ANALYSIS OF THE DEVELOPMENT OF AGRICULTURAL STRUCTURES IN EU REGIONS, 1980-2000

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Abstract

In this paper we explore whether developments of agricultural labour and the ratio of agricultural area and labour in EU agriculture in the period 1980-2000 are affected by regional characteristics. We employ a regional data set composed of linkages between different time series from Eurostat Farm Structure Surveys. Regional characteristics are captured by two typologies, derived from rurality and employment growth. Our findings suggest that the rate of labour outflow is not affected by the degree of rurality, that employment growth influences farm exit differently in urban and rural regions, and that rural regions usually have more hectares per labourer.

Key words: agricultural structure, EU regions, rural-urban, typology

1. Introduction

The term 'agricultural structure' is usually employed to refer to the whole of production factors (land, labour and capital) used for the production of agricultural output (Brink, 1990). In the course of economic development, two main changes in the structure of agriculture can be observed: relatively less labour and more capital is employed by the sector. This structural change is mainly due to technological progress and changing price ratios (OECD, 1994; Strijker, 1998). The adoption of new technologies in agriculture, like mechanization and higher yielding crops and livestock, usually results in an increase in factor productivity. If the input of labour does not decrease, agricultural output rises, which has a downward effect on prices. As prices of intermediate consumption do not follow the price decline of agricultural output, agricultural incomes fall. When agricultural incomes decrease at a level below income per labour unit in the other economic sectors, it becomes attractive to leave the agricultural sector. Additional demand for agricultural products and price policies can slow down this process, but in the long run high output prices will be transmitted into higher prices for land and production quota. These make exit attractive and taking over of farms more difficult, so that the process of labour shed from the agricultural sector will be resumed.

Rate of outflow of agricultural labour differs between and within countries

The rate of outflow of labour from the agricultural sector and other structural adjustments of the agricultural sector differ between and within countries, among others due to the stage of economic development, the economic structure, the physical and social geography, and characteristics related to history, population and human capital (OECD, 1998). For example, the decline of the agricultural labour force in the 1990s in the Netherlands amounted to 1% p.a. against nearly 5% p.a. in Portugal (own calculations based on Eurostat), whereas in the same period the decrease in the number of farmers in W. German counties varied from 4-55 % (Glauben *et al.,* 2006). A clear understanding of the differences in the agricultural adjustment process between countries and regions might support an effective policy design for rural areas, as the extent to which a country/region will benefit from particular policy programs and the changes in these benefits under policy reform is influenced by the number, concentration, production type and size of its farms (OECD, 1998).

On the whole, two approaches in the empirical literature on the outflow of labour from the agricultural sector can be distinguished: empirical studies at the farm-household level and studies focusing on the adjustment of farm labour at the aggregate (sectoral and/or regional) level (Glauben *et al.,* 2006). Studies on farm exit at the household level are usually conducted in case study regions and cover a short period of time, like, for example, the study on farm household adjustment in Western Europe 1987-1991 (Bryden *et al.,* 1992). Studies on farm labour adjustment at the aggregate level, on the other hand, often focus on a longer period of time, and refer to national comparisons of farm exit in a group of countries (for example, OECD, 1994), comparisons of farm exit in regions within one country (for example, Goetz and Debertin, 2001; Glauben *et al.,* 2006), or comparisons of farm exit in regions in a group of countries (OECD, 1996, 1998).

Regional time series analysis hampered by frequent changes in regional boundaries

For conducting studies on the development of farm labour during one or two decades at the aggregate level, a consistent historical data base is needed. However, in contrast to national boundaries, the regional boundaries within countries, that are used in statistics, change frequently over time. This makes data collection and analysis of agricultural structural developments in regions over a longer time period rather complicated, as regional data for the one time series using certain regional codes cannot be linked to regional data for the next time series using other regional codes. In order to solve this problem for the regional time series of the Eurostat Farm Structure Surveys (FSS), we designed an overall harmonised classification system of regional codes. By using this classification system, we could construct a regional data set for the period 1980-2000 in which the regional data for the different time series of the FSS are linked. The beginning and the end of this period coincides with years in which a full FSS census took place. In principle, it is possible to extend the period to 2005 or 2007, years in which intermediate sample surveys were held, but usually these sample surveys give rather biased results compared to the years with full censuses.

Objective of this paper
In this paper, we employ the regional data set, that has been composed from a linkage between different time series from the Eurostat Farm Structure Surveys (FSS), for analysing structural changes in agriculture in the EU regions in the period 1980-2000. In particular, we explore whether the development of agricultural labour and the ratio of utilized agricultural area and labour are affected by regional characteristics. Regional characteristics are captured by designing two regional typologies, based on rurality and employment growth.

Plan of this paper
The plan of this paper is as follows. In Section 2 the focus is on the methodological approach of our analysis. Successively, we discuss our hypotheses, the design of regional typologies and the use of data. In Section 3 we elaborate on the results of the testing of the hypotheses. In the final section we make some concluding remarks.

2. Methodological approach

In order to explore whether structural changes in EU agriculture are affected by regional characteristics, we consider a number of hypotheses, that are explained below.

Hypothesis 1: The outflow of labour from the agricultural sector develops at the same rate in rural, intermediate rural and urban regions.
It could be wondered whether the outflow of labour from the agricultural sector develops at different rates in rural and urban regions. According to neoclassical assumptions, differences in factor prices between regions will disappear either due to mobility of production factors or mobility of goods. In the case of agriculture with relatively immobile factors, it is likely that regions specialize in goods produced with its production factors and that they exchange these goods (Strijker, 1998). Given equal factor prices in regions, neoclassical theories do not give rise to expect different rates of outflow of labour from the agricultural sector in rural and urban regions.

Hypothesis 2: The outflow of labour from the agricultural sector in leading regions exceeds that in lagging regions.

Contrary to the convergence trend in the neoclassical theory, we find divergence among wealthy and lagging regions in cumulative causation theories, as for example, formulated by Myrdal (1957). The main idea behind these theories is that once regional disparities come into existence, a self-reinforcing process starts that, in the absence of catastrophic events, maintains the status of growing areas. An agglomeration of economic activities and people induces further rounds of expansion in the wealthy regions, whereas lagging regions are confronted with a negative spiral of declining economic activities and outmigration. Whether the outmigration of labour from all economic sectors in the lagging regions implies that outflow of labour from the agricultural sector in lagging regions exceeds that in wealthy regions, is not explicitly taken into account by the cumulative causation theories. Considering the cumulative process of concentration and expansion of economic activities in the wealthy regions, rapid technological progress in the agricultural sector and many off-farm job opportunities could accelerate the rate of outflow of labour from the agricultural sector in wealthy regions. This brings us to the push-pull hypothesis, which assumes that labour is 'pushed' from the agricultural sector by factors associated with constrained farming conditions and 'pulled' by other factors related to off-farm opportunities (Efstratoglou-Todoulou, 1990). Building on regional disparities in the socio-economic context, a study on farm household adjustment in 24 study areas in Western Europe provides some useful insights: in the years 1987-1991, it appears that rates of exit tend to be higher in areas with good non-farming opportunities in the local labour markets (Bryden *et al.,* 1992). If we translate 'good non-farming opportunities in the local labour markets' into terms of regional employment growth, then there is some scope to expect that the outflow of labour from the agricultural sector in leading regions (i.e. regions with high employment growth) is higher that that in lagging regions (i.e. regions with low employment growth).

Hypothesis 3: The number of ha utilized agricultural area per agricultural labourer in urban regions is below that in rural regions.

Apart from analysing regional disparities in the rate of outflow of labour from the agricultural sector, differences in the development of the intensity of agricultural production - expressed by the number of hectares per labourer - among regions could be investigated. The idea about a positive relationship between intensity of agricultural production and the degree of urbanization was put forward by Von Thünen in the study 'Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie' in 1826. In this study, Von Thünen tried to explain the location of agricultural production (Noort, 1980). He assumed a situation with a central city surrounded by a homogeneous plain. According to Von Thünen, agricultural production is organized in a series of concentric zones or rings around the city, which correspond with the intensity of production. In the first ring around the city, horticulture and milk production take place. In the next rings, cereals are produced. The outer ring is used for extensive cattle breeding. If we assume that the city and its first ring correspond to an urban region, and that the subsequent rings are more or less similar to rural regions, Von Thünen's theory gives rise to the expectation that the intensity of agricultural production in urban regions exceeds that in rural regions.

A more recent underpinning of this expectation was given by Hayami and Ruttan (1985). It could be said that their induced technological innovation model is derived from two premises: in the process of agricultural development an inelastic supply of land may be offset by advances in biological and chemical technology, whereas constraints imposed by an inelastic supply of labour may be offset by advances in mechanical technology. Given these two premises, Hayami and Ruttan assume in their model that a process of induced technological innovation starts in response to a change in relative factor prices: farmers are induced to search for technical alternatives that save the increasingly scarce factors of production. So whenever the price of labour increases relative to the price of land, induced innovation refers to mechanical technology; on the other hand, whenever the price of land increases relative to the price of labour, induced innovation refers to biological and chemical technology. If we apply this model to urban and rural regions, we could assume that - given the fact that land is more scarce in urban regions than in rural regions - induced processes of land saving innovations tend to emerge in urban regions, resulting in less land per labourer relative to rural regions.

Approach for testing hypotheses

For testing the hypotheses, we have to decide how to define urban, rural, leading and lagging regions. For this purpose we design a typology of urban and rural regions and a typology of leading and lagging regions. These typologies are discussed below.

Typology of rural and urban regions

The OECD rural typology of predominantly rural, intermediate rural and predominantly urban regions is often used in comparisons of socio-economic indicators in functional regions. This typology is derived from population density. All three types of regions are territorial entities with villages, cities and agricultural area. The OECD rural typology could be used as a typology of rural and urban regions in this study as well. However, due to the use of FSS data in our analysis, we have to make some adjustments for the regional unit. Whereas the OECD rural typology was designed for a mix of NUTS2 and NUTS3[1] regions (OECD, 1996), which covers 599 regions in the EU15, FSS distinguishes 476 EU15 regions.

In order to distinguish FSS regions according to their rurality, we designed a typology of urban and rural FSS regions by using the same differentiating characteristics and method of classifying types as in the OECD rural typology (OECD, 1996). The differentiating characteristic refers to population density in local communities. The method of classifying types consists of three steps. First, when population density in local communities is less than 150 inhabitants per square kilometre, the community is classified as ‘rural’; when population exceeds 150 inhabitants per square kilometre as ‘urban’. Second, a deductive method of classification has been applied by distinguishing three types of regions (Fig. 1):

1 most rural regions;
2 intermediate rural regions;
3 most urban regions.

These three types were created by using the following threshold values:

- when more than 50% of the population of the region lives in rural local communities, the region is classified as ‘most rural’;

1 NUTS = Nomenclature des Unités Territoriales Statistiques.

- when between 15 and 50% of the population of the region lives in rural local communities, the region is classified as 'intermediate rural';
- and when less than 15% of the population of the region lives in rural local communities, the region is classified as 'most urban'.

Finally, when most rural regions include a city of 200,000 inhabitants or more, the region is classified as intermediate rural; when intermediate rural regions include a city of 500,000 inhabitants or more, the region is classified as most urban[2].

Typology of leading and lagging regions

In this paper, leading and lagging regions are defined in terms of high and low employment growth. Regional employment growth can be compared with several benchmarks, like the EU average, the national average and the average of the group of rural or urban regions. In the typology of leading and lagging regions, we look at employment performance in a region relative to employment growth in the other regions of the country in the period 1980-1990 and in 1990-2000. By relating the regional growth rate to the other regions of the country, regional growth rates are corrected for macro-economic factors. This procedure was also applied in other international comparisons of regional employment growth (OECD, 1996; Esposti *et al.*, 1999; Bollman *et al.*, 2005). In order to define types, we first rank regions within each country according to their employment growth in the period 1980-1990. Then we divide this ranking into three groups, as follows: the top-33% is called 'leading', the bottom-33% is labeled as 'lagging' whereas the group in-between is referred to as 'middle' (Fig. 2). As the rate of employment growth may vary over time, we design a separate typology of leading and lagging regions for the period 1990-2000 (Fig. 3). It has to be emphasized that here the labels 'leading' and 'lagging' are only derived from employment performance, and that leading regions may be less successful with regard to other indicators like GDP per capita, GDP growth and unemployment rates. Moreover, if a region is labelled as lagging, this is not necessarily a permanent situation, but it can change (Reimer, 2000).

Database for testing the hypotheses

In this paper, we use data on agricultural labour and utilized agricultural area for three years: 1980, 1990 and 2000. These data are derived from Eurostat Farm Structure Surveys (FSS), and reflect a full FSS census. FSS usually specifies only data for EU Member States. This implies that our data refer to 8 Member States in 1980[3], 12 Member States in 1990, and 15 Member States in 2000. The analysis of regional FSS data for longer periods is hampered by changes of regional boundaries over time. By designing an overall harmonised classification system of regional codes, we could construct a regional data set for the period 1980-2000 in which the regional data for the different time series of the FSS are linked.

Data on population density and employment growth – used for the design of the typology of rural and urban regions and the typology of leading and lagging regions

[2] The application of this last criteria results especially in Scotland in some unsatisfying results: as the FSS regions in the UK are relatively large, the presence of a big city and their population density affects the classification of a relatively large area. We still have to find an alternative for such cases.

[3] In fact, the EU counted 9 Member States in 1980. However, we were not able to include the regional codes for Italy and the UK for 1980 in our harmonized classification system of regional codes. On the other hand, although Portugal was not yet a member of the EU, regional data for Portugal for 1980 are included in the FSS.

are collected for NUTS regions (which slightly differ from FSS regions) by Eurostat. The regional codes of the NUTS regions are also included in our overall harmonised classification system of regional codes. As a result, we can use NUTS data for the FSS regions.

A main question in the analysis of socio-economic indicators across EU regions refers to the benchmark: have values to be compared with the EU average or with the national average? The answer depends on whether the indicator is independent or dependent on national specific factors. In the case of agricultural structures, large differences exist among Member States, reflecting differences in the stage of economic development and the composition of agricultural production. Therefore, we will compare the rate of outflow of labour form the agricultural sector and the number of ha utilized agricultural area per labourer with the national average.

3. Empirical results

In this section we discuss the results of our testing of the three hypotheses.

Hypothesis 1: The outflow of labour from the agricultural sector develops at the same rate in rural, intermediate rural and urban regions.

For testing this hypothesis, we use the annual growth rates of the outflow of labour from the agricultural sector in two periods: 1980-1990 and 1990-2000 (Table 1). The hypothesis is supported in Germany and France for both periods and in the Netherlands and Spain for the years 1990-2000. In Ireland, the rate of exit in most urban and most rural regions is at the same level; however, the rate of exit in intermediate rural regions in the 1980s is below and in the 1990s above that in the two other groups. In Portugal, it appears that the rate of outflow of labour from the agricultural sector is highest in intermediate rural regions, followed by most urban regions and slowest in most rural regions in both periods. For the remaining Member States, no consistent sequence in the ranking of outflow among the three types of regions in the 1980s and 1990s can be perceived. On the whole, in countries where the hypothesis is rejected, differences in the outflow among the three groups of regions are smaller than those among the various Member States. In Belgium, Denmark, France and Luxembourg, the rate of exit in the 1990s is below that in the 1980s; the opposite is true for Ireland, the Netherlands and Portugal. In Germany, the rate of outflow of labour from the agricultural sector is more or less the same in both periods.

Other studies on the relation of population density and the rate of farm exit show similar varying levels of farm exit in urban and rural regions as in our set of countries. A study by Glauben *et al.* (2006) on farm exit in 326 counties in Western Germany in the years 1991-1999 found that a higher population density significantly reduces exit rates, whereas a study by Goetz and Debertin (2001) on farm exit in 2999 counties in the US in the period 1987-1997 showed the opposite relationship: US counties with a higher population density experienced higher exit rates.

Hypothesis 2: The outflow of labour from the agricultural sector in leading regions exceeds that in lagging regions.

Leading and lagging regions are defined according to their ranking of employment growth within a country. Regions with the highest growth (top 1/3) are labeled as

'leading', regions with the lowest growth (bottom 1/3) are labeled as 'lagging', and the group regions in between as 'middle'. These groups are defined for two periods: the 1980s and 1990s. This approach implies that a region, that is labeled as leading in the 1980s might shift to another group in the 1990s. As a second step, we allocated the groups of leading, middle and lagging regions according to their degree of rurality.

Only Portugal and the Netherlands support the hypothesis that the outflow of labour from agriculture in leading regions is above that in lagging regions, both in the 1980s and 1990s (Table 2 and 3). Belgium and Denmark show an opposite pattern in the 1980s, with the highest rate of exit in lagging regions. Such a pattern can also be perceived for Greece, France and the UK in the 1990s. When we compare the patterns of exit rates between both periods, then most countries do not show a similar sequence in the level of exit rates among leading, middle and lagging regions.

Considering the most rural regions, intermediate rural regions and most urban regions as separate groups, then the hypothesis is supported in most urban regions in all Member States in both the 1980s and 1990s, except for Belgium and the UK. On the other hand, the hypothesis is rejected by empirical evidence in the most rural and intermediate rural groups in the 1980s and 1990s: in these groups the rate of exit in lagging regions exceeds that in leading regions, leaving exit rates in middle regions undetermined: sometimes they are close to the rate in either the leading or lagging regions, sometimes their values rather deviates from that in the leading and lagging regions. The only exceptions to this finding are Denmark, the Netherlands and Portugal in the 1990s.

The different patterns of exit rates in leading, middle and lagging regions in the group of most urban regions on the one hand, and that in the groups of most rural and intermediate rural regions on the other hand give rise to the following observation. It seems that a situation of high employment growth in most urban regions acts as a strong pull factor for farmers to leave the agricultural sector, whereas a situation of high employment growth in most rural and intermediate rural regions provides farmers with opportunities for part-time off-farm employment without leaving the agricultural sector. Farmers in most rural and intermediate rural regions with a low or stagnation of employment growth face a more unfavourable situation at the off-farm labour market and are more likely not to benefit from the income stabilizing effects of part-time off-farm employment. In such a situation, off-farm work by successors can, for example, not be used to facilitate succession (Bryden *et al.*, 1992). This might boost farm exit and may be accompanied by outmigration.

Hypothesis 3: The number of ha utilized agricultural area per agricultural labourer in urban regions is below that in rural regions.

For testing this hypothesis, we analyse the number of ha utilized agricultural area per agricultural labourer in most rural, intermediate rural and most urban regions in 1980, 1990 and 2000. It appears that in most EU Member States the number of ha per labourer in most rural regions exceeds that in intermediate rural regions, which is on its turn above that in most urban regions, except for Ireland, Finland, Sweden and the UK (Table 4). The relatively low number of ha per labourer in rural regions in Finland and Sweden compared to those in urban regions could be due to severe climatologically conditions, which might hamper agricultural production and which results in different types of agricultural production in urban and rural regions; the

findings for the UK can be influenced by difficulties in the application of the rural typology in this country (see footnote 2).

Apart from a more extensive type of agricultural production in most rural regions, our analysis shows a number of other findings. First, the number of ha per worker rather varies among countries: from 10 ha or less in Greece, Italy and Portugal to 40 ha or more in Denmark, Sweden and the UK. These differences reflect both differences in the main types of agricultural production and in the stage of economic development. Second, in countries like Belgium, Spain, the Netherlands, Austria and Portugal the number of ha per worker in most rural regions are more than twice as large as those in most urban regions, whereas in the other countries the differences are less pronounced. Finally, the number of ha per worker tends to increase in the course of the time in all Member States and in all groups of regions. Especially in Belgium, Denmark, Germany, France, Luxembourg and Portugal, the number of ha per worker more or less doubled between 1980 and 2000. This increasing number of ha per agricultural worker reveals a process of scale enlargement in the agricultural sector, enhanced by technical progress and a shrinking number of agricultural workers.

4. Concluding remarks

In this paper, we explored whether the development of agricultural labour and the ratio of utilized agricultural area and labour in EU agriculture in the period 1980-2000 were affected by regional characteristics. For this purpose, we employed a quite unique regional data set composed of a linkage between different time series from the Eurostat Farm Structure Surveys (FSS). Regional characteristics were captured by designing two regional typologies, based on rurality and employment growth. In particular, we considered three hypotheses:

(1) The outflow of labour from the agricultural sector develops at the same rate in rural, intermediate rural and urban regions;
(2) The outflow of labour from the agricultural sector in leading regions exceeds that in lagging regions;
(3) The number of ha utilized agricultural area per agricultural labourer in urban regions is below that in rural regions.

Little support for hypotheses (1) and (2)

We found little support for hypothesis (1). On the whole, exit rates differ between most urban, intermediate rural and most rural regions, without showing a fixed pattern that one group of regions has always higher exit rates than the other groups. Either did we find wide support for hypothesis (2). However, evidence for the individual groups of regions revealed an interesting differential between the most urban regions on the one hand, and the intermediate rural and most rural regions on the other hand. In the group of the most urban regions, leading regions experienced the highest rate of outflow of labour from the agricultural sector, whereas in the intermediate rural and most rural regions exit rates were highest in the lagging regions. This observation gives rise to the assumption that the availability of off-farm labour opportunities pulls labour out of the agricultural sector in leading most urban regions, off-farm employment opportunities tend to provide part-time jobs for farmers in leading intermediate and most rural regions, thereby stabilizing incomes of these farm households, whereas the lack of off-farm employment opportunities in lagging

intermediate and most rural regions might boost farm exit and outmigration. In order to maintain or to prevent an erosion of the farm population in the lagging rural regions, rural development policy could focus on increasing the number of non-agricultural jobs and on ways to stabilize agricultural incomes. As agricultural landscapes in many lagging rural regions are of high natural value, it could be considered to reward farmers for the production of valuable landscapes. Of course, such a policy is already applied in the EU for many years, by means of agri-environmental schemes and the less favoured areas (LFA) policies. However, in the context of the debate on the post 2013 CAP there seems to be an increasing support to replace direct payments of the first pillar of the CAP by payments for public services provided by farmers. This could serve as an opportunity to increase funds for the provision of public services by farmers in lagging rural regions.

Wide support for hypothesis (3)
It appears that in most of the studied EU Member States, the number of ha utilized agricultural area per labourer in most rural regions is above that in most urban regions, which reflects Von Thünen's observation that agriculture in urban areas tends to be more intensive than agriculture in rural areas. In addition, our analysis showed a number of other findings: the number of ha per labourer largely varies among countries, in some countries the number of ha per labourer in most rural regions are twice or more than that in most urban regions, and the number of ha per labourer tend to increase between 1980 and 2000. These findings reveal that agricultural structures may differ among countries and within countries. Further insight in the differences of agricultural structures among countries and regions could be gained by extending the analysis to other agricultural, socio-economic and environmental indicators.

Do regional characteristics matter?
Evidence in this paper showed that regional characteristics might affect the rate of outflow of labour from the agricultural sector and the intensity of agricultural production, but not always in the way as we expected. In particular, the finding that the availability of non-agricultural jobs is accompanied by differentials in farm household behaviour to exit the agricultural sector in most urban and most rural regions, asks for further analysis, for example, on the characteristics of the farm households and the non-agricultural jobs. Further studies could use time series analysis of agricultural, socio-economic and environmental indicators at the aggregate regional level and case studies to deepen the insight of how and why farm households interact with regional characteristics.

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Table 1 Outflow of labour from the agricultural sector in the EU regions, 1980-2000 (% p.a.)

	1980-1990				1990-2000			
	Most rural regions	Inter-mediate rural regions	Most urban regions	National average	Most rural regions	Inter-mediate rural regions	Most urban regions	National average
Belgium	-2.9	-3.3	-2.7	-2.8	-3.1	-2.9	-2.2	-2.3
Denmark	-5.6	-5.6	-7.7	-5.7	-3.7	-3.4	-2.8	-3.5
Germany[1)]	-3.4	-3.9	-3.6	-3.7	-3.3	-3.5	-3.5	-3.4
Greece					-1.7	-0.9	-1.2	-1.5
Spain					-0.3	-0.8	-0.5	-0.6
France	-3.9	-3.7	-3.6	-3.8	-3.0	-2.5	-2.7	-2.8
Ireland	-2.3	-1.5	-2.3	-2.2	-3.8	-4.3	-3.6	-3.9
Italy					-2.8	-3.5	-3.4	-3.4
Luxembourg	-	-3.6	-	-3.6	-	-3.4	-	-3.4
Netherlands	-	-1.7	-0.5	-0.7	-	-0.8	-0.9	-0.9
Portugal	-2.3	-4.7	-3.3	-3.0	-4.3	-5.5	-5.1	-4.7
United Kingdom					-4.4	-2.5	-3.5	-3.2
EU8	-3.2	-3.9	-2.8	-3.3				
EU12					-2.6	-2.6	-3.0	-2.7

'-' denotes that the type does not exist.
(1) For 1980-1990 excluding regions in Eastern Germany.
Source: Eurostat FSS; adaptation LEI.

Table 2 Outflow of labour from the agricultural sector in the EU8 leading and lagging regions, 1980-1990 (% p.a.)

	Most rural regions			Intermediate rural regions			Most urban regions			National average		
	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging
Belgium	-2.9	-	-	-	-3.0	-3.5	-1.8	-2.6	-3.9	-2.0	-2.6	-3.8
Denmark	-5.1	-8.3	-6.6	-5.6	-5.7	-	-	-	-7.7	-5.3	-5.9	-6.9
Germany[1)]	-3.3	-3.5	-3.5	-3.6	-3.5	-5.3	-5.4	-2.9	-3.5	-3.9	-3.1	-4.2
France	-3.6	-4.0	-3.8	-3.7	-3.4	-4.2	-5.5	-2.9	-3.2	-3.8	-3.7	-3.9
Ireland	-2.4	-1.7	-2.6	-	-1.5	-	-2.3	-	-	-2.4	-1.6	-2.6
Luxembourg	-	-	-	-	-3.6	-	-	-	-	-	-3.6	-
Netherlands	-	-	-	-	-1.5	-1.9	-0.9	-0.6	0.2	-0.9	-1.1	-0.4
Portugal	3.6	-3.6	-2.2	-4.9	-5.9	-3.7	-4.9	-	-	-3.7	-4.0	-1.9
EU8	-2.8	-3.6	-3.1	-4.0	-3.5	-4.2	-3.6	-2.7	-1.2	-3.5	-3.4	-3.1

'-' denotes that the type does not exist.
(1) Excluding regions in Eastern Germany.
Source: Eurostat FSS; adaptation LEI.

Table 3 Outflow of labour from the agricultural sector in the EU12 leading and lagging regions, 1990-2000 (% p.a.)

	Most rural regions			Intermediate rural regions			Most urban regions			National average		
	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging	Lead-ing	Mid-dle	Lag-ging
Belgium	-3.1	-	-	-	-2.4	-3.1	-2.3	-1.4	-3.3	-2.4	-1.5	-3.3
Denmark	-	-3.8	-2.2	-3.7	-	-2.6	-2.8	-	-	-3.6	-3.8	-2.6
Germany	-3.1	-3.6	-	-3.4	-3.5	-3.6	-3.8	-3.3	-3.2	-3.4	-3.5	-3.4
Greece	-1.6	-1.7	-1.7	-0.8	-0.9	-3.0	-1.2	-	-	-1.3	-1.4	-1.7
Spain	1.3	0.7	-1.0	0.3	0.4	-3.2	-0.7	-0.2	-	0.2	0.4	-2.0
France	-2.7	-3.0	-3.1	-2.4	-2.5	-3.1	-3.4	-2.7	-0.3	-2.5	-2.8	-3.1
Ireland	-3.8	-3.7	-3.9	-	-4.3	-	-3.6	-	-	-3.7	-3.9	-3.9
Italy	-2.3	-2.7	-3.3	-3.4	-3.4	-3.6	-3.6	-3.4	-3.1	-3.3	-3.3	-3.5
Luxembourg	-	-	-	-	-3.4	-	-	-	-	-	-3.4	-
Netherlands	-	-	-	-0.7	-1.4	-0.6	-1.6	-0.9	-0.9	-1.1	-0.9	-0.8
Portugal	-5.6	-5.4	-2.8	-5.9	-4.6		-5.0	-5.2	-5.1	-5.6	-5.1	-3.0
United Kingdom	-4.1	-4.9	-4.1	-1.2	-3.4	-2.5	-2.9	-3.3	-4.1	-2.6	-3.4	-3.5
EU12	-3.2	-2.5	-2.4	-2.3	-2.4	-3.4	-3.1	-2.8	-3.0	-2.8	-2.5	-2.8

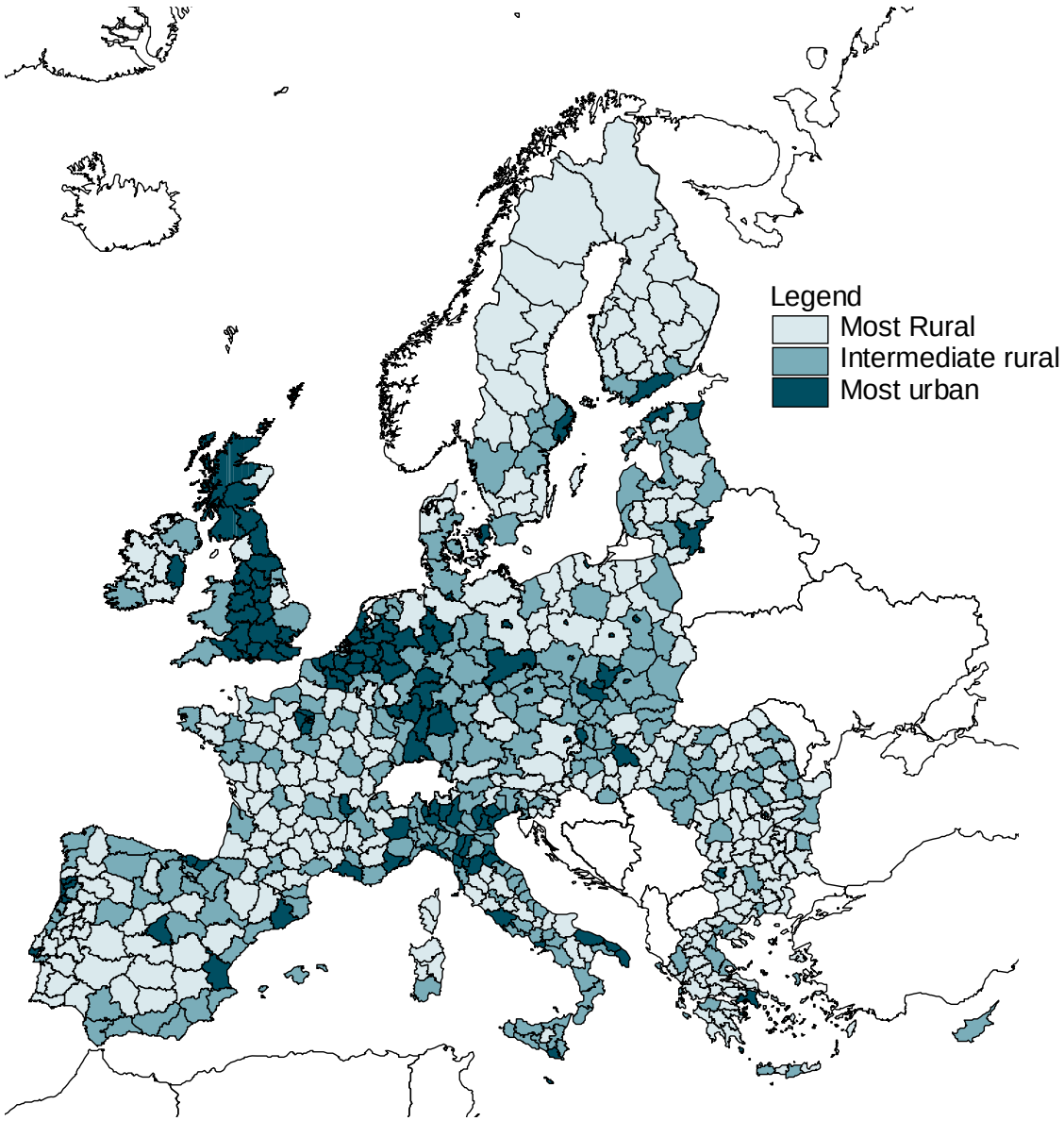
'-' denotes that the type does not exist.
Source: Eurostat FSS; adaptation LEI.

Table 4 Utilized agricultural area per agricultural labourer in the EU15 regions, 1980-2000 (ha/AWU)

	1980				1990				2000			
	Most Rur	Int Rur	Most Urb	Nat Av	Most Rur	Int Rur	Most Urb	Nat Av	Most Rur	Int Rur	Most Urb	Nat Av
Belgium	20	20	9	12	25	26	12	14	36	35	15	19
Denmark	18	16	13	17	31	28	27	29	43	37	33	40
Germany	13	12	11	12	18	17	15	16	24	24	21	23
Greece					6	5	4	5	6	6	4	6
Spain					32	16	10	22	35	19	11	24
France	18	14	10	16	25	20	14	22	34	25	19	29
Ireland	16	18	20	16	17	19	23	18	26	28	30	26
Italy					14	7	6	8	16	9	7	10
Luxembourg	-	14	-	14	-	20	-	20	-	29	-	29
Netherlands	-	15	7	8	-	18	7	9	-	19	8	10
Austria									19	19	4	19
Portugal	4	1	1	3	7	1	1	5	10	2	2	7
Finland									20	27	30	22
Sweden									36	46	47	41
United Kingdom					36	28	39	35	47	35	49	44
EU8	13	11	8	12								
EU12					18	13	13	15				
EU15									23	17	17	19

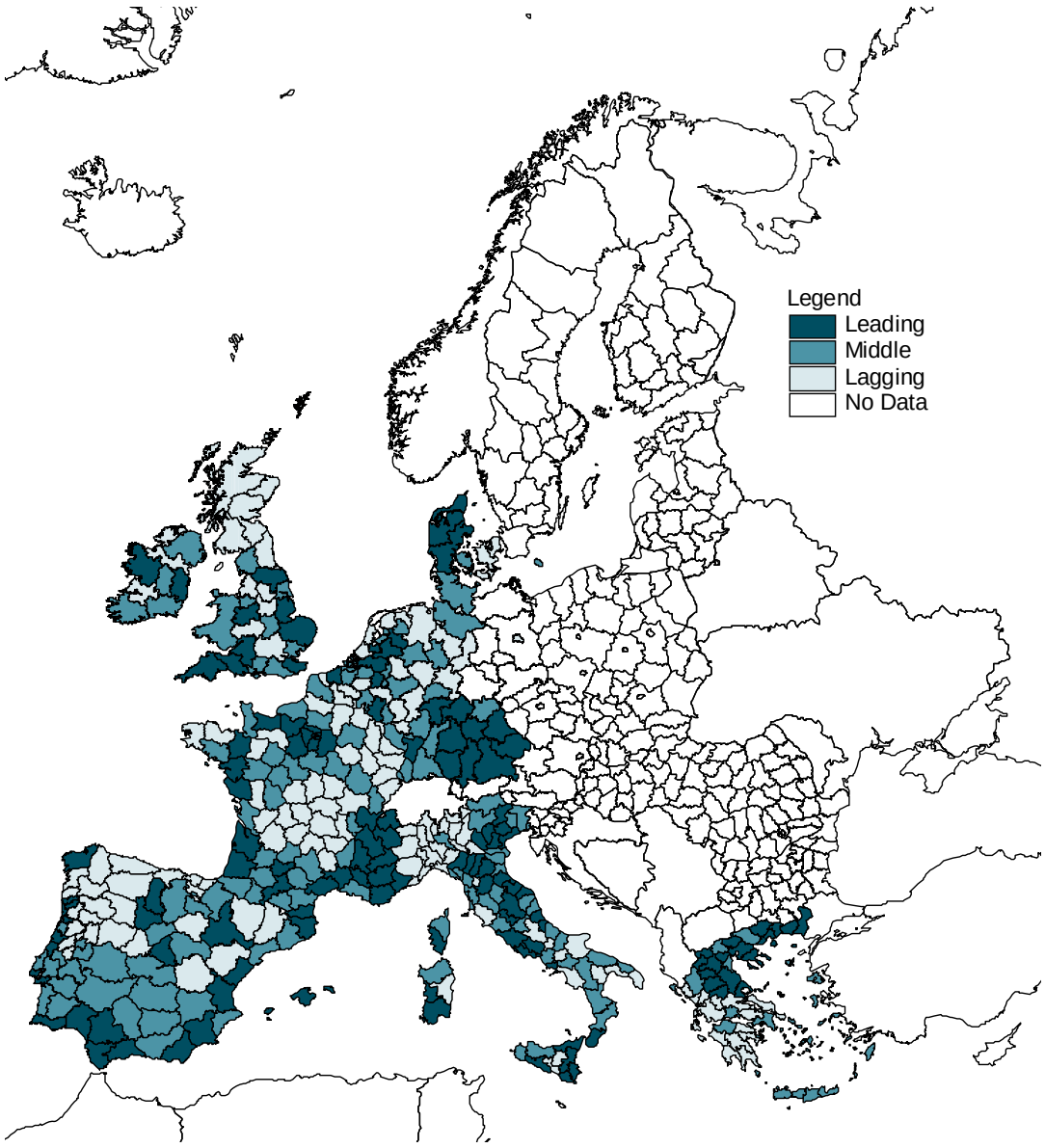
'-' denotes that the type does not exist.
Source: Eurostat FSS; adaptation LEI.

Figure 1 Most rural, intermediate rural and most urban regions in the EU



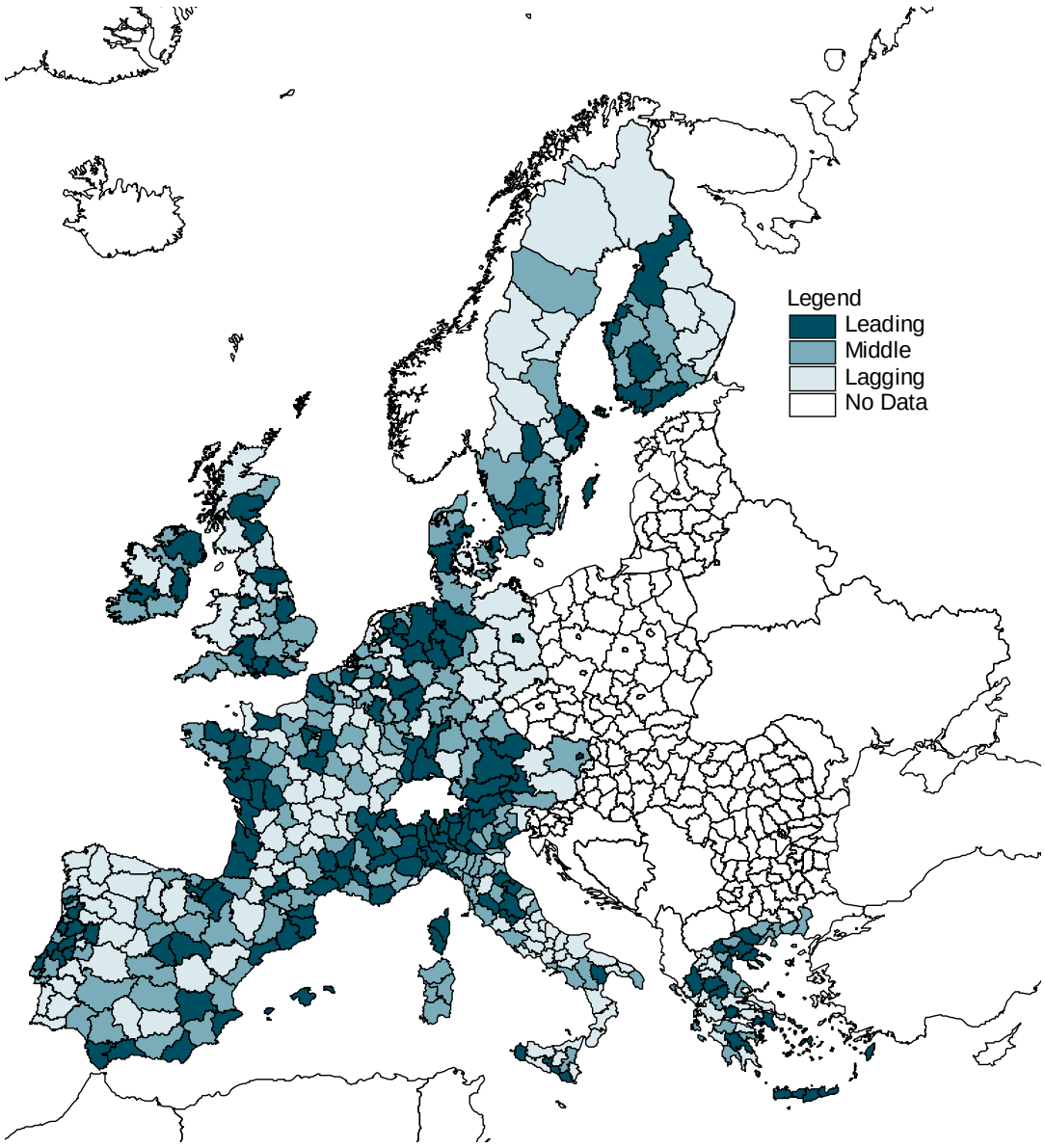
Source: Own calculations based on Eurostat, Luxembourg.

Figure 2 Leading and lagging regions in the EU12[1)], 1980-1990



(1) Excluding regions in Eastern Germany.
Source: Own calculations based on Eurostat, Luxembourg.

Figure 3 Leading and lagging regions in the EU15, 1990- 2000



Source: Own calculations based on Eurostat, Luxembourg.