Socio-economic characteristics and the role of agriculture in different rural types of Finland

In Finnish rural policy the rural municipalities are usually divided into three types based on the multistage method: urban-adjacent rural municipalities, core rural municipalities and sparsely populated rural municipalities. Based on the socio-economic situation and development, the challenges to regional development are obviously the greatest in the sparsely populated rural areas. In the urban-adjacent rural areas, the situation and development is far more positive in the light of socio-economic indicators, especially because of their location adjacent to cities and hence better possibilities for commuting to the centres. Thus, perceiving the whole countryside as homogenous area may give a rather misleading picture of the opportunities and challenges available for rural development.

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<sup>8</sup> However, the development of agricultural income does not include the year 1996.

Compared to other parts of Europe, Finland is a very sparsely populated country, where the share of the rural population is notable high. In 2005, according to the Finnish Rural Typology, more than 1.3 million Finns (26% of population) lived in municipalities located in the core rural areas and sparsely populated rural areas. This is why rural development policies and initiatives are particularly important in Finland. In 2005, the 432 Finnish municipalities were categorised as follows: 58 urban municipalities (58% of the population in 2004), 89 urban-adjacent municipalities (16% of the population), 142 municipalities representing the core rural areas (15% of the population) and 143 municipalities in the sparsely populated rural areas (11% of the population) (Figure 2). When comparing Finland's 'rurality' to other OECD countries according to the OECD's TL 3 level regional classification, Finland ranks within the top five in terms of rural territory, population and share of GDP (OECD, 2008a; see more about OECD regional classification: OECD, 2010).

Based on socio-economic indicators, urban-adjacent rural areas are more similar to urban areas than to core rural areas or sparsely populated rural areas (Table 1). The differences in the trends between two kinds of rural areas are very clear, and are still growing. This means that the population of the core rural areas and sparsely populated rural areas will continue to decrease as, especially, young and working-age people move to population centres. The share of urban-adjacent and sparsely populated rural municipalities has grown, while the share of core rural municipalities has decreased (Malinen *et al.*, 2006). As a result, we have an ever increasing number of 'winners' and 'losers' in rural areas.

In 2007, 3% of all jobs in Finland were in agriculture. The share of agricultural jobs in the rural areas defined by the Finnish Rural Typology was 9%. However, the role of agriculture as an employer varies a great deal according to the type of rural area. In urban-adjacent rural areas agriculture employed far fewer people than in the other types of rural areas. The significance of agriculture as an employer continues to diminish in the country as a whole. However, the socio-economic role of agriculture varies regionally, not only in terms of total employment but also as a source of income for farm households and as a share of value added (Table 2). Most of the farms are situated in Southern and Western Finland. Furthermore, there is a concentration trend of farms in fewer and fewer regions. In 2005, 52% of the farms were in core rural area municipalities, 22% in sparsely populated rural municipalities, 17% in urban-adjacent rural municipalities and 9% in urban municipalities. Sparsely populated Eastern and Northern Finland are seriously affected by structural change, because in these areas agriculture is still an important source of employment and the consequences of the changes are particularly severe (Niemi & Ahlstedt, 2008).

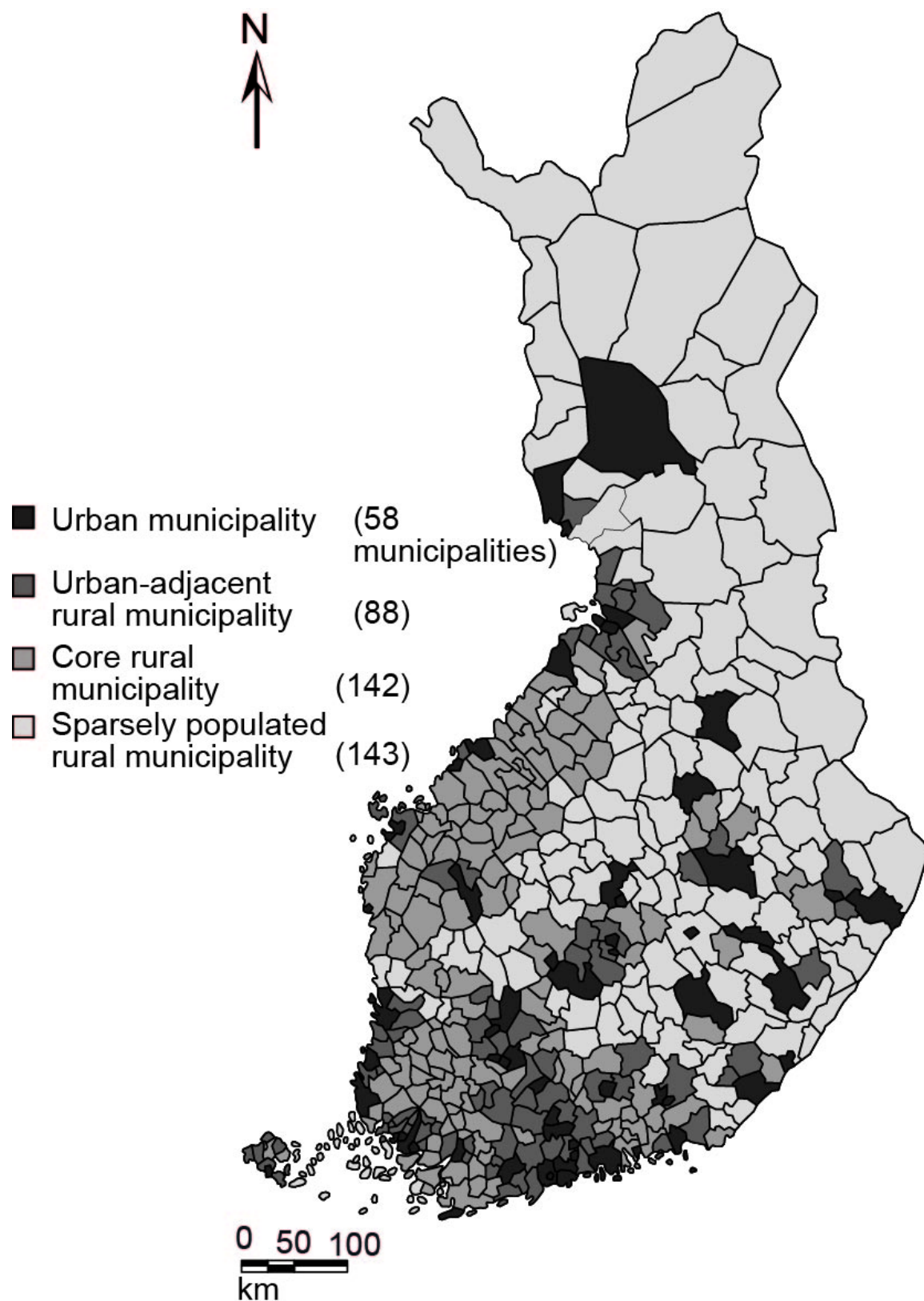


Fig 2. Typology of Finnish rural municipalities in 2006 based on municipal classification in 2005 (Malinen et al., 2006).



	Urban municipalities	Urban-adjacent rural municipalities	Core rural municipalities	Sparsely populated rural municipalities	Whole Finland
Population in 2009 (1995 in brackets), share of whole Finland, %	63.9 (61.4)	13.7 (12.6)	13.1 (14.4)	9.3 (11.7)	100 (100)
Mean annual change of population between 1995 and 2007, %	0.58	0.98	-0.39	-1.33	0.29
Population density, inhabitants per km <sup>2</sup> (land surface) in 2005 (1995 in brackets)	74.6 (70.5)	28.2 (25.7)	13.3 (13.9)	2.9 (3.3)	17.3 (16.8)
Unemployment rate in 2007 (1995 in brackets), %	8.5 (19.6)	6.5 (17.9)	7.4 (18.2)	12.8 (25.4)	8.5 (19.8)
Mean annual change of the number of jobs between 1995 and 2007, %*	2.1	1.7	0.7	-0.3	1.7
Mean annual change of employees' aggregate income between 1995 and 2007, %	5.0	5.8	4.2	3.2	4.8
Mean annual change of value added in the region between 1995 and 2007, %	5.7	5.1	4.6	3.8	5.4

\*Finland faced a severe economic depression in the early 1990's which meant that the number of jobs fell rapidly all over the country during that period. This partly explains notable strong total development in the number of jobs in Finland between 1995 and 2007.

*Tab 1. Socio-economic development in different rural types of Finland (based on municipal classification in 2010) in Finland.*

	Year/Years	Urban-adjacent rural municipalities	Core rural municipalities	Sparsely populated rural municipalities
Share of agriculture in all jobs in the region, %	1995	8.7	18.6	19.5
	2004	5.1	12.4	12.9
	2007	4.6	11.4	12.0
Mean annual development in the number of agricultural jobs in the region, %	1995-2007	-3.4	-3.3	-4.2
Share of farm income* in total income of farm households, %	2008	36.2	41.1	48.4
Mean annual development in aggregate farm income in the region, %	2000-2008	0.8	1.2	2.1
Value added** in agriculture, share of all line of businesses, %	1995	4.4	10.4	6.6
	2004	2.0	5.5	4.4
	2007	1.5	3.8	3.2

\* Includes farm forestry income.

\*\* Value added is the difference between the total sales revenue of an industry and the total cost of components, materials, and services purchased from other firms within a given reporting period (usually one year). This is the industry's contribution to the gross domestic product (GDP).

*Tab 2. Socio-economic roles of agriculture and farms in different rural types of Finland (based on municipal classification in 2010).*

## Municipal agricultural and rural development according to the Finnish Rural Typology

At the first stage of the municipal analysis, the relationship between agricultural and rural development is analysed within the framework of the Finnish Rural Typology. This typology is a good framework for the analysis, since the rural types strongly differ from each other, both in terms of the socio-economic conditions and the average role of agriculture in a given region. Furthermore, the Finnish Rural Typology is largely used in Finnish rural policy.

With regard to rural development, the development has been clearly the strongest in the urban-adjacent rural areas and clearly the weakest in sparsely populated rural areas (Figure 3). Compared to rural development, development in agriculture within different rural types is regionally much more diverse (Figure 3). When looking at the mean agricultural development of municipalities within rural types and also taking the distribution inside the “four-fold typology of agricultural and rural development” into account, development has been the strongest in core rural areas and the weakest in urban-adjacent rural areas.

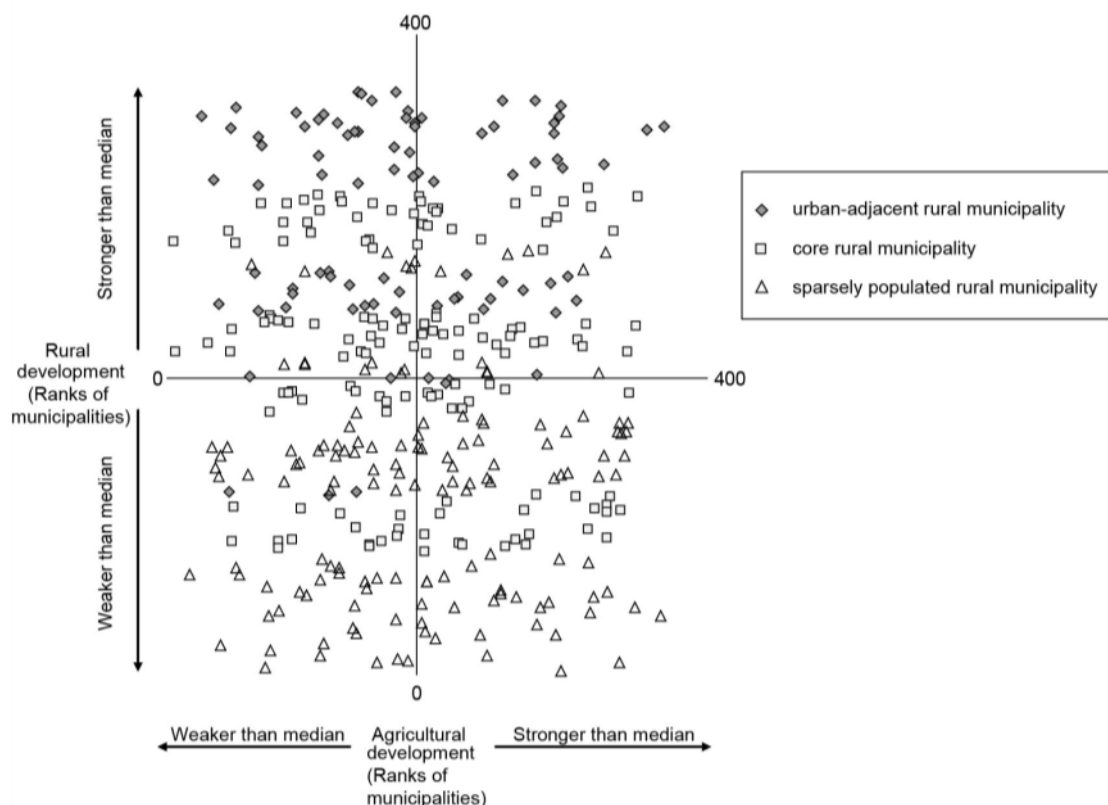


Fig 3. Relationship between mean annual proportional agricultural development (jobs in agriculture and agricultural income) and rural development (jobs excluding agriculture, income and population) in different rural types of Finland measured by municipal rank orders of developments, period 1995-2004.

As can be clearly seen in Figure 3, Table 3 and Table 4, there is a low correlation between agricultural and rural development in a whole country and according to rural types. While, in a case of agricultural development, the mean value of the municipal rank order does not strongly vary between the three rural types, the equivalent differences in rural development are notable (Table 4).

	Jobs (excl. agriculture)	Income	Population	Rural development (jobs excluding agriculture, income and population)
Jobs in agriculture	-0.16	-0.16	-0.32	-0.24
Agricultural income	0.07	0.21	0.17	0.16
Agricultural development (agricultural jobs and agricultural income)	-0.06	0.02	-0.10	-0.05

\*According to Finnish Rural Typology (see Malinen et al. 2006)

*Tab 3. Spearman rank order correlation coefficients between the components of agricultural and rural development in the rural municipalities of Finland\*, period 1995–2004.*

Type of municipality	Agricultural development (jobs in agriculture and agricultural income), mean municipal rank order	Rural development (jobs excl. agriculture, income and population), mean municipal rank order	Correlation between agricultural and rural development, Spearman rank order correlation coefficient
Urban-adjacent rural municipalities	165	284	0.15
Core rural municipalities	198	205	-0.09
Sparsely populated rural municipalities	185	104	-0.04
Mean	186	186	-0.05

*Tab 4. Mean municipal rank orders in agricultural and rural development and correlation between agricultural and rural development according to rural types, period 1995–2004.*

### **Rural development and its components in municipal level**

The strongest rural development in the period 1995–2004 has taken place in the southern and western parts of Finland and in the municipalities adjacent to major cities (Figure 4). The municipal developments between the separate socio-economic indicators used in this study – jobs, income and population – are in the same directions (Figure 5). In addition, the correlations between the separate components of rural development and total rural development are high (Table 5). The map presentations regarding to the rural developments reminds us most notably of the map of the Finnish Rural Typology: the development has been the most favourable in urban adjacent rural areas and the weakest in sparsely populated rural areas, especially in eastern and northern parts of Finland.

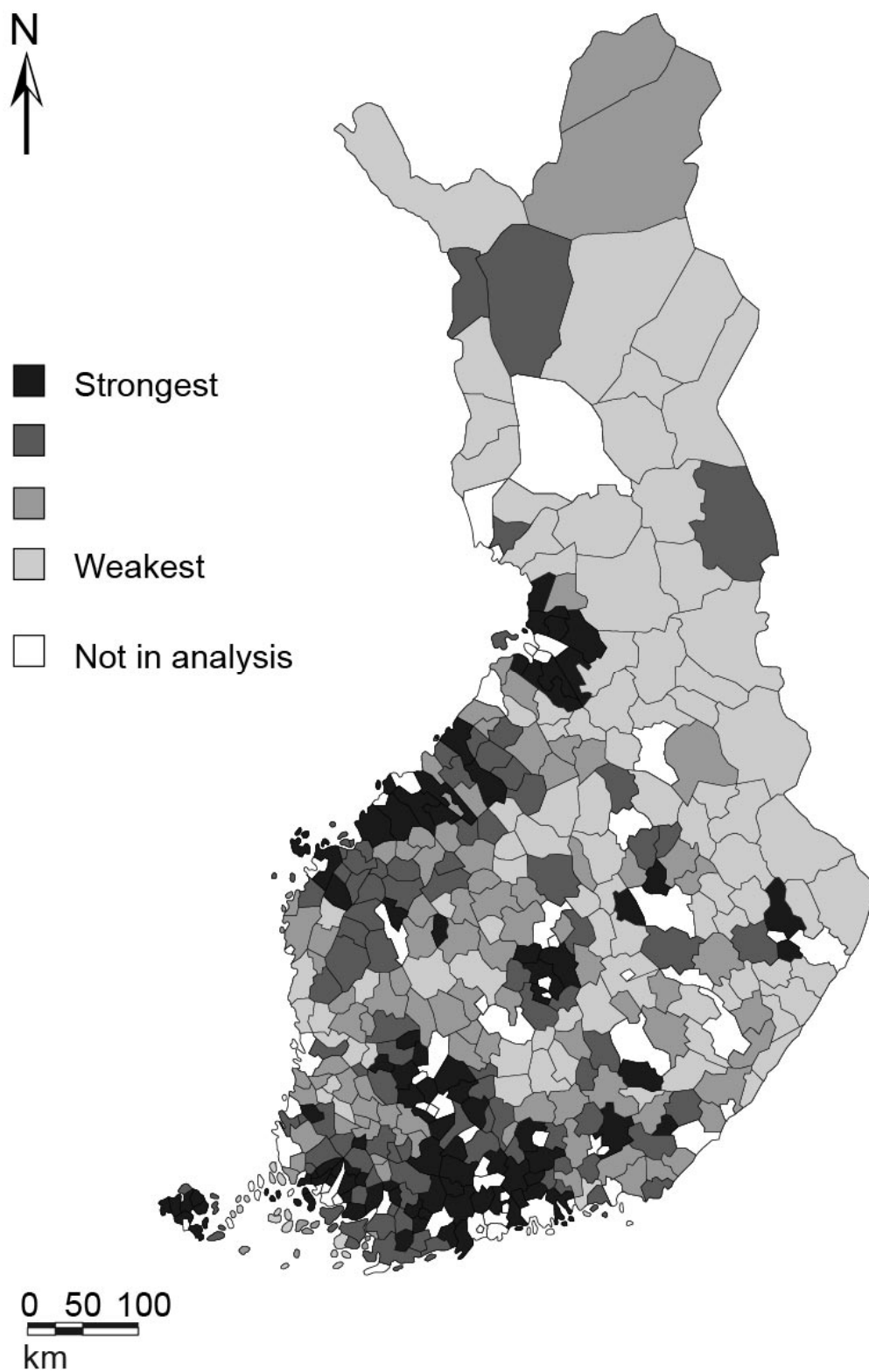


Fig 4. Mean annual proportional rural development (population, income and jobs excluding agricultural jobs) in municipal level (LAU-2) in Finland, period 1995–2004.

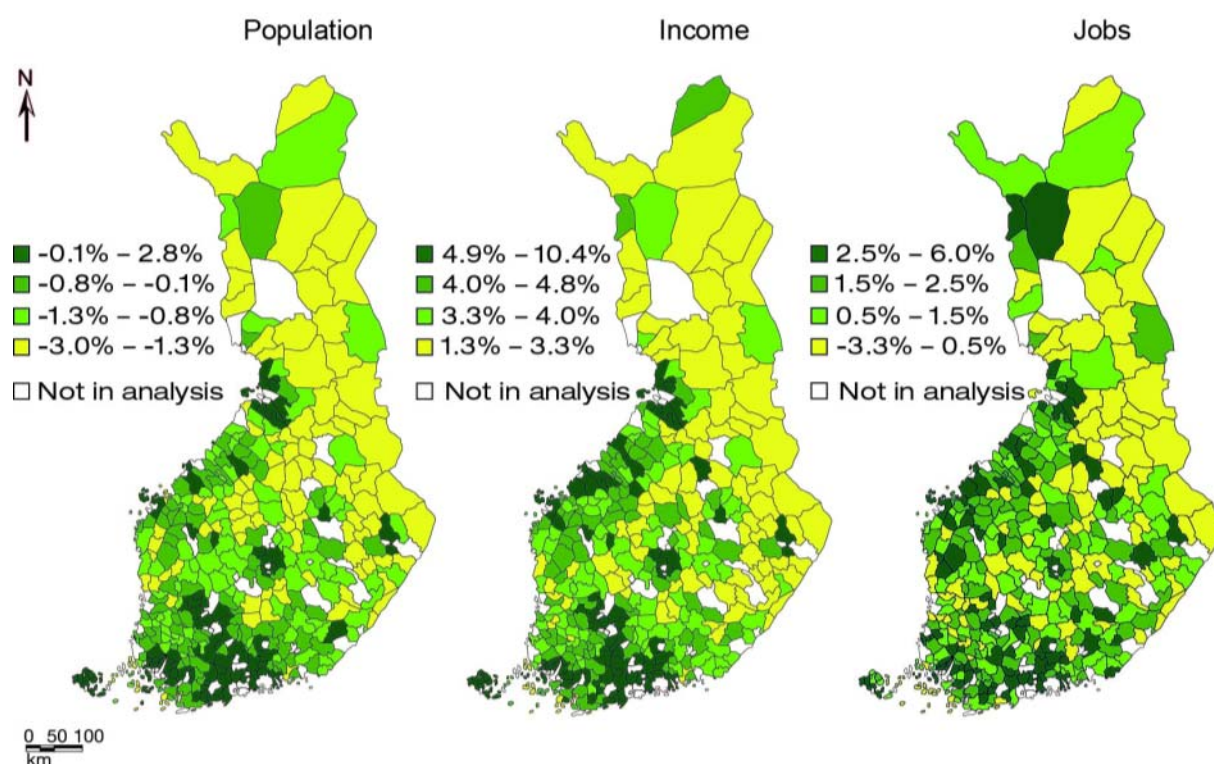


Fig 5. Mean annual proportional development of population, income and jobs (excluding agriculture) in municipal level (LAU-2) in Finland, period, 1995-2004.

	Jobs excl. agriculture	Income	Population	Rural development (jobs excl. agriculture, income and population)
Jobs excl. agriculture		0.87	0.59	0.83
Income	0.87		0.66	0.94
Population	0.59	0.66		0.91

\*According to Finnish Rural Typology (see Malinen et al. 2006)

Tab 5. Spearman rank order correlation coefficients between the components of rural development in the rural municipalities of Finland\*, period 1995-2004.

### Agricultural development and its components in municipal level

When taking a closer look at the separate indicators of agricultural development, municipal developments based on these indicators clearly differ from each other. This also means that the correlation between the development of agricultural jobs and the development of agricultural income is low (Table 6).

	Agricultural income	Jobs in agriculture	Agricultural development (jobs in agriculture and agricultural income)
Jobs in agriculture	0.23		0.78
Agricultural income		0.23	0.78

\*According to Finnish Rural Typology (see Malinen et al. 2006)

Tab 6. Spearman rank order correlation coefficients between the components of agricultural development in the rural municipalities of Finland\*, period 1995-2004.

The development of agricultural jobs has been the weakest especially in many regions of Eastern Finland and the strongest particularly along the southern coast and in Western Finland (Figure 6). In 1995–2004, the mean municipal annual change in the number of agricultural jobs was positive only in three municipalities. The mean municipal annual change of the number of agricultural jobs amongst the rural municipalities (i.e. the municipalities which are included in the analysis) was -2.7%. The development of agricultural income has also been stronger in many areas along the southern and western coasts, but also in parts of Eastern and Northern Finland. The development in terms of agricultural income has been the weakest in Southern Finland except in the coastal areas (Figure 6). During 1995–2004, the mean municipal annual change of agricultural income amongst the rural municipalities was positive in 120 municipalities and negative in 250 municipalities. The mean municipal annual change of agricultural income amongst the rural municipalities was 4.4%.

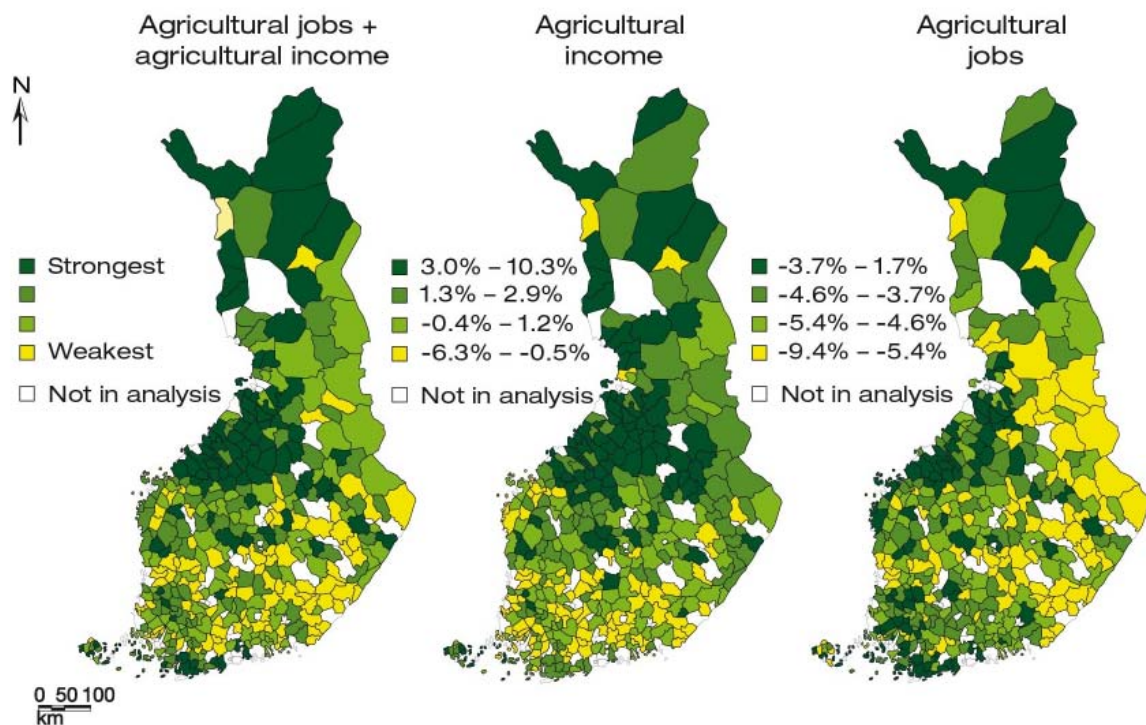


Fig 6. Mean annual proportional agricultural development (jobs in agriculture and agricultural income) in municipal level (LAU-2) in Finland: total development and development of each indicator, period 1995–2004.

The areas where both the development of agricultural income and agricultural jobs have been relatively strong can be found especially along the southern and western coasts and in parts of Northern Finland, while the areas described by relatively weak agricultural development measured by both indicators are located particularly in Eastern Finland and in parts of Central Finland (Figure 6).

## 5. Discussion

The results of this study show that there has been continuous diversification and polarisation trend in socio-economic development between Finnish rural areas since 1995. The results of this article support the results of the earlier Finnish studies made on this subject and discussed in this article. As comes to the relationship between agricultural development and socio-economic development of rural areas (expressed as rural development in this article), the results show that there has not been significant correlation between these developments in Finland since 1995. Lately, the studies made on this subject have been relatively scarce in Finland. However, as it has been stated earlier in this article, the dissociation of paths between agriculture and other rural activities is also recognised in the earlier studies done in Finland and

other countries. Overall, the results clearly show that agriculture has various kinds of socio-economic roles depending on type and location of a given rural area in Finland. Hence, the relationship between agriculture and rural area as a whole certainly differs between regions. Next, some explanations for this will be suggested.

In Southern and Western Finland, where most of the urban-adjacent and the majority of the core rural municipalities are located, the natural preconditions for farming are the best and most diverse (Finnish Meteorological Institute a; b; Varjo, 1977; 1980; Rosenqvist, 1997; Ministry of Agriculture and Forestry, 2002). In urban-adjacent municipalities local markets also function better than in other types of rural areas. In addition, the opportunities to work outside the farms are more abundant because of availability of other jobs and shorter distances (Breman *et al.*, 2010). This partly explains a modest development of agriculture in urban-adjacent rural municipalities, measured by the indicators chosen in this study.

In core rural areas major centres are rather distant, but the distances to medium-sized centres are not that far, which means that the situation for agriculture in terms of the demand for products and services and working outside the farm is also reasonable (Niemi & Ahlstedt, 2008). However, as our results showed, the share of farm income in total farm household income is higher in core rural areas than in urban-adjacent rural areas. This is surely because of different production structures, but also because the possibilities of working outside the farms are somehow smaller.

Most of Eastern and Northern Finland is sparsely populated rural area, where the natural conditions restrict agriculture (see e.g. Varjo, 1980) and other economic opportunities the most. Long distances are a major obstacle to both working outside the farm and local marketing of agricultural products and services. The production structures of farms differ strongly from those in other types of rural areas: dairy husbandry is a more common line of production (Niemi & Ahlstedt, 2010). In addition to natural and socio-economic conditions, the production structure also affects the income structure of farm households. In 2008, for instance, the average share of farm income in total income of farm households was a bit over 80% amongst the farms specialised in dairy production, while the equivalent share was a bit over a quarter amongst the farms specialised in crop production (Statistics Finland b). In Eastern and Northern Finland, the role of farm and agricultural income in farm household's total income is higher than in other rural areas.

During the last decades, structural change in agriculture has been especially difficult for Eastern and Northern Finland and for dairy husbandry farms in particular: the share of dairy husbandry farms has decreased while the share of grain farms has increased. However, the strongest and the most rapid structural changes have already occurred before the time period covered in this analysis (see Niemi & Häkkinen, 1988; Häkkinen, 1991; Kuhmonen, 1996b).

The differences between the regional developments of agricultural jobs and agricultural income may partly be explained by regional differences in production structures of agriculture and structural changes of agriculture. If the development of agricultural income has been stronger than the development of agricultural jobs, then agricultural productivity might have increased. Stronger development in productivity can mean that production has become more effective, more capitalised in terms of machinery, for instance (see also Massey & Meegan, 1982), or that certain functions have been outsourced from farms. These are the factors which can lead to an exceptionally strong decrease in agricultural jobs. Outsourcing of activities can also lead to a decrease in agricultural income. Socio-economic circumstances of rural areas affect these results, too (Voutilainen *et al.*, 2009). Furthermore, the annual changes of natural conditions and the regional differences between them must not be forgotten.

Based on the study by Voutilainen *et al.* (2009), the relatively strong development in agriculture has been based more on labour intensive agriculture in urban-adjacent rural areas than in remote rural areas where the share of agricultural income is bigger than the average. The logical reason for this might be that, compared to urban-adjacent rural areas, the stronger structural changes in agriculture have taken place in remote rural areas (see Niemi & Häkkinen, 1988; Häkkinen, 1991; Kuhmonen, 1996b). Especially in urban-adjacent rural areas it has been



easier to find other income sources outside agriculture. This also means that the pressures for intensification of agricultural production have not been as obvious as in more remote rural regions (Voutilainen *et al.*, 2009).

## 6. Conclusions

Based on the analysis made in this article, six key conclusions are now presented. Firstly, in the period 1995–2004, there was no significant correlation between agricultural and rural development in municipal level (i.e. LAU-2 level) in Finland. However, the most challenging areas seem to be Eastern Finland and parts of Central Finland, where both the agricultural and rural developments are relatively poor. On the other hand, the relatively strong development measured by both agricultural and rural development can be found especially along the southern and western coasts of Finland.

Secondly, from the rural and hence the regional development point of view, the most favourable rural areas are located in southern and western parts of the country and the rural areas adjacent to major cities. The most challenging areas are located in eastern parts of the country and in certain parts of Central Finland. The developments in separate factors – income, jobs and population – are regionally, in the municipal level, in the same directions.

Thirdly, both the socio-economic role and the development of agriculture and its separate components – here jobs and income, particularly – vary a great deal between regions. Compared to rural development, agricultural development is much more regionally dispersed, for instance within rural types. In addition, compared to rural development, the relative developments between the separate indicators of agricultural development – jobs in agriculture and agricultural income – are not in the same directions in many municipalities. These differences between the developments may be explained by regional differences in production structures, by structural changes in agriculture and in the socio-economic circumstances of each region.

Fourthly, based on our analysis, we will present a few policy conclusions. If the aim of the Common Agricultural Policy of the EU and rural development policy as a whole is to practise integrated development of rural areas, the focus of the policy should be on the varying potentials of each rural region. The results of this study support the demand for a regionally-specific agricultural and rural development policy for different regions. In conclusion, the development of rural areas has to be understood as the comprehensive development of different types of rural areas, where agriculture has a particular but varying role.

Fifthly, the analysis and methods used in this article bring out many challenges when analysing agricultural development in particular. The choice of the indicators can strongly affect the results. It must be very clear what is to be studied: single farms or agriculture in a region as a whole; agriculture of farms or all activities of farm households; development of agriculture in terms of jobs, productivity or other aspects; and so on. One essential question concerns what the prime objectives of different policy measures are, and based on this, what is actually 'positive' or 'negative' development.

Overall, the results presented in this article show the regional complexity and heterogeneity of the relationships between agricultural and rural development, and within agricultural development. Hence, as has been stated in some earlier studies, there is a notable need to analyse the connections between agriculture and rural development in regions in a more detailed way.

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