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**Conference Paper**

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46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece

**Provided in Cooperation with:**

European Regional Science Association (ERSA)

*Suggested Citation:* Nijkamp, Peter; Levent, Tuzin Baycan; Gulumser, Aliye Ahu (2006) : Turkey's Rurality: A Comparative Analysis At the EU Level, 46th Congress of the European Regional Science Association: "Enlargement, Southern Europe and the Mediterranean", August 30th - September 3rd, 2006, Volos, Greece, European Regional Science Association (ERSA), Louvain-la-Neuve

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## **Turkey's rurality: A comparative analysis at the EU level**

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### **Abstract**

*The future of Europe's rural peripheries as well as the future of rural societies is an important development and planning issue in the EU. Several typologies of rural areas and different rural indicators have been developed by researchers and international organizations such as OECD and EU to better understand the dynamics of rural areas and to develop relevant policies for these areas. Rural indicators include a wide range of indicators from population and migration to economic structure and performance and from social well-being and equity to environment and sustainability, whereas the common approach of the rurality measurement is mainly focused on demographic indicators such as population and population densities. Against this background, the aim of this paper is to compare and evaluate rurality of EU member states, while identifying the place of Turkey's rurality within EU on the basis of various selected rural indicators. The data and information used for comparison and evaluation of 26 countries (EU-25 and Turkey) are based on Eurostat and World Bank data. A multidimensional classification technique, factor analysis, is deployed to define Turkey's rurality in the European context by means of 5 factors, viz. underdevelopment, demography, urbanization, higher education and industrialization. The results of our study show that northern and western European countries have great similarities while southern and eastern European countries tend to have a similar tendency. Within these countries however, Turkey looks like to be close to the southern European countries, but it is too far to be close to average EU member states.*

## 1. Defining Rurality

Civilization has started with the agricultural revolution and has proceeded with the industrialization. The beginning of settlements forms the roots of today's urban areas in which most of the world population resides. However, this trend never demolished the importance of rural areas. The term "rural area" was used originally as the home of agricultural activities to identify the areas which were not urban. However, defining rural areas as the non-urban space or the domain where agriculture and physical landscape are important is inadequate to describe today's complex reality (Labrianidis, 2006). The discrimination of rural and urban areas becomes increasingly fuzzy. Consequently, rural areas are increasingly a part of the modern leisure industry, with mass tourism on the one hand and small-scale recreation on the other hand (Vaz et al., 2006).

"Rural area" is an often used term in policy circles as well as in the scientific community and public debates; nevertheless, there is no unequivocal definition of this term, which often combines regions with many diverse features (Baum et al., 2004). Rural is a fuzzy concept which is contested in terms of identifying the critical parameters of rural space (Hoggart, 1990, Halfacree, 1993, Pierce, 1996). Various ways of classification and definition in the literature are derived to define rurality including the level of population density, the rate of population loss or gain, settlement size, local economic structure and landscape (Akder, 2003; Ballas et al., 2003; Baum et al., 2004; Bryden, 2002; Ilbery, 1998; Labrianidis, 2004). Actually, the meaning of rurality depends on the perception of each individual who integrates visions of rurality into everyday life (Ilbery, 1998; Hoggart et al. 1995, Halfacree, 1995). Moreover, rural has also been used in different contexts from developed countries to the underdeveloped ones (Dinis, 2006). The developmental processes of social, economic and political restructuring in many countries are reshaping rural areas (Woods, 2005; Labrianidis, 2006), and pushes governments to focus more on them.

Especially in Europe the future of rural peripheries as well as the future of rural societies becomes an important development and planning issue in the EU. The globalization, liberalization, free market activities and changes of cultural values have led rural areas to become more consumerized and more externally interrelated (Labrianidis, 2006). 80% of Europe is now rural by sheltering 25% of its population (van Leeuwen, 2006). The European Commission describes rural areas as complex economic, natural and cultural locations, which cannot be characterized by a one-dimensional criterion such as population density, agriculture or natural resources (European Commission, 1999:23). Rural areas considered in terms of their cultural, social, political, and economic aspects – and especially in terms of their futures - have attracted much attention of governments. From this perspective, rurality of a candidate country is often the last negotiation issue taken into consideration by the EU. Turkey as the most discussed candidate is now in the accession period and during the negotiation its rurality will certainly be addressed. The complexity of Turkey's rurality is recognized by the EU and the academic world. However, its rurality is not yet evaluated as a whole.

Against this background, the aim of this paper is to compare and evaluate Turkey's rurality with the EU countries on the basis of selected rural indicators. The data and information used for comparison and evaluation of 26 countries are based on Eurostat and World Bank data. A multidimensional classification technique, factor analysis, is deployed to reduce 15 indicators, while 5 main factors, viz. underdevelopment, demography, urbanization, higher education and industrialization levels are used to define Turkey's rurality in the European context. In the next section, a literature review is

offered to identify rural indicators that are often used to measure rurality of a region. In the following section, the EU and Turkey's rurality will be compared while giving information about the data and methodology of the study. The paper will conclude by discussing the results of the study while proposing some guidelines for further study.

## 2. Rural Indicators and classifications

The classification of rural areas and the distinction between rural and urban areas are not easy tasks. Each country has its own definition usually focused on socio-economic indicators, and these are not globally applicable (Politecnico di Milano, 1999). However, in the global context, two main perspectives of rural typologies have been developed by OECD and EU.

The OECD (1994; 1996; 2003) creating territorial and rural indicators, aims to be able to compare sub-national territories. According to the OECD, territorial studies have four main indicators: population and migration, economic structure and performance, social well-being and equity, and environment and sustainability (Table 1). The OECD definition of rural areas distinguishes 2 hierarchical levels of territorial unit, viz. local and regional. At local community level (administrative or statistical units- equivalent to NUTS5), the OECD identifies rural areas as communities with a population density below 150 inhabitants per square kilometre. At regional level (aggregated sub-national regions- equivalent to NUTS3), the OECD distinguishes larger functional or administrative units by their degree of rurality, depending on which share of the region's population lives in rural communities. To facilitate the analysis, regions are clustered into three types:

1. **Predominantly Rural Regions:** over 50% of the population living in rural communities;
2. **Significantly Rural Regions:** 15 to 50% of the population living in rural communities;
3. **Predominantly Urban Regions:** less than 15% of the population living in rural communities.

Table 1 Basic set of indicators and sub-criteria of OECD

<b>Population and Migration</b>	<b>Social well-being and equity</b>
Density	Income
Change	Housing
Structure	Education
Households	Health
Communities	Safety
<b>Economic structure and performance</b>	<b>Environment and sustainability</b>
Labour force	Topography and climate
Employment	Land use changes
Sectoral shares	Habitats and species
Productivity	Soils and water
Investment	Air quality

Source: Akder, 2003

On the other hand, the EU's rural typology is less strict and is changing over time as well. Eurostat, focusing on the degree of urbanisation as a main indicator, developed an approach to define zones at a NUTS5 level. In this approach, EU regions are classified into 3 types:

1. **Densely Populated Zones:** these are groups of contiguous municipalities, each with a population density above 500 inhabitants/km<sup>2</sup>, and a total population for the zone of at least 50,000 inhabitants.
2. **Intermediate Zones:** these are groups of municipalities, each with a density above 100 inhabitants/km<sup>2</sup>, not belonging to a densely populated zone. The zone's total population must be at least 50,000 inhabitants, or it must be adjacent to a densely populated zone.
3. **Sparsely Populated Zones:** these are groups of municipalities not classified as either densely populated or intermediate (Politecnico Di Milano, 1999; Ballas et al., 2003).

As a second EU rural typology, the classification of territories developed in the study programme of the European Spatial Programme can be shown. A specific typology of six broad types of territories is distinguished on the basis of urbanisation rate; rural population density, the degree of contrast in the distribution of settlement size; average distance to any urban settlement; the primacy of the largest city; and the size of the largest centre at NUTS 3 Level (SPESP, 2000). This typology is as follows:

1. Regions dominated by a large metropolis,
2. Polycentric regions with high urban and rural densities,
3. Polycentric regions with high urban densities,
4. Rural areas under metropolitan influence,
5. Rural areas with networks of medium-sized and small towns,
6. Remote rural areas.

Besides these typologies of EU and OECD, there are also two different typologies which bring OECD and EU typologies on discussion. One of those is developed by Politecnico di Milano and second is developed by three Greek scholars, Ballas, Labrianidis and Kalogerisis.

The Milan Approach is based on a strategic study towards one new urban-rural partnership in Europe and examined all European rural areas. The main assumption of this approach is that the diversity of rural areas and their heterogeneity is very great; it is impossible to develop a single and unequivocal definition of a rural area. In the study, an alternative methodology to describe the nature of rural areas based on the strengths and weaknesses of agricultural activities in Europe is identified. Their typology depends on the presence and absence of 4 major indicators, viz. Productivity of agriculture, Importance of agriculture, Agricultural Compatible Activities, and Urban Sprawl in a specific area of a determined characteristic of rurality (Table 2).

Table 2 Typology of rural areas / Milan approach

1	High	high importance of agriculture area			Strong
2	productivity of agriculture	low	High	Low urban sprawl	Strong
3		importance of agriculture area	diversification of activities	High urban sprawl	Under pressure
4		Low diversification of activities			Under pressure
5		high	High	Low urban sprawl	Weak
6	productivity of agriculture	importance of agriculture area	diversification of activities	High urban sprawl	Under pressure
7		Low diversification of activities			Weak
8	Low importance of agricultural area				Weak

Source: Politecnico di Milano, 1999

On the other hand, the Greek approach (as the authors are Greek, we call it so), attempts to draw a picture of European rural areas on the basis of a novel database while comparing two different approaches, OECD and EUROSTAT. The aim of this approach is to create rural typologies on the basis of aggregative and disaggregative classification methods. They distinguished rural regions by means of four main indicators such as accessibility, dynamism-competitiveness, economic performance and role of agriculture, and they excluded all urban regions from the analysis. As a result they reached a typology of 24 types of rural areas (see Table 3).

Table 3 Typology of rural areas / Greek approach

	<b>Accessibility</b>	<b>Economic performance</b>	<b>Dynamism</b>	<b>Importance of agriculture</b>
1	Least accessible	Relatively low	Lagging	Dependent
2			Not dependent	
3			Advancing	Dependent
4			Not dependent	
5		Relatively high	Low competitiveness	Dependent
6			Not dependent	
7			High competitiveness	Dependent
8			Not dependent	
9	Semi-accessible	low	Low competitiveness	Dependent
10			Not dependent	
11			High competitiveness	Dependent
12			Not dependent	
13		high	Low competitiveness	Dependent
14			Not dependent	
15			High competitiveness	Dependent
16			Not dependent	
17	Most accessible	low	Low competitiveness	Dependent
18			Not dependent	
19			High competitiveness	Dependent
20			Not dependent	
21		high	Low competitiveness	Dependent
22			Not dependent	
23			High competitiveness	Dependent
24			Not dependent	
25	Urban			

Source: Labrianidis et al., 2003

In addition to these general efforts on a classification of rural areas, there are also sectorally focused typologies within countries, e.g., policy-based or as a tool for development plans or sectoral plans like transport, education, health and housing etc. (Blunden et al. 1998; CIT, 2002; Cloke, 1977; Copus et al. 2001; Malinen, 1995; Reading et al., 1994; Satsangi et al. 2000; Williams et al. 2005).

The merits and generalization of the various typologies can be discussed from several perspectives. Here, we may find out the common indicators between these typologies. The distinction into rural and urban areas emerged as a result of policy issues or planning problems, e.g., to measure differences in the degree of rurality etc. (Cloke, 1977; Scottish Executive Development Department, 2005). However the most important reason was to balance national and local perspectives. Criteria used in different typologies are endless concerning the diversity and uniqueness of rural areas.

### 3. A Comparative Analysis of Rurality: Turkey in EU-25

#### 3.1. Prefatory remarks

Rurality attracts normally attention in terms of cultural, social, political, or economic aspects, and especially in terms of the future of rural areas. Rurality is considered by the EU as a combination of economic, natural and cultural components; it cannot be characterized by one-dimensional criteria such as population density, agriculture or natural resources. Therefore, early attempts to evaluate rurality were to measure it by its components such as agriculture, demography or social well-being separately. On the other hand, the definition of rurality may change according to the perception of developed or developing countries. From this perspective, Turkey offers a complex picture as perceived by the EU and the academic world. However, a comprehensive evaluation of rurality is not carried out in this study. We took into consideration only EU member states and Turkey. Therefore, our sample is composed by 26 countries from which 18 are developed and 8 are semi-developing countries (Table 4).

Table 4 List of development level of the sample

<i>Developed Countries</i> (18 Countries)		<i>Semi-Developing Countries</i> (8 Countries)
Austria	Italy	Czech Republic
Belgium	Luxembourg	Estonia
Cyprus	Malta	Hungary
Denmark	Netherlands	Latvia
Finland	Portugal	Lithuania
France	Slovenia	Poland
Germany	Sweden	Slovak Republic
Greece	Spain	Turkey
Ireland	United Kingdom	

Source: World Bank, 2005

The present paper investigates the rurality of EU member states while comparing them with Turkey's rurality on the basis of various selected data. The data and information used for comparison and evaluation of 26 countries are based on Eurostat and World Bank data. A multidimensional classification technique, factor analysis, is applied to compare rurality within EU member states while reducing 15 indicators to 5 main factors, viz. underdevelopment, demography, urbanization, higher education and industrialization levels.

The 15 variables, for 26 countries at country level, used in the analysis can be seen in Table 5. While deploying these 15 variables, the previous rural classifications were used and the intersection of these classifications was carried out. As can be seen from Table 5, variables are classified under the subtitles population, employment, income, education, land use and environment-energy, mainly based on OECD's classification. On the one hand, variables such as population, land, population density, households or GDP are not included in the analysis as they are correlated with the rest of the variables. On the other hand, variables related to innovation, export and import rates have missing values that forced them to be excluded from the analysis. By selecting those variables, different aspects of the socio-economic and demographic character of the countries were taken into consideration, as early attempts to define and measure rurality are based on a geographical, socio-economic and demographic database. To compare countries in terms of their ruralities, we used shares and rates which enabled us to compare countries by the variables included in Table 5.

Table 5 Variables included in the analysis

<i>Code</i>	<i>Description of the variables</i>	<i>From</i>
<b>POPULATION</b>		
CBR	Crude Birth Rate	Eurostat
CDR	Crude Death Rate	Eurostat
PG	Population growth (annual %)	World Bank
<b>EMPLOYMENT</b>		
AES	Agricultural Employment per Total Employment	Eurostat
IES	Industrial Employment per Total Employment	Eurostat
SES	Services Employment per Total Employment	Eurostat
<b>EDUCATION</b>		
SE1	School enrollment, primary (% gross)	World Bank
SE2	School enrollment, secondary (% gross)	World Bank
SE3	School enrollment, tertiary (% gross)	World Bank
<b>INCOME</b>		
IOID	Inequality of income distribution	Eurostat
<b>LAND USE</b>		
ALS	Agricultural land per Total land area	Eurostat
LOM	Length of Motorways	Eurostat
NOD	Number of Dwellings	Eurostat
<b>ENVIRONMENT - ENERGY</b>		
CO2	CO2 emissions (metric tons per capita)	World Bank
EPC	Electric power consumption (kWh per capita)	World Bank

The next sub-section will evaluate rurality of EU-25 and Turkey. The evaluation is based on 5 factors carried out by a factor-analytic approach which enables us to see the similarities and differences within EU and between EU and Turkey.

### 3.2. Rurality of European Union Member states: a factor-analytic approach

As mentioned in the above, there are many multivariate techniques that can be used to measure rurality. One of the well known techniques is factor analysis which can be used to analyze interrelationships between a large number of variables and to explain in terms of their common underlying dimensions. Factor analysis is an interdependence technique in which all variables are considered, as each relates to all others, and where the concept of the variate, the linear composite of variables, is employed (Hair et al. 1998).



In this study, principal component analysis is used to transform the set of originally mutually correlated variables into a new set of independent variables. It is a non-stochastic approach and it only deals with the common variance of the original variables. It first derives the first factor or the first principal component, which is supposed to account for the greatest part of the common variance. The second factor is supposed to account for the next greatest part of the common variance, and so on. A minimum part of the common variance is set, and factors below this critical level are eliminated. The relative lengths of the lines that express the different variable combinations are called eigenvalues. As the result of the principal component analysis, 82, 60 % of the variance of the original variables is explained (Table 6). A plot of eigenvalues of explained variances of factors is shown in the scree plot (see Figure 1). The first factor has an eigenvalue of 4, 38 and the last factor's eigenvalue is above 1.

Table 6 Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	4,38	29,19	29,19	4,38	29,19	29,19	3,64	24,26	24,26
2	3,34	22,24	51,43	3,34	22,24	51,43	2,94	19,59	43,86
3	1,96	13,09	64,52	1,96	13,09	64,52	1,97	13,16	57,02
4	1,59	10,60	75,13	1,59	10,60	75,13	1,93	12,85	69,87
5	1,12	7,47	82,60	1,12	7,47	82,60	1,91	12,72	82,60

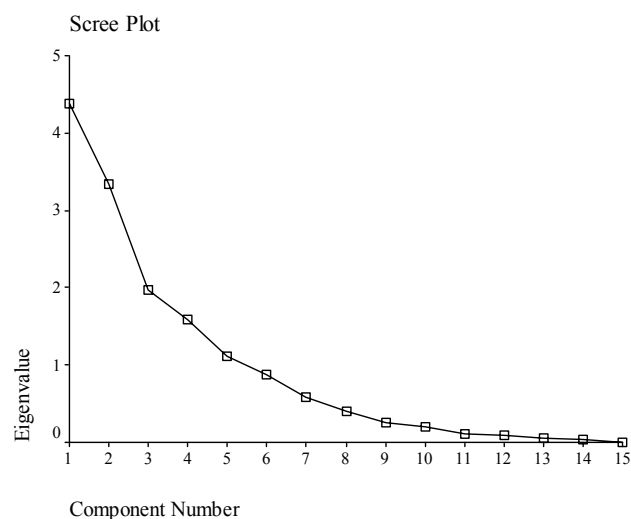


Figure 1 Scree plot of all factors

From these findings, the factor analysis is carried out with 5 factors rotated with the equamax method. Loadings of the factors tend to be either high or low in absolute values (see Table 7). In the first component, the highly loaded variable is agricultural land per total land area but the other loadings are also high so that the component represents underdevelopment level of the area (see Table 7 and 8). On the other hand, the second component represents demographic change of the area. Consecutively, the other factors are representing the built-up area/urbanization level, higher education and industrialization level of countries.

Table 7 Principal component matrix

	Factor 1: Underdevelopment	Factor 2: Demography	Factor 3: Urbanization	Factor 4: Higher Education	Factor 5: Industrialization
AES	0,84	-0,04	-0,18	-0,15	-0,24
SES	-0,78	0,00	0,08	0,36	0,38
IOID	0,81	0,16	0,12	-0,16	-0,19
SE1	-0,48	0,39	-0,04	0,33	-0,44
ALS	0,85	0,35	0,14	-0,16	0,00
CBR	0,57	0,69	0,00	0,10	0,18
CDR	-0,04	-0,89	-0,13	0,18	-0,11
PG	-0,01	0,96	0,06	0,00	0,11
LOM	-0,14	0,09	0,96	0,02	-0,03
NOD	0,15	0,02	0,97	0,07	0,03
SE2	-0,23	0,13	0,09	0,84	0,11
SE3	-0,02	-0,39	0,01	0,79	-0,25
CO2	-0,20	0,06	0,02	-0,27	0,78
EPC	-0,46	0,19	-0,09	0,25	0,64
IES	-0,21	-0,49	-0,03	-0,34	-0,57

Table 8 Distribution of variables by factors

**Factor 1: Underdevelopment**

AES	Agricultural Employment per Total Employment
SES	Services Employment per Total Employment
IOID	Inequality of income distribution
SE1	School enrollment, primary (% gross)
ALS	Agricultural land per Total land area

**Factor 2: Demography**

CBR	Crude Birth Rate
CDR	Crude Death Rate
PG	Population growth (annual %)

**Factor 3: Urbanization**

LOM	Length of Motorways
NOD	Number of Dwellings

**Factor 4: Higher Education**

SE2	School enrollment, secondary (% gross)
SE3	School enrollment, tertiary (% gross)

**Factor 5: Industrialization**

CO2	CO2 emissions (metric tons per capita)
EPC	Electric power consumption (kWh per capita)
IES	Industrial Employment per Total Employment

The following issue is to analyse the communalities of all variables to see the degree of reflection by the 5 main components. The highest communalities are the ones related to built-up areas and population growth, while primary school enrolment has the lowest commonality. This shows us that school enrolment is not correlated with the other variables and its uniqueness is high.

The first factor is measuring the underdevelopment level of the countries by agricultural employment, inequality of income distribution, agricultural land, service employment and primary school enrolment. According to the underdevelopment factor, Turkey has the highest score, while Malta, Slovenia, Luxembourg, Austria, the Czech Republic and Sweden have the lowest scores (Table 9). Greece, Poland, Lithuania and Latvia are following Turkey and they have a high level of relative underdevelopment (Figure 2). These results except for the Czech Republic and Greece match the World Bank economic development classification. The Czech Republic which is a developing country according to the classification of World Bank, is significantly developed in terms of the results of our study. The reason of this result can be the service sector component

which is impacting negatively on this factor. This sector may be highly developed in tourist areas.

As can be seen from Figure 2, most of EU member states have a negative score which means they are developed, but are quite different from each other. Therefore, the similarity within northern countries and also southern countries can be seen from Figure 2. Ireland and United Kingdom which are northern countries are acting contrarily to the rest of northern countries and have a higher value in terms of underdevelopment level.

Table 9 Factor 1: Underdevelopment

-0,95/-0,62	-0,61/-0,13	-0,12/0,32	0,33/1,13	1,14/4,61
Malta	Germany	Italy	Greece	Turkey
Slovenia	Netherlands	Ireland	Poland	
Luxembourg	Belgium	United Kingdom	Lithuania	
Czech Republic	Spain	Estonia	Latvia	
Austria	France			
Sweden	Cyprus			
	Slovakia			
	Portugal			
	Denmark			
	Finland			
	Hungary			

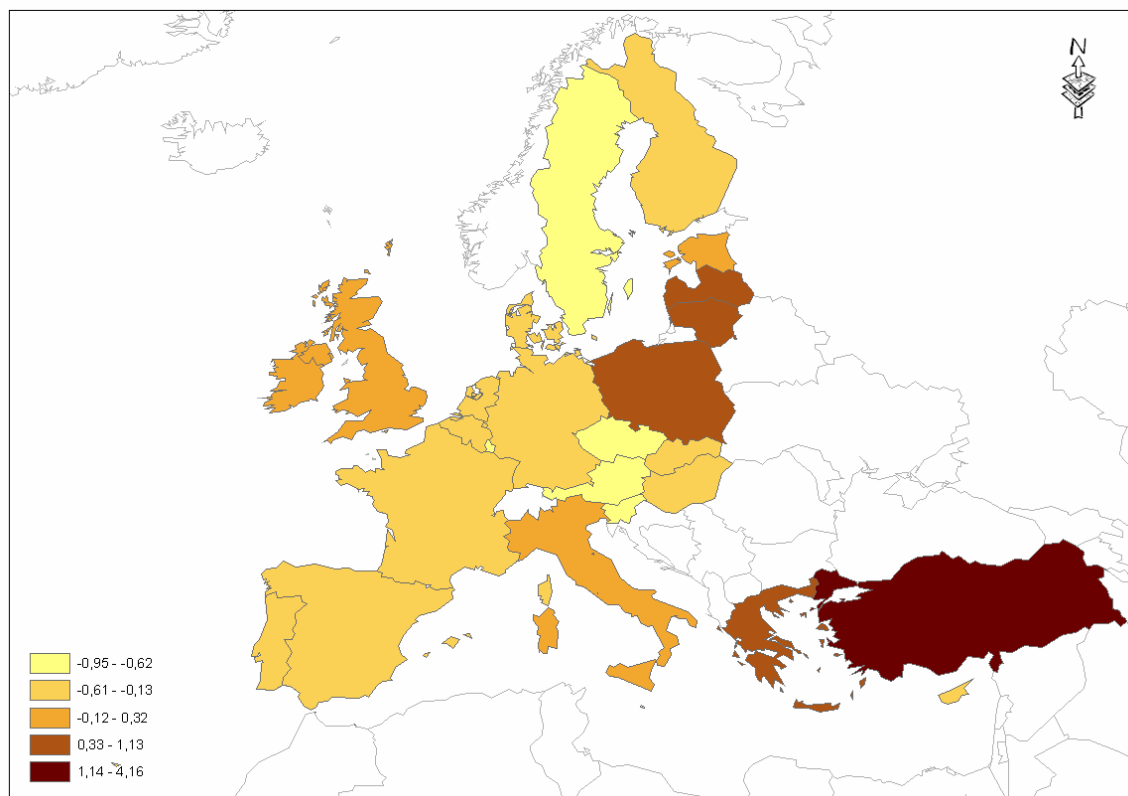


Figure 2 EU-25 and Turkey by underdevelopment level

As the second component, the demography factor, is used to measure demographic changes with crude birth rate and population growth having a positive effect and crude death rates having a negative effect. According to this factor, Turkey and additionally Ireland have the highest scores; while Latvia, Lithuania, Estonia and Hungary have the lowest scores (Table 10). It is usually expected that developing countries have high crude birth rates and crude death rates like population growth, but according to our results, developing countries like Latvia, Lithuania, Estonia, and

Hungary have a low score. In other words, the crude birth rate of countries is low and in contrast the crude death rate is high (see Appendix). Those countries are small countries in regard to their land surface so that their population growth is limited. An opposite situation is seen for developed countries like France, Netherlands and Luxembourg. Their high demography level is caused by their attractiveness of immigrants affecting population growth. In addition, the two island Malta and Cyprus which have limited attraction compare to other countries and a relatively limited life span have a high demography level. On the other hand, Germany which has a high population is in the low rank, the reason being is that Germany has a negative population growth rate. As a broad spectrum, the results show that while northern European countries have a low demography level, southern European countries have a relatively high level (Figure 3).

Table 10 Factor 2: Demography

-2,15/-1,41	-1,40/-0,32	-0,31/0,45	0,46/1,07	1,08/1,72
Latvia	Germany	Slovenia	France	Turkey
Lithuania	Poland	Denmark	Netherlands	Ireland
Estonia	Italy	United Kingdom	Luxembourg	
Hungary	Greece	Sweden	Malta	
	Czech Republic	Belgium	Spain	
	Finland	Austria	Portugal	
	Slovakia		Cyprus	

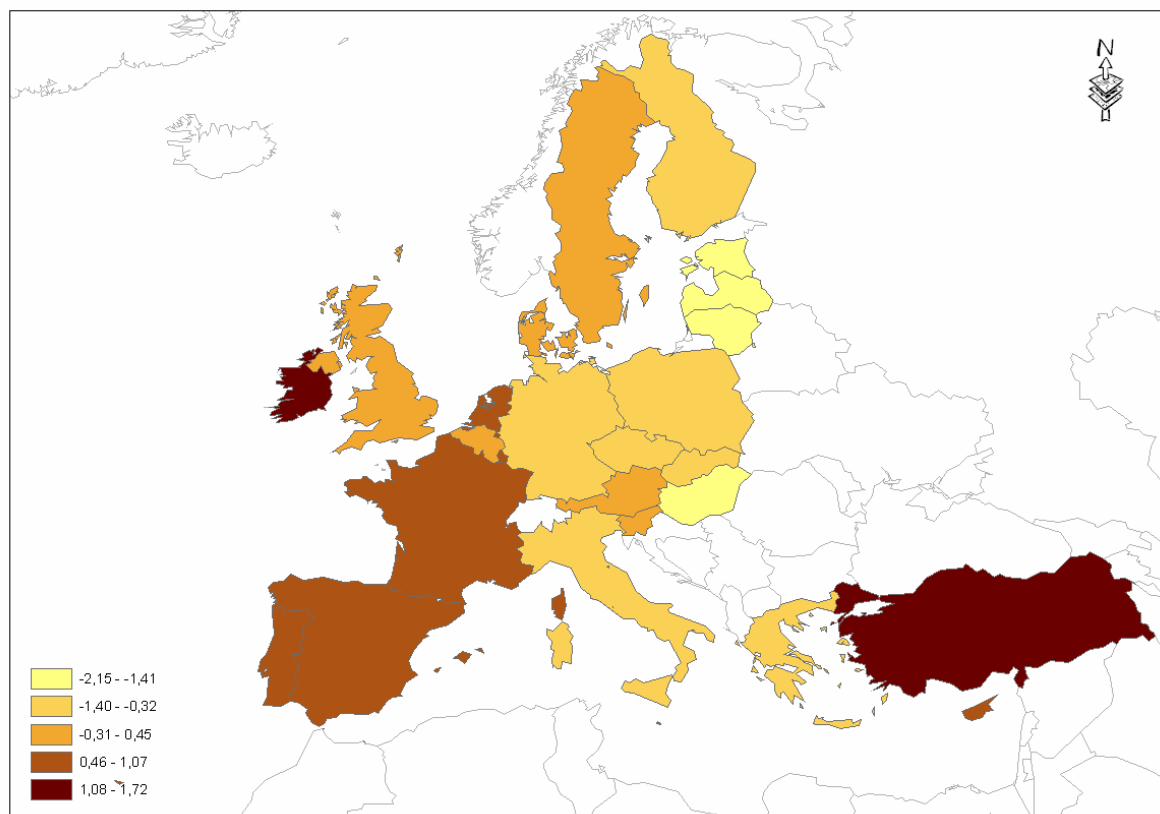


Figure 3 EU-25 and Turkey by demography level

The third factor, the urbanization level is measured by the length of motorways which can be also a tool to understand the accessibility but here we used it with the number of dwellings to define how much built-up land exists in the countries. From this point of view, Germany which is in the middle of Europe has the highest score (Figure 4). Germany, United Kingdom, Italy, Spain and France are the countries which are far from the others in terms of their extreme urbanization score. The reason is that most of the

European transportation projects are complemented derived in those areas. Therefore, most of the peripheral countries like Ireland, Lithuania, Estonia, Latvia, and Finland and additionally Luxembourg, Slovenia, and Cyprus have a low urbanization level. On the other hand, Turkey is in the average set close to high level countries, as it is strategically a bridge between Europe and Asia (Table 11). According to these results the surprising finding is Luxembourg. Luxembourg has the highest ratio of urban areas in the EU. The reason for our result is that the country area is the smallest one and has the lowest number of dwellings which depend on land area. The results show that southern and western European countries have a parallel tendency in terms of urbanization level while northern European countries have so.

Table 11 Factor 3: Urbanization

<b>-0,78/-0,59</b>	<b>-0,58/-0,36</b>	<b>-0,35/0,26</b>	<b>0,27/2,07</b>	<b>2,08/3,00</b>
Ireland	Sweden	Malta	United Kingdom	Germany
Slovenia	Denmark	Belgium	Italy	
Luxembourg	Slovakia	Poland	Spain	
Cyprus	Greece	Netherlands	France	
Lithuania	Czech Republic	Turkey		
Finland	Portugal			
Estonia	Hungary			
Latvia	Austria			

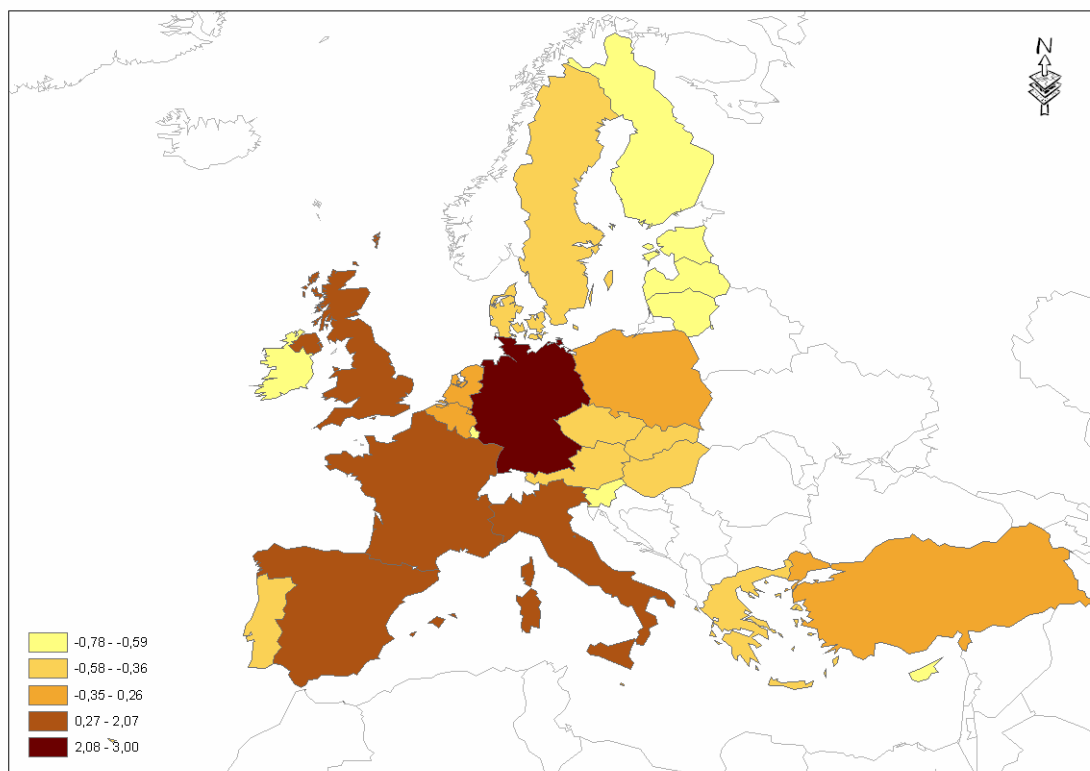


Figure 4 EU-25 and Turkey by urbanization level

Our fourth factor is the enrolment of secondary and tertiary schools called higher education, as not in all countries secondary and tertiary schools are obligatory. The UK, Belgium and Scandinavian member states have very high scores (Table 12). This is not surprising, as these countries have the highest percentages in terms of secondary and tertiary school enrolments (see Appendix).

On the other hand, Malta, Cyprus, Luxembourg, Slovakia, the Czech Republic and Turkey have a low higher education enrolment (Figure 5). The reason of Turkey's low score is the high remoteness of areas while secondary and especially tertiary schools are not spread equally around Turkey. The inequality of spread of schools does not only exist in Turkey but also, around Europe so that most of the European countries have a different share of school enrolment. Therefore, northern and western European countries have a similar level, while eastern and southern European countries have the same between themselves.

Table 12 Factor 4: Higher education

-1,75/-1,27	-1,26/-0,78	-0,77/0,05	0,06/0,80	0,81/1,96
Luxembourg	Germany	Austria	Latvia	Denmark
Slovakia	Turkey	Hungary	Lithuania	Finland
Malta	Cyprus	Italy	France	Belgium
Czech Republic		Poland	Ireland	Sweden
		Estonia	Spain	United Kingdom
		Slovenia	Greece	
		Portugal	Netherlands	

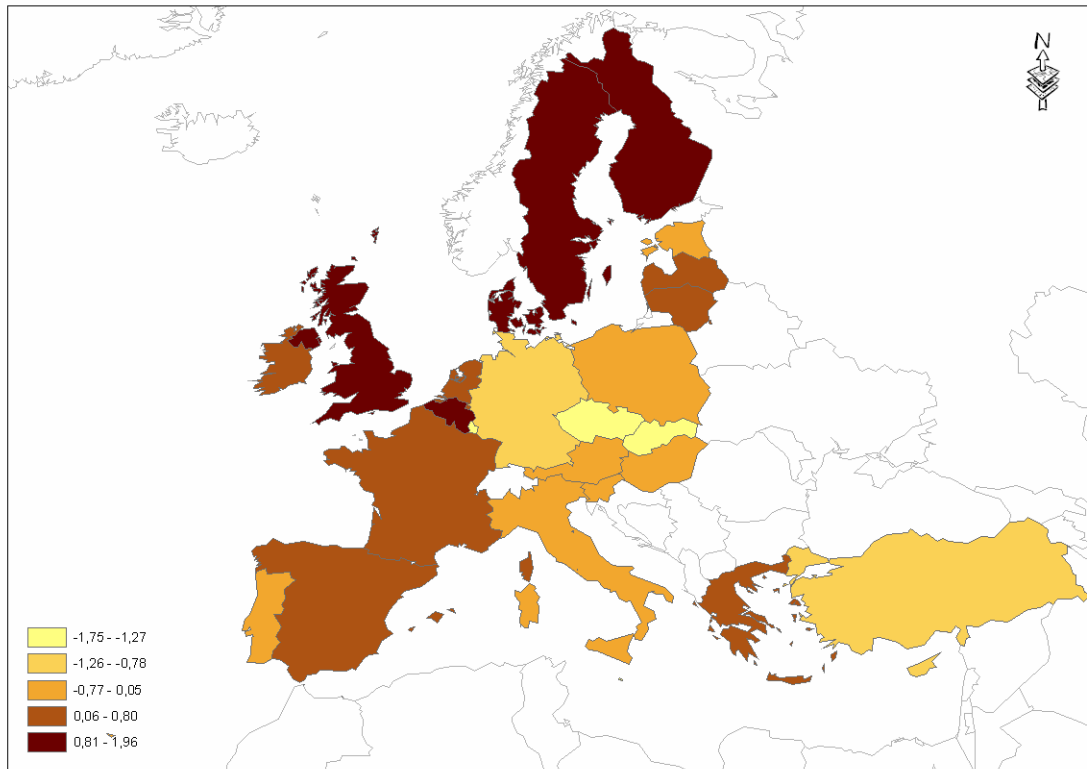


Figure 5 EU-25 and Turkey by higher education level

The last factor is the industrialization level which evaluates three components, viz. the employment share of industry, CO<sub>2</sub> emission and electric power consumption of the country. According to the results, Luxembourg and Finland has the highest scores and none of the other countries can catch them. On the other hand, Slovenia is the least industrialized country. In terms of industrialization level, Turkey is in the middle which means that it has an industry which is not enough developed. As can be seen in Figure 6, northern European countries are close to a high industrialization level; therefore, eastern and southern European countries are close in terms of their low industrialization level. It is a well-known reality that technology and innovation used in northern European country

is highly developed compare to southern European countries of which the economy is more concentrated in the service sector, especially tourism.

Table 13 Factor 5: Industrialization

-1,69/-1,41	-1,40/-0,33	-0,32/0,21	0,22/0,73	0,74/3,56
Slovenia	Spain	Italy	Latvia	Finland
Portugal	Slovakia	Lithuania	Cyprus	Luxembourg
	Czech Republic	Hungary	Sweden	
	Malta	Netherlands	United Kingdom	
	Poland	France	Germany	
	Ireland	Turkey		
	Estonia	Greece		
	Austria	Belgium		
		Denmark		

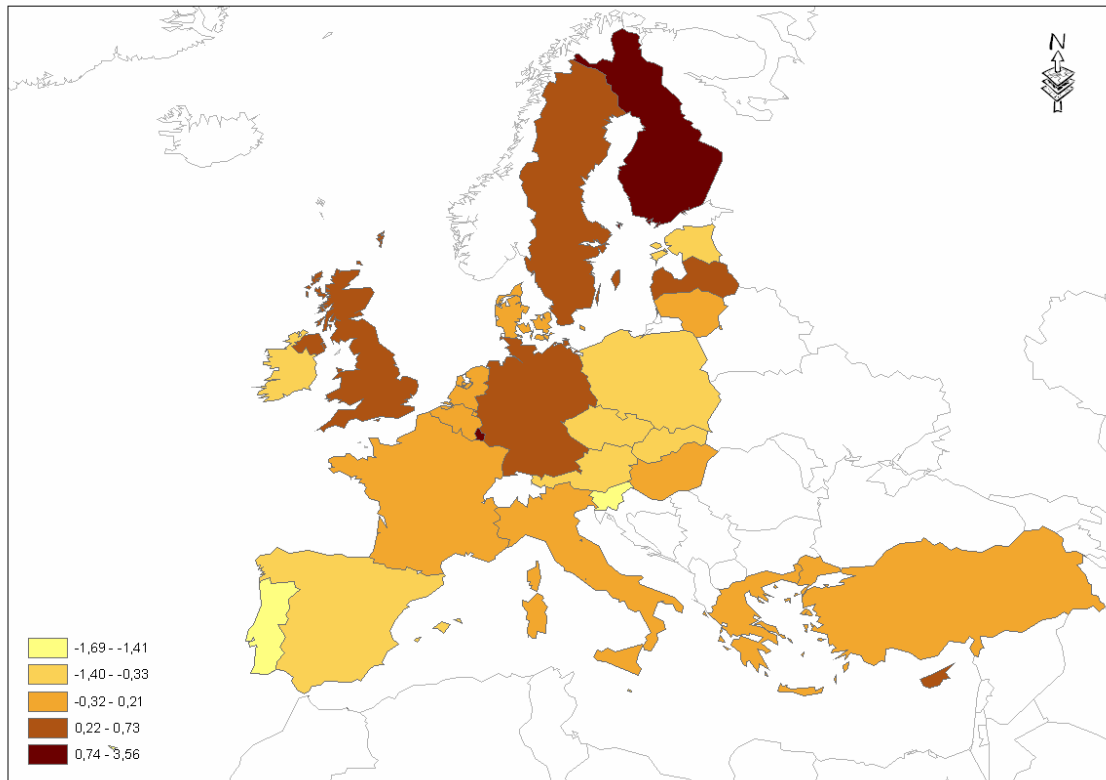


Figure 6 EU-25 and Turkey by industrialization level

On the basis of these results, we aim to find out an overall score, through which a rurality score can be calculated. While calculating this rurality score, underdevelopment and demography scores had a positive effect, and urbanization, higher education and industrialization had a negative effect. It is assumed that rural areas have fewer dwellings and motorways, education facilities are often missing in these areas and also those areas had not yet met with industry.

In Europe, 11 countries have positive rurality levels, although they are rather different from each other (Table 14). According to the results of our study, the general picture is that northern countries and western European countries are not really rural in contrast; southern and eastern European countries are rural (Figure 7). The UK and Germany have the lowest scores, although they give importance to their rurality. On the other hand, Turkey has the highest rurality level so that none of the countries can reach its level (Table 15). Ireland is following Turkey in terms of being rural and has the second

highest rurality score together with Portugal (Table 14). Rural Poland which is seen as similar to Turkey, has also a high score but is far away from Turkey's one. Rurality is obvious in the periphery of Europe (Figure 7).

Table 14 Total Factor: Rurality

-4,22/-2,81	-2,80/-1,45	-1,44/0,22	0,23/2,50	2,51/6,41
United Kingdom	Belgium	Greece	Ireland	Turkey
Germany	Italy	Estonia	Portugal	
	France	Lithuania	Malta	
	Sweden	Netherlands	Slovakia	
	Finland	Spain	Cyprus	
		Hungary	Slovenia	
		Denmark	Czech Republic	
		Latvia	Austria	
		Luxembourg	Poland	

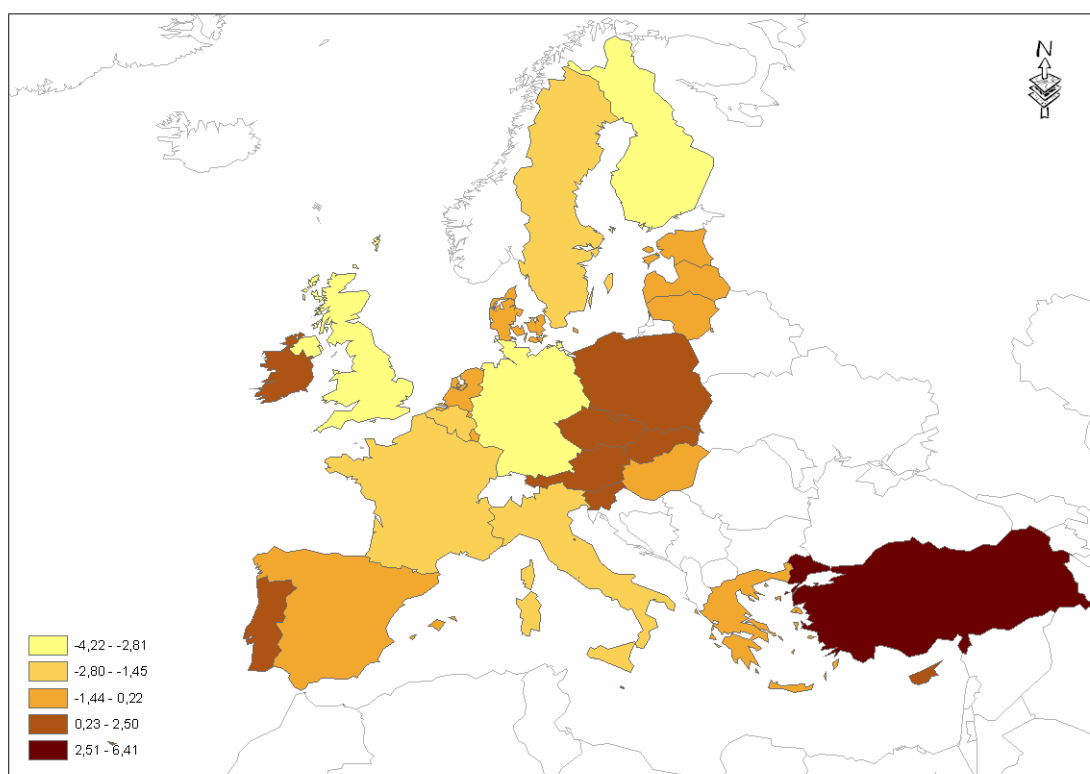


Figure 7 EU-25 and Turkey by rurality level

The wide range of rurality scores can be better seen from a detrended q-q plot which is a tool to assess whether the shape of distribution is normal (Figure 8). In this plot, the obviously different country is Turkey; however, without it, the distribution of member states is not normal either. Although, by the time, the convergence between EU countries is increasing, the divergence within the countries becomes higher. The best example is Greece. In terms of rurality, Greece is getting closer to the average of EU but the high level of income distribution highlights the divergence within the country (Table 15).



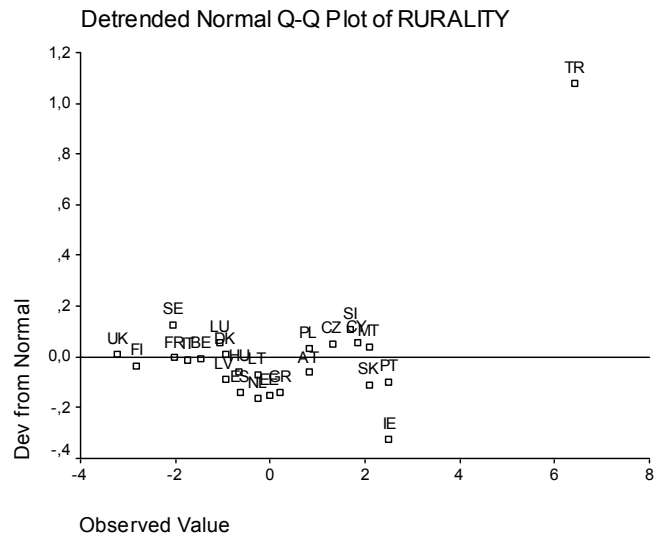


Figure 8 Detrended Normal q-q plot of rurality

As can be seen from the boxplots of the factors, the spread of variables is quite different and has no equilibrium (Figure 9). So, it also shows us that each country even if it has similarities to others can also have differences as they are unique. Their uniqueness and their specialization can also be seen from the box plots, except Turkey, which has almost high scores in each factor; the upper and lower outliers in the member states vary quite considerably.

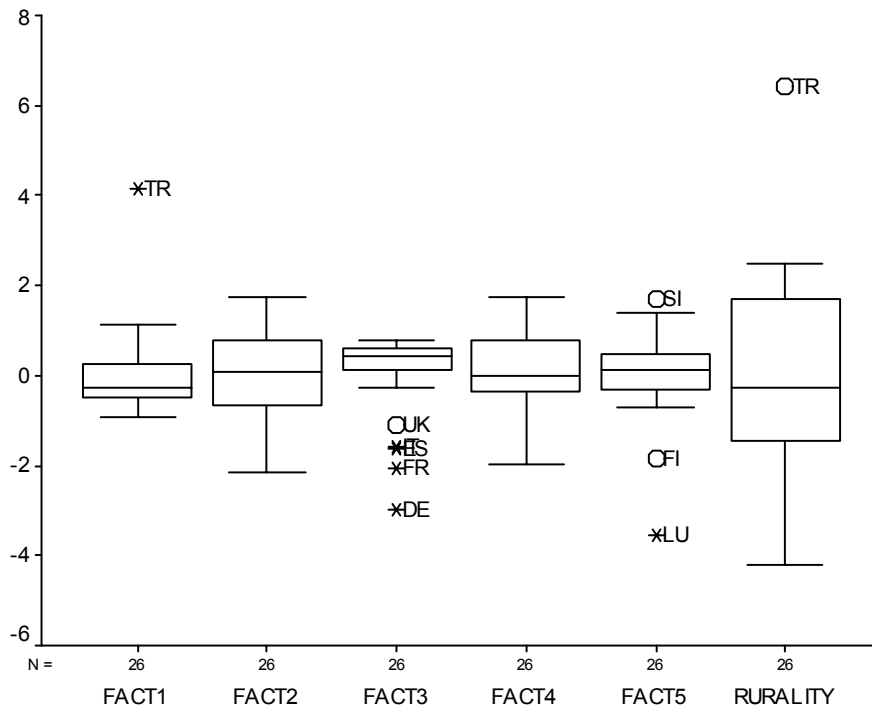


Figure 9 Boxplots

In terms of rurality, Europe has various characteristics and different aspects as stated in its rurality definition. A country which has a high level in one factor cannot be rural by having the lowest score from another factor. It is the consequence of the complexity and difficulty of measuring and defining rurality. For example, according to the results, Latvia has a high underdevelopment level but its rurality is less than zero (Table 15). The opposite can also be true, as Malta having the lowest underdevelopment level has a positive rurality score.

Table 15 Factor scores by country

<b>COUNTRY</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>F4</b>	<b>F5</b>	<b>RURALITY</b>
Turkey	4,16	1,69	0,26	-0,85	0,04	<b>6,41</b>
Ireland	-0,03	1,72	-0,78	0,31	-0,35	<b>2,50</b>
Portugal	-0,21	0,95	-0,41	0,05	-1,41	<b>2,50</b>
Malta	-0,95	0,78	-0,26	-1,39	-0,61	<b>2,09</b>
Slovakia	-0,31	-0,32	-0,44	-1,51	-0,76	<b>2,09</b>
Cyprus	-0,33	1,07	-0,65	-0,78	0,34	<b>1,83</b>
Slovenia	-0,82	-0,02	-0,76	-0,08	-1,69	<b>1,69</b>
Czech Republic	-0,75	-0,38	-0,41	-1,27	-0,76	<b>1,32</b>
Austria	-0,71	0,45	-0,36	-0,40	-0,33	<b>0,82</b>
Poland	0,69	-0,75	-0,14	-0,24	-0,49	<b>0,82</b>
Greece	0,67	-0,41	-0,44	0,36	0,12	<b>0,22</b>
Estonia	0,32	-1,43	-0,59	-0,16	-0,34	<b>-0,02</b>
Lithuania	0,74	-1,58	-0,65	0,24	-0,17	<b>-0,26</b>
Netherlands	-0,42	0,73	-0,14	0,80	-0,08	<b>-0,26</b>
Spain	-0,35	0,87	1,61	0,36	-0,82	<b>-0,62</b>
Hungary	-0,13	-1,41	-0,37	-0,39	-0,13	<b>-0,65</b>
Denmark	-0,19	0,00	-0,48	1,02	0,21	<b>-0,94</b>
Latvia	1,13	-2,15	-0,59	0,21	0,30	<b>-0,94</b>
Luxembourg	-0,77	0,77	-0,75	-1,75	3,56	<b>-1,07</b>
Belgium	-0,37	0,31	-0,26	1,54	0,12	<b>-1,45</b>
Italy	-0,03	-0,66	1,59	-0,31	-0,22	<b>-1,74</b>
France	-0,34	0,67	2,07	0,30	-0,02	<b>-2,01</b>
Sweden	-0,62	0,31	-0,50	1,87	0,36	<b>-2,05</b>
Finland	-0,16	-0,32	-0,63	1,13	1,83	<b>-2,81</b>
United Kingdom	0,27	0,13	1,10	1,96	0,56	<b>-3,21</b>
Germany	-0,50	-1,04	3,00	-1,04	0,73	<b>-4,22</b>

In other words, according to Factor 1, northern European countries have higher scores as agriculture is highly important and developed in those countries. However, the ones which are close to Turkey are Latvia, Lithuania and Poland which are new members and Greece. On the other hand, in terms of Factor 2, the demography level, southern and western countries are similar and have higher scores. In contrast, the new member states, viz. Latvia, Lithuania and Estonia are far from Turkey and have the lowest scores. In this sense, Turkey is close to many EU founder states, viz. France, Netherlands and Luxembourg. Therefore, for the 3<sup>rd</sup> factor, it is difficult to classify member states spatially. However, western and southern European countries including Turkey are the most urbanized ones. As the higher education enrolment, in factor 4, the distribution of states has a high variance, however; similarities between northern and western and southern and eastern European countries can be seen. In this sense, Turkey is close to southern and eastern countries, where higher education enrolment is low. In terms of an industrialization factor there are again similarities between northern and western and southern and eastern European countries. In summary, it can be said that apart from exceptions, northern and western and southern and eastern countries are alike from many perspectives and that Turkey is close to southern countries.

#### 4. Concluding Remarks

The importance of rurality is without any doubt through its connections with agriculture coming from the past. Agriculture is the strat of civilization and economies. So, even today, rurality is the main indicator of socio-economic development of a country. Therefore, changing the definition of rural areas needs other components to differentiate new rural areas from the traditional ones. Each country measures its rurality from a different perspective by their definition of rural. Therefore, the EU is trying to gather its members under a level commonality to evaluate each issue with a general and common understanding. In other words, the heterogeneity in the EU is an obvious and complex reality. The changing definition of rural and reformist views of the EU especially in its policies brought to light how to compare non-member states with the member states of EU.

Based on early rural classifications, our aim was to draw a global picture of rurality from a holistic approach. The previous studies already emphasized the potential of Turkey in regard to agriculture, arable lands etc. However, this study gave statistically an idea about how far Turkey is from EU member states on the basis of selected rural indicators. To look as a whole is difficult, however; pairwise studies with member states at regional levels will be more valuable to make a precise comparison of Turkey's rurality.

The results of our study show that Turkey has the lower and upper values and even becomes sometimes an outlier in regard to each chosen indicators compared to the EU member states. In other words, Turkey having the highest score of rurality is rather far from EU-25. The nearest countries to Turkey are Ireland and Portugal. Therefore, rurality of EU-25 is also different between all of its member states.

The reason of Turkey's high rurality score is the high level of inequality of income distribution and the presence of less favoured areas. The presence of cities like Istanbul and Izmir and touristic places on the Mediterranean costs of Turkey can cover the sides of Turkey which are not yet westernized. In other words, social and public facilities and other socio-economic facilities depending on quality of life are not equally spread around Turkey. This study emphasizes that dynamics of Turkey's rurality depend more on socio-economic facilities that agricultural potential. Therefore, authorities may focus on elimination of divergence which exists in Turkey, while developing relevant policies.

While evaluating this study, three questions come to mind, viz. (1) Is Turkey so different from, EU member states that it is still not a full member?, (2) Can rurality at country level be as effective as at a regional level? (3) Are the used variables reflecting rurality? Actually, the answer of the first question is still discussed in different fields, especially in politics and international studies (Buzan and Diez, 1999; Axt, 2005). The political view is that not the differences of Turkey but the political and strategic standing of the country may affect Turkey's full membership to EU. Through the results of our study, in one sense it seems true, as even member states have a great difference among them.

The answers to the 2<sup>nd</sup> and 3<sup>rd</sup> questions can be given simultaneously and can be either yes or no. To measure rurality at any level will be anyhow subjective and can only create a tool to see the big picture from the components chosen by the researcher. On the other hand, minimizing the scale will be more effective in that relations and correlations will be more obvious. Changing the definition of rural, uniqueness of countries and regions calls for an in-depth survey, for which this study may offer guidelines for a start.

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## APPENDIX

Table A Data used in the analysis

Country	AES	SES	IOID	SE1	ALS	CBR	CDR	PG	LOM	NOD	SE2	SE3	CO2	EPC	IES
<i>Austria</i>	0,05	0,67	3,80	104,72	40,20	9,70	9,10	0,64	1670,00	3888821	100,35	48,71	1,07	8104,42	0,20
<i>Belgium</i>	0,02	0,73	4,00	104,90	45,70	11,10	9,80	0,43	1729,00	4745503	160,15	60,67	1,08	8411,94	0,18
<i>Cyprus</i>	0,05	0,71	4,10	97,61	14,70	11,20	7,00	1,01	268,00	323828	98,42	31,96	1,08	4758,63	0,13
<i>Czech Republic</i>	0,04	0,56	3,40	102,15	46,00	9,60	10,50	0,14	517,76	4344178	96,89	36,88	1,11	6070,08	0,30
<i>Denmark</i>	0,03	0,73	3,40	102,63	61,80	12,00	10,30	0,32	1010,00	2780658	127,31	66,83	1,08	6602,32	0,17
<i>Estonia</i>	0,06	0,59	5,90	100,37	17,00	10,40	13,20	-0,33	98,00	646764	95,91	64,49	1,11	5224,16	0,27
<i>Finland</i>	0,05	0,69	3,50	101,66	6,70	11,00	9,10	0,29	653,00	2624474	127,39	86,90	12,03	16426,83	0,19
<i>France</i>	0,04	0,00	4,20	105,21	53,70	12,70	8,40	0,59	10379,00	29600012	109,99	55,35	1,06	7816,45	0,00
<i>Germany</i>	0,02	0,66	4,40	99,39	47,70	8,60	9,90	-0,03	12037,00	38628607	100,07	50,10	10,03	6896,33	0,24
<i>Greece</i>	0,13	0,65	6,00	99,98	29,50	9,40	9,40	0,22	280,00	5709281	95,58	72,24	1,08	5040,51	0,14
<i>Hungary</i>	0,05	0,62	3,30	98,55	63,00	9,40	13,10	-0,22	542,00	4120551	103,41	51,89	1,05	3637,28	0,25
<i>Ireland</i>	0,06	0,66	5,00	105,57	61,30	15,20	6,90	1,08	176,00	1424565	109,02	55,29	1,10	6098,00	0,16
<i>Italy</i>	0,04	0,65	5,60	100,97	50,70	9,70	9,40	-0,13	6478,00	26681151	99,09	59,02	1,07	5619,84	0,22
<i>Latvia</i>	0,13	0,59	6,00	95,13	25,40	8,80	13,80	-0,54	0,00	1026168	94,70	70,98	1,02	2455,55	0,19
<i>Lithuania</i>	0,16	0,56	4,50	99,71	39,90	8,90	12,00	-0,54	417,00	1423463	102,52	68,99	1,03	3055,09	0,20
<i>Luxembourg</i>	0,02	0,78	3,70	99,18	49,50	12,00	7,90	0,74	115,00	217427	96,01	1,12	21,26	15935,21	0,10
<i>Malta</i>	0,02	0,68	4,60	102,59	30,40	9,70	7,20	0,57	2262,00	161658	93,93	29,92	1,07	4867,17	0,22
<i>Netherlands</i>	0,03	0,73	4,00	107,92	51,50	11,90	8,40	0,35	2289,00	6882317	121,94	58,00	1,09	6747,81	0,13
<i>Poland</i>	0,18	0,53	5,00	99,51	52,20	9,30	9,50	-0,04	405,00	12566780	104,51	59,47	1,07	3329,14	0,23
<i>Portugal</i>	0,12	0,57	7,20	118,48	41,50	10,40	9,70	0,58	1835,00	4152943	109,04	55,53	6,00	4383,18	0,20
<i>Slovakia</i>	0,05	0,56	5,80	100,25	45,60	10,00	9,60	0,05	312,80	1907196	91,73	33,99	1,06	5009,81	0,30
<i>Slovenia</i>	0,10	0,53	3,00	111,32	24,20	9,00	9,30	0,07	477,00	776965	111,80	70,12	1,07	6816,66	0,31
<i>Spain</i>	0,06	0,64	5,10	107,45	49,80	10,60	8,70	1,01	9739,00	21093061	116,52	63,55	1,07	5701,08	0,18
<i>Sweden</i>	0,02	0,75	3,30	109,11	7,70	11,20	10,10	0,40	1591,00	4336297	137,03	81,78	1,05	15402,63	0,17
<i>Turkey</i>	0,28	0,16	10,00	94,69	53,10	19,10	6,20	1,01	1775,00	17631782	85,30	28,01	1,02	1656,00	0,15
<i>United Kingdom</i>	0,01	0,76	5,30	100,82	67,20	12,00	9,70	0,48	3609,00	25957376	170,12	62,76	1,09	6209,24	0,15