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QUALITY OF LIFE IN EUROPE: OBJECTIVE AND SUBJECTIVE INDICATORS

A Spatial Analysis Using Classification Techniques

1. INTRODUCTION

Here we will present the preliminary results of a geographical study[1] among the regions in Europe. It is an exploratory comparative analysis among the regions in Europe that represents the first phase in a larger analysis which aims to study quality of life at the European level.[2]

Our aim here is to show that, in Europe, it is the region (a sub-national administrative unit) that is taking on a much more important significance than that of the nation in the study of quality of life.[3] The well-known contribution by Inglehart and Rabier (1984) on the importance of "nationality" in the determination of individual satisfaction is losing its initial significance. Europe, in fact, is going through a phase of profound transformation that would have been unthinkable only decades ago. In a Europe in which the futures of the various populations will have ever more in common, it is very important to have available as much comparative information as possible.

It is our opinion that quality of life studied at a "macro" level,[4] that is at the country level, must be the result of an ensemble of factors referred both to the objective reality of the area under study and also to the evaluations expressed by individuals living within the area itself. Thus, the basic unit of territorial observation takes on an increasingly important role.

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2. THE DATA

The statistical sources[5] of the study are:

- Eurostat Yearbook, EU (Regions) in which one finds economic, social and demographic information at three levels of territorial groupings (Nuts 0, Nuts 1, Nuts 2, and Nuts 3);
- Eurobarometer Survey (n. 42, 1994).

Problems were encountered in attempting to unite these two separate statistical sources at the same territorial level as there are two European International Agencies that produce these two sources.[6] Our comparison deals with a geographic situation that is a merger of different territorial levels, and our data is at times at a high level of detail, at others intermediate, and, occasionally, is even at the national level. The comparison is made on 115 European observations, but we hope, with the help of appropriate agencies, to pursue further research. We must, in fact, underline the need for improvement in the quality and comparability of European statistics, particularly considering the ever increasing need for comparison in this area. In addition, while Eurobarometer is a questionnaire-based survey that has already been tested and in use for many years, the data published by Eurostat have an aim that is more geared to diffusing information than to promoting scientific research and a comparison between the two presents some substantial difficulties. Some difficulties are connected to the definition of the character surveyed, and others pertain to content, while still others are of a technical nature if we use, as in this case, printed data. Here are some examples. *Definitional problems*: measurement of the infant mortality rate implies a definition of stillbirths, on which an important indicator for the individuation of demographic unease is based, but the definition of "stillbirth" is not the same across the board. This same type of problem applies also to the definition of "unemployed"; *contextual problems*: educational structures differ in the various countries of Europe, be it with respect to length of mandatory schooling or to the structure of the various school levels. Specific rates of scholarization cannot therefore be measured while if we calculate generic rates (educated population as a ratio of total population) the ratio reflects the age structure of the population and loses its comparative significance; *technical problems*: certain

phenomena are measured by means of published indicators[7] with a structure that is so generic as to render territorial differences practically invisible.

2.1. *The Indicators*

2.2. *Objective indicators*

A first evaluation of the quality of life was done considering just the objective component. The selected objective indicators refer to the reality of the considered territorial units and are indicators of the "environment" where people lives. So, it's possible to compare societies using indices that summarize a variety of important objective social indicators. The indicators are chosen on the basis of the social unease for stressing the most difficult and problematic realities inside the countries of the European Union.

A number of objective indicators were selected that were made comparable by a reproportioning in which minimum and maximum values are represented by two extremes corresponding to two actual regions. Since our objective is focused, above all, on the outlining of areas of "unease," the observational unit that assumes a higher value than the indicator is that which presents greater unease in that category.

Thus, we have aggregated reproportioned data and obtained 11 indicators. Some of these correspond to the initial indicator (ex: GDP/pop.; suicide rate); others are the result of an aggregation (death/pop. for environmental reasons) so as to obtain a synthetic indicator. The lack of information in some cases prevented further probing. Indicators of unease:

- Demographic unease (demographic aging – low birth rate – migratory discount) [IDEM]
- Economic unease (complement of per capita GDP.) [ECO]
- Employment unease (unemployment of youth, adults, women) [OCC]
- Gender Disequilibrium (among the working and unemployed populations) [SEX]
- Unease in the healthcare system (beds/pop.; doctors/pop.) [SAN]
- Percentage growth of agricultural population [AGR]

- Low percentage of population in industry [IND]
- Low percentage of population in the service sector [TER]
- Lack of roads infrastructure (highways/sqkm – cars/pop.) [AUTO]
- Social unease (rates of suicides) [SUI]
- Deaths for environmental causes (cardiovascular deaths, tumors) [AMB]

2.3. *Subjective indicators*

The subjective evaluations of the persons interviewed are reported for the same territorial units used to calculate the objective indicators.

The following 6 subjective indicators were selected and are expressed across 18 types of responses (ex: life satisfaction is composed of 4 types of responses: Very satisfied, Fairly satisfied, not very satisfied, not at all satisfied):

- Life satisfaction [MSOD-ASOD-AINSOD-MINSOD]
- Definition of oneself as religious or not [REL-NOREL]
- The economic optimist/pessimist index (ECO) is constructed on the basis of the assessment of the changes in the Nuts's economic situation over the past 12 months and over the next 12 months. The index represents the individual evaluation of the general economic situation of the country [ECOPES-ECONEU-ECOOTT]
- The financial situation optimist/pessimist index (FIN) is constructed on the basis of the assessment of the changes in the financial situation of an individual household over the past 12 months and over the next 12 months. The index represents the individual evaluation of the financial situation of the family [FINPES-FINNEU-FINOTT]
- Social class to which the subject evaluated belongs [COPERAI-CMEINF-CMESUP]
- European Social Grade (7-point scale) based on the recommendation of the European Society for Opinion and Marketing Research (ESOMAR) to harmonize the measurement of social grade across borders and elaborated upon by Eurobarometer [MAXESG-NEUESG-MINESG]

We consider these indicators for the two following levels of the analysis. At the first step we consider all the listed subjective indicators. These indicators express jointly the individual evaluation of quality of live, the individual evaluation of the economic situation of the country, the financial situation of the family and the evaluation the individual social class.

At a more detailed level, using only the first four indicators listed, we express the quality of life in terms of social well-being (SWB). The expressions noted show how the individuals evaluate theirs lives, in terms of global satisfaction, but also in terms of waits and expectations of theirs future. Individualism is a cultural variable. Referring the SWB to the territorial units which are very different for history, tradition, religion, language, habits, etc. we try to identify the contribution of the affective reaction (moods and emotions) component to the quality of life over the territory.

3. RESULTS

Cluster analysis is a very interesting kind of explorative analysis in geographic studies. In our case, it allowed for the evaluation of various levels of aggregations of the European regions. Depending on the level at which a similarity occurred a number of different clusters were formed. Obviously, the number of clusters is higher when there is greater similarity. In this case, small very specific clusters formed in which only very similar regions were grouped together. As similarity progressively decreased also the number of clusters decreased and more numerous groups were formed with less specific characteristics in common. Ward's method was used.[8]

3.1. *Objective Quality of Life*

We have considered the first level of aggregation to be that of 82.43% similarity corresponding to the formation of 75 clusters (of which 47 are unitary). This point signals the beginning of a fusion among regions of different nations. We are, therefore, at a high level of detail that we consider only in order to put together this particular aspect of the analysis.

At a level of aggregation with similarity so high many regions remain isolated and constitute clusters with just one observation.

Clearly the first aggregations are formed by a limited number of observations. It is important to note that the first aggregations form within the nations themselves and that they are made up of areas that are already clearly delineated, oftentimes, by a joining of adjacent areas. These first clusters show the strongest ties that each nation has internally and in many cases one senses historical and cultural ties that characterize many areas in Europe. The indicators used are objective and thus the aggregations represent areas that are homogenous from an economic, social and demographic point of view.

At a slightly lower level of similarity (80%) two clusters have formed between regions in different nations: the first region that joins another in a different country is Antwerp (Belgium) with Hessen (Germany); the next is the North-West region of the UK which joins with Lisbon (Portugal).

It should be noted that, in these first aggregations, all the capitals (or capital regions), with the exception of Lisbon, remain isolated and do not present any similarities either among themselves or with other regions.

Table I (see appendix) shows the scheme of evolution of the cluster formations over successive stages of aggregation that we indicate with the number of the clusters that form (4-7-16-20).

Increasing the size of the clusters, the differences between the value of intermediate values declines because different realities merge. However, even an extreme that would divide Europe into two, three or four parts, can be interesting. For example, dividing Europe into only four typologies leads to the exact reconstitution of the national territory in the cases of France, the Netherlands and the UK. Other countries show either similarities with bordering states (France-Belgium) or distinct internal divisions (Italy) that lead to the formation of groupings with other countries. Italy is noticeably divided into two typologies, one which aligns with Germany, the other with Spain, with the exception of Rome (region: Lazio) that joins with the region of Madrid.

Our objective, however, is not that of recreating nations. On the contrary, it is of singling out small areas within countries that display homogeneity with areas in other countries. Thus, it is more inter-

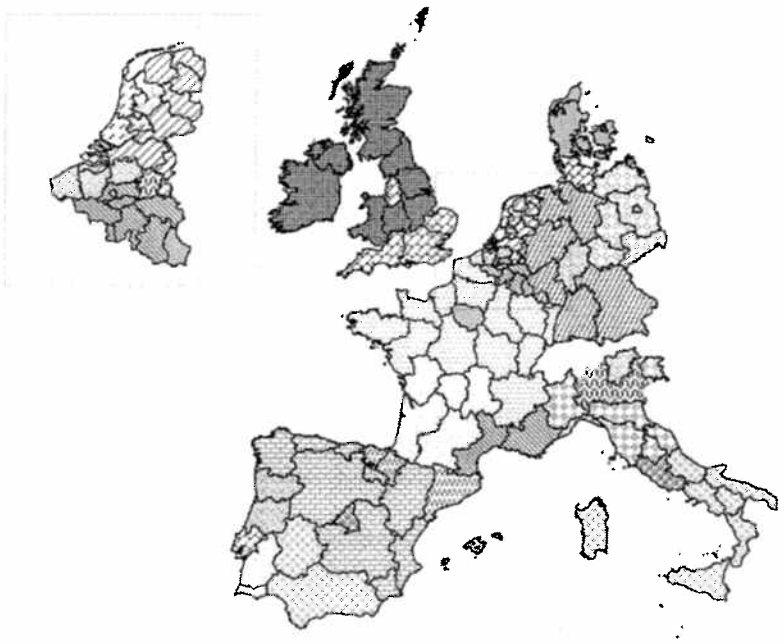

Figure 1. Objective indicators: cutting the clustering tree at 20.

esting to analyze the typologies at a higher level of similarity with the formation of a greater number of clusters.

Table II (see appendix) contains average values of the indicators at various levels of cluster size (4-7-16-20) selected by using a tree clustering analysis.

In order to compare the transformations that take place at the successive levels of cluster formation, we have placed the values obtained on the map of Europe.

In this presentation we proceed, however, to the examination of only the typologies that it form at the level of 20 European areas (Figure 1) and we compare them with the final situation represented by the four larger clusters shown in Figure 2.

The maps should be interpreted together with the outline in Table I (see appendix) and the average values in Table II (see appendix).

Figure 2 points out well defined areas that do not correspond in any way to national boundaries; in fact, they outline areas that are common to two or more countries.

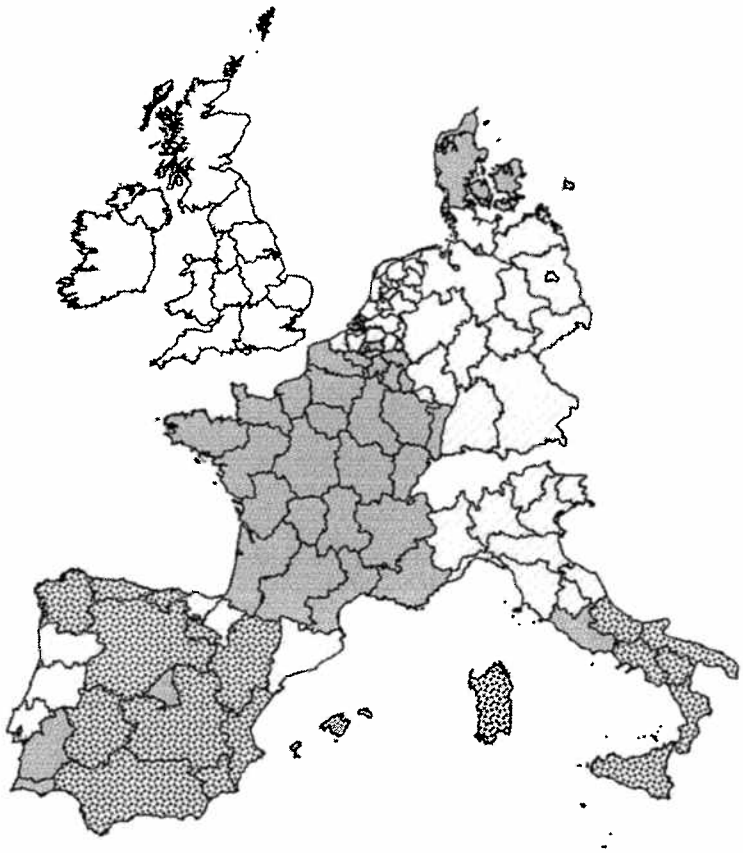

Figure 2. Objective indicators: cutting the clustering tree at 4.

The first larger cluster is comprised of 37 observations that exactly recreate the territorial boundaries of France, show a formation of some adjacent regions in Belgium (including Brussels) and two European capitals (Lazio, which includes Rome, and Madrid). This larger cluster has an average level of aging, a low level of industrial development, a good environmental level, but a high level of suicide.

At a more detailed level of observation, we see that one cluster $(1.20.10)^9$ unites two capitals in southern Europe; another (1.20.1) unites Brussels, Paris, two big cities such as Hamburg and Bremen and the nations of Denmark and Luxembourg. These two clusters have an analogous process of demographic aging and of service

sector activity, but the first cluster shows greater economic, employment, and health unease and a gender disequilibrium; the second has greater social and environmental unease. A great portion of France remains compact and very stable (1.20.12). Here economic unease is stronger than employment unease (there is a high percentage of agricultural population); in addition, there is a high level of social unease that, together with cluster (1.20.13), joins other regions in France and reaches the highest level in all Europe. Two regions in Southern France group instead with Belgian regions (1.20.4). The second larger cluster, comprised of 32 observations, has a high level of demographic unease with aging process and low birth rate each as strong factors. Economic unease is intermediate, industrial activity is high and health and environmental unease is medium-high. Various Italian regions are included in this group, among which the north-central region which forms a compact and stable group (2.20.15) characterized by the strongest aging process in all of Europe.

One cluster (2.20.7) exactly unifies all the German regions of the eastern area where economic and environmental unease are very high. In fact, only the central-north area of Portugal (2.20.19) has a higher level of economic unease, with the difference that the Portuguese area has the highest percentage of agricultural population in Europe and, thus, does not have a high level of unemployment.

The third larger cluster, comprised of 27 observations, extends across the whole of northern Europe to which is joined also Lisbon. This cluster has a higher level of demographic development, with a minimum employment unease, a low level of gender disequilibrium and a better healthcare situation. At the detailed level, Lisbon initially joins with Berlin and some English regions among which is also the area of London (3.20.5), creating a cluster with a minimum of gender disequilibrium and a minimum of employment unease. There is a cluster comprised of only Dutch regions (3.20.16) that is demographically young, with a stronger level of economic than employment unease, a good environmental situation and an excellent healthcare situation.

The fourth larger cluster, made up of 19 observations, remains separated from the rest of Europe over an extended period of time

and only at a very low level of similarity does it join to the preceding larger clusters. It is a cluster with a fairly high level of aging and with a strong unease extended across all fields. However, with respect to the others, it has a better environmental situation and a situation of social unease that is worse.

Cluster 4.20.8 unites all the regions of southern Italy to two regions in the south of Spain; cluster 4.20.9 joins only Spanish regions. A comparison of the two clusters indicates that the first has a lower level of demographic aging, a greater level of gender and healthcare system disequilibrium, a lower level of industrialization but also greater unease in the service sector and a higher suicide rate. The two clusters have a high percentage of agricultural population. It should also be pointed out that the first nuclei of similarity to come from the cut of the tree at the 82.43% similarity level already joined together two initial groups of Spanish regions (Aragon-La Rioja and Cantabria-Castilla) and two Italian regions (Campania-Sicilia and Puglia-Basilicata-Sardegna) which represent the first nuclei of the two groupings.

3.2. *Subjective Quality of Life*

If we apply once again the same procedure of cluster analysis using only subjective indicators, taken from Eurobarometer, the situation changes greatly. The first level of aggregation that signals the beginning of a fusion among regions of different nations is at 88.24% level of similarity. That is an aggregation which occurs earlier than with objective data.

From a first glance taken from the examination of the redivision of Europe into 4 larger clusters, the countries that resulted as being more delineated by the objective data (France, Germany, and the UK[10]), now show a greater internal heterogeneity. On the contrary, we see a more defined reality among the Mediterranean countries. In the case of Spain and Portugal, we observe a greater internal homogeneity and a higher level of similarity between the two countries. Italy becomes almost entirely aggregated leaving two regions isolated (Tables III and IV, see appendix).

Let us compare the redivision set out in 20 clusters in which greater heterogeneity becomes evident, with that of the more aggregated level formed by the 4 larger clusters.

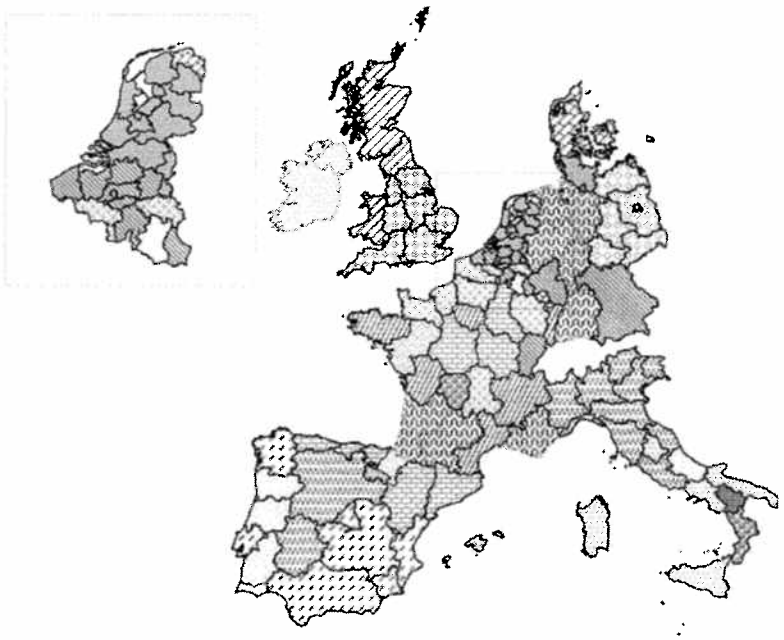

Figure 3. Subjective indicators: cutting the clustering tree at 20.

With 20 clusters we can see common aspects among individual regions or among groupings of regions which are often adjacent to one another though they often belong to different countries (Figure 3).

The highest life satisfaction is seen in Denmark which joins to a Dutch region (Groningen) and a German one (Saarland) (cluster 1.20.5); followed by Ireland and Northern Ireland which, according to this profile, join together (cluster 2.20.17). The greatest dissatisfaction is found in Portugal (cluster 4.20.20) followed by certain regions in the north-center of France (cluster 3.20.8) and Spain (cluster 4.20.18).

Even zones in the south of Italy also have a widespread level of dissatisfaction, though they show a less categorical response, as there is a higher percentage value found for the response "fairly dissatisfied" (cluster 2.20.12).

The most pessimistic view of a population towards its own country's economic situation is found in certain regions of the UK (cluster 3.20.16); the most optimistic, apart from two small moun-

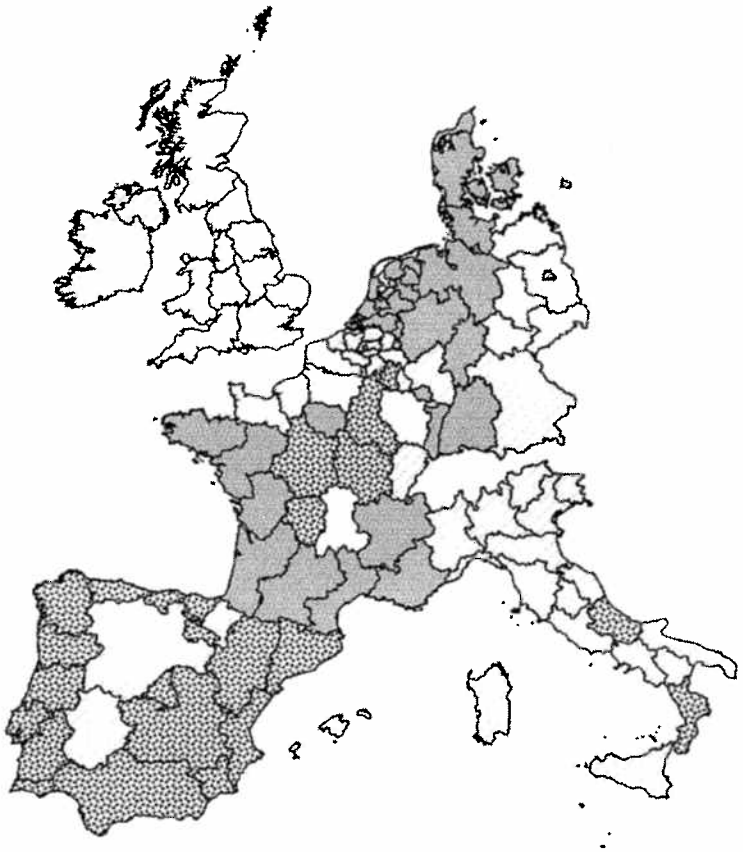

Figure 4. Subjective indicators: cutting the clustering tree at 4.

tain regions, one in Italy (Basilicata), the other in Spain (Navarra), is found in Ireland and Northern Ireland (cluster 2.20.17), in Denmark joined to the Dutch region of Groningen and the German region of the Saarland (cluster 1.20.5). Oddly, not far behind there is also the aggregate of southern Italy (cluster 4.20.12). Even the evaluation of the financial situation of one's family, thus narrowing the scope of the indicator to the direct personal financial situation, reconfirms pessimism for numerous regions in the UK, followed by an area that is economically developed such as Hamburg, Bremen and the Pays de la Loire. It should be added that the highest European Social Grade is reached by these last three regions and by all the Dutch regions that join in one cluster, with the exception of Zeeland

(1.20.1). The lowest level of this indicator is found in Portugal and in some mountain regions of various countries: Calabria (IT); Limousin (FR), and La Rioja (ES).

The evolution of the clusters examined in the successive phases, that is progressively considering a smaller number of clusters, reinforces the presence of typologies internal to the nations that are repeated also in other nations.

Comparing these results with the groups formed with the preceding objective data, reconfirms that the objective situation is much more defined and traceable to national boundaries than the subjective situation. With the objective indicators cutting the clustering tree at 16, some national uniformities emerge that were not seen with subjective indicators. Nations are better defined with objective data at higher levels of aggregation (8 and 4 clusters). Subjective data reconfirms subnational area divisions.

The most glaring example is France: a real puzzle at the subjective level, and a compact unit at the objective level.

Portugal represents an exception as with objective data it is fragmented, something that with subjective data is not seen at all. In part this also occurs for Italy which, with subjective data, it is more uniform though separate regions can be seen.

3.3. *Social Well-Being*

If we represent the quality of life just on the basis of the individual evaluation expressed as the life satisfaction index plus the optimist/pessimist of the future life indices we obtain a possible evaluation of the SWB. Adding the evaluation component due to the religious sense that in other studies on the Italian and European regions[11] showed his importance as decisive element of life satisfaction. The SWB map shows a extreme fragmentation that is free from the national borders and much more marked than obtained before. The national borders are fuzzy with the exception of the former Germany and partly of the United Kindom which are the only areas showing a solid territorial identity (Figure 5).

Many nations can be ideally divided in small areas which are the result of the process of aggregation of regions characterized by similar individual cultural level. In our country, Italy, some clusters of regions reflect the historical and cultural factors of great interest

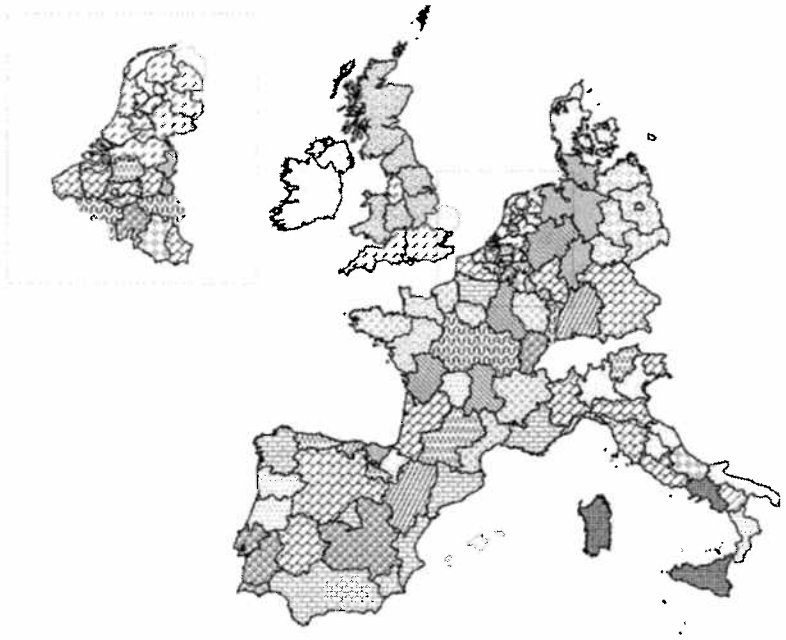

Figure 5. Subjective well-being indicators: cutting the clustering tree at 20.

for many fields of research. According to the previous subjective map which included economic and professional indicators, the differences are more evident.

The passage from the details of 20 clusters to the partition in 4 cluster unify areas defined through the nation (Table V, see appendix). Their definition is less clear than the definition of those obtained through objective or subjective (including social classes) indicators.

It is interesting to observe clustering according to the same criteria in Italy and in Spain. It seems that there are overnational criteria, these are capable to overcome the national borders and individuate similar patterns in different countries. France has now cultural relations with Italy and Spain, even if the geographical distribution of the subjective indicators shows clear borders between France and each of the two near countries.

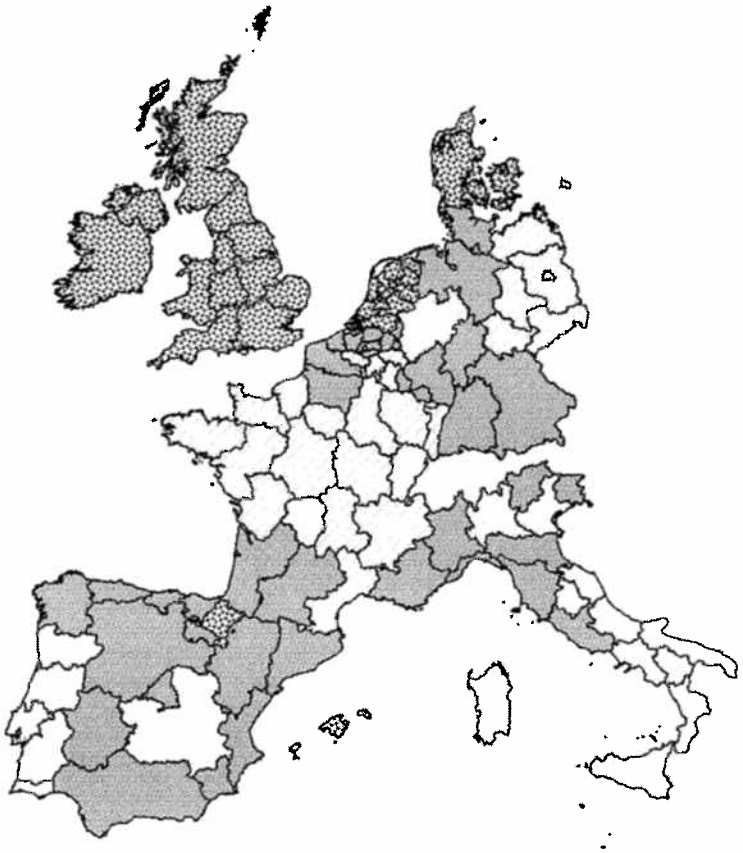

Figure 6. Subjective well-being indicators: cutting the clustering tree at 4.

3.4. *Quality of Life with Objective-Subjective Indicators*

The results obtained can lead to some difficulty in their interpretation, but at the same time, they cause us to reflect on the importance of the individual evaluative components.

Objective indicators reflect the socio-economic situation, the objective well-being of a country. For example, the main economic indicators, even at a disaggregated level within the country, reflect the overall national political and economic situation.

Subjective indicators express sensations, expectations, hopes and disappointments of a population, aspects that are often connected to the local situation. The subjective indicators are affected by cultural

and historical factors, tradition, habit and, in some cases, "resignation" that lead to a different perception of seemingly entrenched situations. The European reality differentiates itself more under the subjective profile than it does under the objective one.

To intervene on the subjective aspect is much more difficult though it is important to comprehend the subjective reality. It is to this end than we emphasize the usefulness of Eurobarometer information.

The definition of "quality of life" we have set forth in the introduction, alongside the results we have obtained with the large differences between subjective and objective indicators, leads us to consider the two types of indicators together. Social Indicators and Subjective well-being measures are complementary.

In this presentation, the analysis of the formation and transformation of the various groups is by necessity synthetic, but our research is progressing with more recent data and greater territorial detail.

Let us consider the formation of groups at successive levels of similarity , cutting the clustering tree at the different levels (20-16-8-4) (Tables IV and VI, see appendix). As for the two preceding applications we begin with the 4 cluster case and look at from what "kernels" the more detailed groupings are derived (Figure 7).

Larger cluster n.1: The is the first among the 4 clusters to form and thus is the most homogeneous. It is formed by 24 observations which include Germany (former West Germany), all of central-north Italy (excluding Abruzzi and Molise), some Belgian regions, Luxemburg and Denmark. As far as Italy and Germany are concerned, initially the regions of the respective countries group together, though Italy remains separate until cluster n.8.

Larger cluster n.2: formed by 32 observations, includes all of the Netherlands, the UK, and Ireland, some important urban areas in Germany (Berlin, Bremen, and Hamburg) and in France (l'Ile de France, Provence, Alpes et Cote d'Azur, Languedoc-Roussillon) and Brussels. It is a cluster that is centered in northern Europe with the exception of the French Mediterranean regions. Among the 6 different realities at the outset only that relative to a part of the UK (North, Yorkshire, East and West Midlands, Wales and Scotland) remain separate for an extended period.

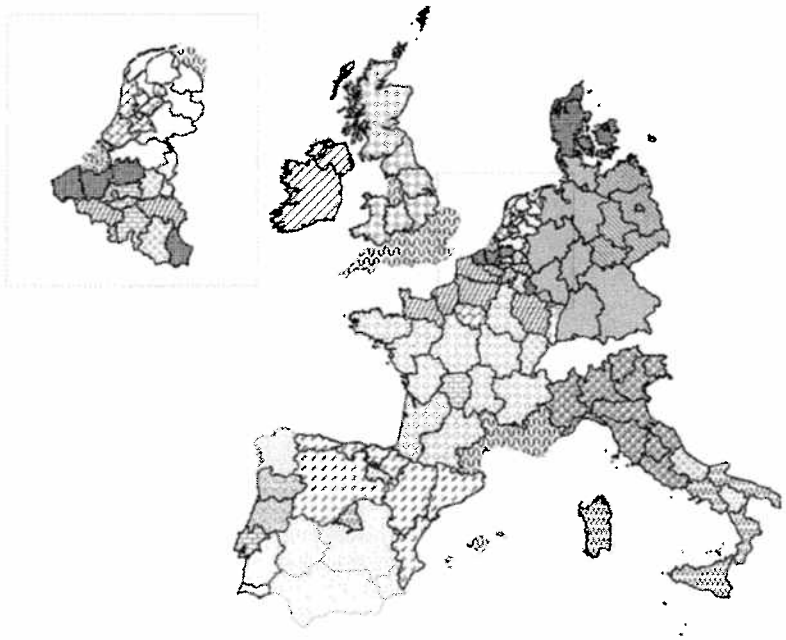

Figure 7. Objective and subjective indicators: cutting the clustering tree at 20.

Larger cluster n.3: formed by 23 observations, this cluster includes Germany (former East Germany), most of the French regions and the two Belgian regions of Liegi and Hainaut. This cluster originates as three clusters from which that which reunited the German regions remains separate for an extended period (3.20.4).

Larger cluster n.4: formed by 36 observations including all of Spain, Portugal, southern Italy and some French and Belgian regions, and the Dutch region of Limburg. The greatest uniformity is seen in the Iberian Peninsula where Spain and Portugal form a single vast area that unites to southern Italy and the two French regions (Franche-Compte and Limousin).

Larger cluster 4 remains separate from the other three for a long time and only at a very low level of similarity does it join with the three other, already formed, aggregates.

The origin of this cluster emerges from 8 highly characteristic initial kernel. Contrary to what may appear to be the case, they are not only groupings within single countries. Table VI

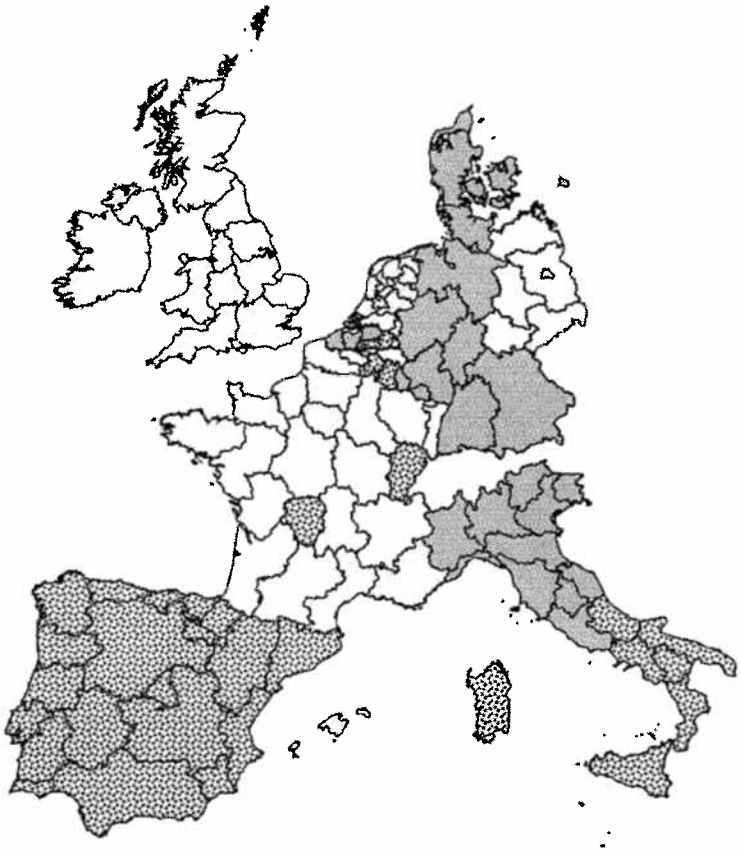

Figure 8. Objective and subjective indicators: cutting the clustering tree at 4.

shows very heterogeneous groupings which form large compact areas only when the distances are increased. For example, one can observe a cluster formed by Limousin, Brabant, Namur, and Lisbon (4.20.9), another formed by many regions in southern Italy together with Madrid (4.20.11); two small mountain regions join together: Basilicata (IT) and La Rioja (ES). The other clusters are within the countries of Portugal and Spain.

It is worth noting that cluster n.4 is not very homogenous. In fact, the two clusters: Spain and southern Italy and Portugal, the French and Belgian regions mentioned, aside from a single Italian region, remain markedly distinct for an extensive period of time.

4. CONCLUSIONS

The results obtained show the different territorial aggregations obtained by the separate use of objective indicators, subjective indicators and the two types of indicator together. From the results we deduce that the use of "nation" (France, Germany, The Netherlands, Italy, etc.) as a standard unit of observation in Europe is losing its significance and can no longer be considered an exhaustive unit of measurement. In order to study quality of life, the unit of "region" (a subnational administrative unit) is taking on a much more important and complete significance than that of "nation."

Looking at the internal situation within each nation, we can see that there are zones characterized by their economic, social, and cultural uniformity, joined together by similar behavior and similar life satisfaction, which do not correspond to national borders but which, instead, are more similar to areas outside their national boundaries and, indeed, to quite distant areas. Our analysis was carried out with three successive lists of indicators: objective data, subjective data, and both objective and subjective data together. The whole of the variables that act on a collective level and those that act on an individual level determined by differentiated interests, internal to the nations, that would be lost with just a single nation-level observation.

As far as availability of disaggregated data, we have noted the difficulty that is encountered in the outlining of comparable territorial units using simultaneously objective and subjective statistical sources. In this phase of research, we feel it premature to set out "typologies" of quality of life in the European areas formed by a grouping together of the territorial unit "region." We have circumscribed our results in an introductory framework.

This is, however, an ideal time to underline the need and the opportunity to orient studies on the quality of life in Europe towards a more analytical territorial level, because the results we have obtained indicate that it is often small areas internal to countries that demonstrate greater similarity with areas in other nations.

APPENDIX

TABLE I

Objective indicators: cutting the clustering tree at the different levels (20-16- 7-4)

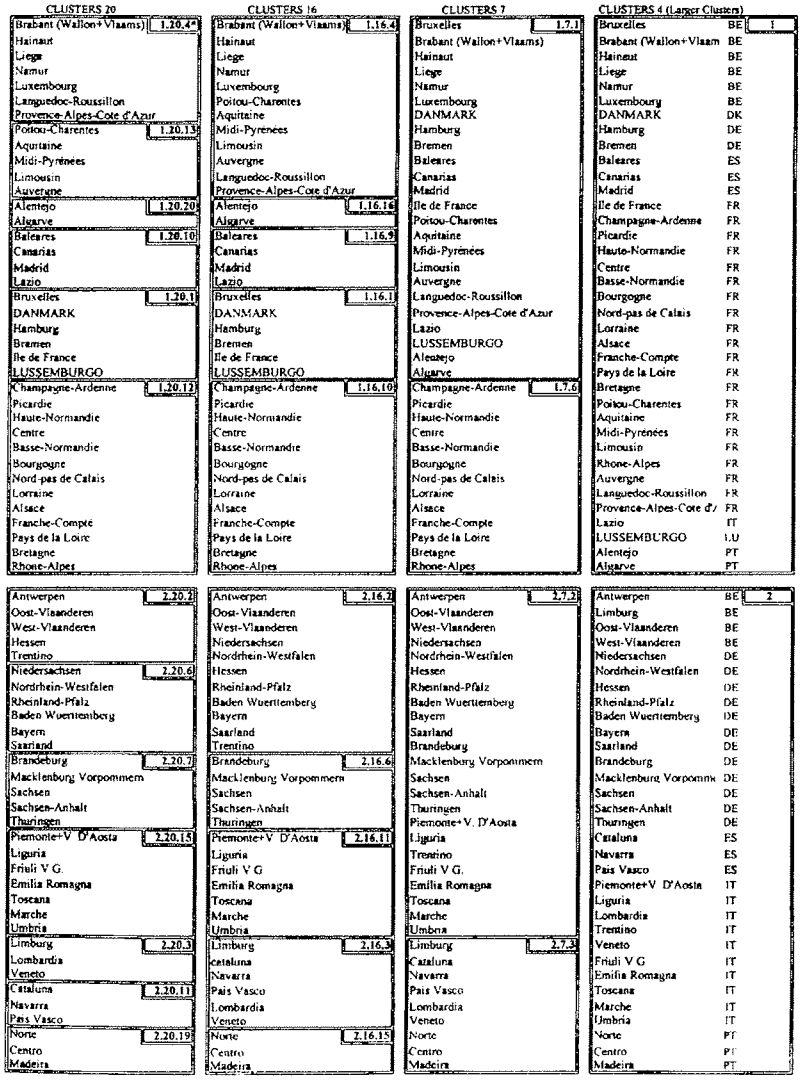

TABLE I

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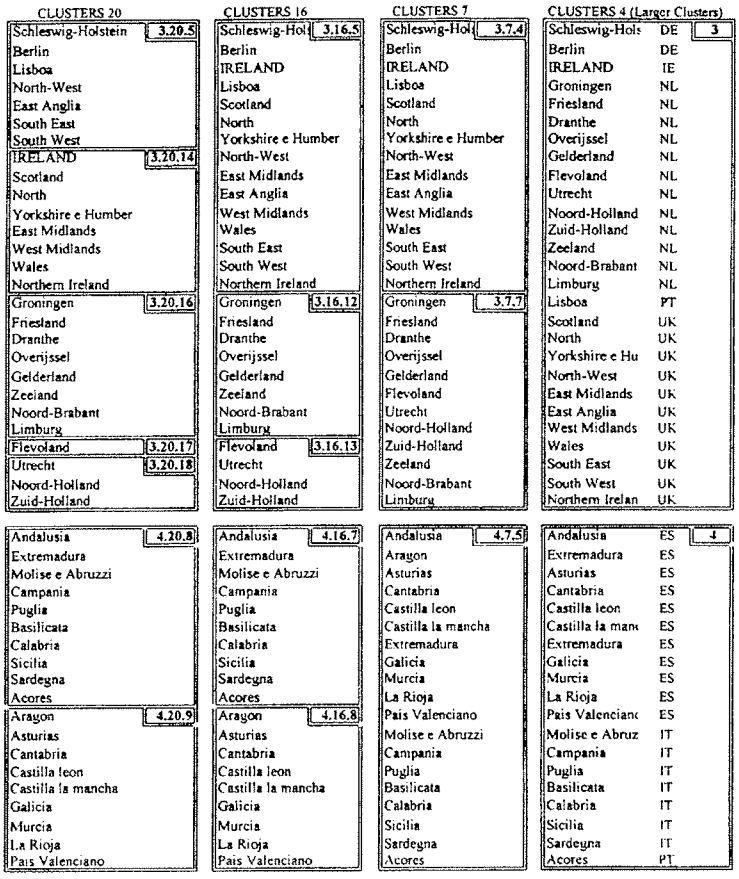


CLUSTERS 20		CLUSTERS 16		CLUSTERS 7		CLUSTERS 4 (Larger Clusters)	
Schleswig-Holstein	3.20.5	Schleswig-Hol	3.16.5	Schleswig-Hol	3.7.4	Schleswig-Hols	DE 3
Berlin		Berlin		Berlin		Berlin	DE
Lisboa		IRELAND		IRELAND		IRELAND	IE
North-West		Lisboa		Lisboa		Groningen	NL
East Anglia		Scotland		Scotland		Friesland	NL
South East		North		North		Dranthe	NL
South West		Yorkshire e Humber		Yorkshire e Humber		Overijssel	NL
IRELAND	3.20.14	North-West		North-West		Gelderland	NL
Scotland		East Midlands		East Midlands		Flevoland	NL
North		East Anglia		East Anglia		Utrecht	NL
Yorkshire e Humber		West Midlands		West Midlands		Noord-Holland	NL
East Midlands		Wales		Wales		Zuid-Holland	NL
West Midlands		South East		South East		Zeeland	NL
Wales		South West		South West		Noord-Brabant	NL
Northern Ireland		Northern Ireland		Northern Ireland		Limburg	NL
Groningen	3.20.16	Groningen	3.16.12	Groningen	3.7.7	Lisboa	PT
Friesland		Friesland		Friesland		Scotland	UK
Dranthe		Dranthe		Dranthe		North	UK
Overijssel		Overijssel		Overijssel		Yorkshire e Hu	UK
Gelderland		Gelderland		Gelderland		North-West	UK
Zeeland		Zeeland		Flevoland		East Midlands	UK
Noord-Brabant		Noord-Brabant		Utrecht		East Anglia	UK
Limburg		Limburg		Noord-Holland		West Midlands	UK
Flevoland	3.20.17	Flevoland	3.16.13	Zuid-Holland		Wales	UK
Utrecht	3.20.18	Utrecht		Zeeland		South East	UK
Noord-Holland		Noord-Holland		Noord-Brabant		South West	UK
Zuid-Holland		Zuid-Holland		Limburg		Northern Irelan	UK
Andalusia	4.20.8	Andalusia	4.16.7	Andalusia	4.7.5	Andalusia	ES 4
Extremadura		Extremadura		Aragon		Extremadura	ES
Molise e Abruzzi		Molise e Abruzzi		Asturias		Asturias	ES
Campania		Campania		Cantabria		Cantabria	ES
Puglia		Puglia		Castilla leon		Castilla leon	ES
Basilicata		Basilicata		Castilla la mancha		Castilla la manc	ES
Calabria		Calabria		Extremadura		Extremadura	ES
Sicilia		Sicilia		Galicia		Galicia	ES
Sardegna		Sardegna		Murcia		Murcia	ES
Acores		Acores		La Rioja		La Rioja	ES
Aragon	4.20.9	Aragon	4.16.8	Pais Valenciano		Pais Valencianc	ES
Asturias		Asturias		Molise e Abruzzi		Molise e Abruz	IT
Cantabria		Cantabria		Campania		Campania	IT
Castilla leon		Castilla leon		Puglia		Puglia	IT
Castilla la mancha		Castilla la mancha		Basilicata		Basilicata	IT
Galicia		Galicia		Calabria		Calabria	IT
Murcia		Murcia		Sicilia		Sicilia	IT
La Rioja		La Rioja		Sardegna		Sardegna	IT
Pais Valenciano		Pais Valenciano		Acores		Acores	PT

The first number is referred to the larger cluster, the second is referred to the cut of the clustering tree, the third is referred to the cluster number.

TABLE II

Objective indicators: cluster related averages at the different aggregation levels

	4 Clusters			
Indicators	1	2	3	4
DEM	60.39	72.81	54.12	67.91
ECO	61.63	64.74	67.04	85.60
OCC	33.06	22.95	15.39	65.40
SEX	20.77	34.18	15.75	60.52
SAN	59.56	68.80	31.93	75.30
AGR	19.27	18.62	12.66	50.20
IND	62.79	28.52	59.85	58.37
TER	39.86	64.16	37.05	66.35
AUTO	58.41	48.56	65.71	78.04
SUI	63.45	36.63	27.67	22.87
AMB	46.26	61.62	51.97	40.77

	7 Clusters						
Indicators	1	2	3	4	5	6	7
DEM	63.64	74.98	67.28	57.35	67.91	54.39	50.07
ECO	58.92	61.60	72.75	69.41	85.60	66.63	64.08
OCC	33.65	20.71	28.65	17.42	65.40	31.97	12.85
SEX	23.49	32.09	39.52	7.91	60.52	15.75	25.56
SAN	59.16	67.32	72.60	47.96	75.30	60.30	11.89
AGR	18.01	15.14	27.50	10.79	50.20	21.59	15.01
IND	72.70	32.53	18.25	52.27	58.37	44.50	69.33
TER	31.74	58.64	78.28	41.09	66.35	54.85	32.00
AUTO	54.89	42.42	64.27	73.47	78.04	64.91	56.00
SUI	56.56	43.14	19.98	27.83	22.87	76.18	27.48
AMB	51.61	71.07	37.48	64.57	40.77	36.37	36.23

TABLE II

Continued

	16 Clusters															
Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DEM	61.65	63.08	72.77	63.50	57.35	79.73	58.41	78.47	61.28	54.39	90.29	54.46	0.00	55.06	56.29	75.23
ECO	18.81	51.60	61.49	71.17	69.41	91.76	87.64	83.33	67.06	66.63	55.79	65.29	80.41	55.41	95.27	89.53
OCC	17.75	12.53	40.62	35.78	17.42	31.68	65.07	65.77	56.83	31.97	25.75	14.63	7.51	9.89	4.70	22.23
SEX	14.49	27.61	50.07	20.47	7.91	20.02	67.74	52.51	44.72	15.75	47.76	29.31	18.07	18.03	18.42	26.16
SAN	45.65	62.54	67.84	56.74	47.96	65.67	80.51	69.52	66.72	60.30	76.01	9.59	43.20	7.61	82.13	99.06
AGR	5.37	11.57	13.73	22.13	10.79	14.75	50.00	50.42	13.62	21.59	21.03	15.91	25.91	8.97	55.04	40.03
IND	70.95	29.83	12.50	70.52	52.27	29.65	69.20	46.33	76.39	44.50	38.84	57.86	90.97	92.71	29.75	83.68
TER	23.52	57.92	72.05	36.37	41.09	60.40	58.37	75.22	25.75	54.85	58.50	40.98	24.56	10.53	90.73	40.60
AUTO	44.57	39.78	57.37	56.86	73.47	61.27	71.14	85.70	53.80	64.91	33.09	65.89	0.00	48.27	78.07	76.23
SUI	56.86	43.42	26.93	67.96	27.83	58.64	19.16	27.00	15.09	76.18	31.64	26.99	20.32	31.15	6.09	70.21
AMB	57.93	61.77	35.03	52.18	64.57	82.10	40.06	41.56	28.34	36.37	77.82	40.92	0.00	35.80	42.38	75.82

	20 Clusters																			
Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEM	61.65	64.03	68.94	57.72	59.53	62.28	79.73	58.41	78.47	61.28	76.61	54.39	71.59	55.45	90.29	54.46	0.00	55.06	56.29	75.23
ECO	18.81	46.08	52.48	70.85	65.15	56.19	91.76	87.64	83.33	67.06	70.50	66.63	71.62	73.14	55.79	65.29	80.41	55.41	95.27	89.53
OCC	17.75	14.59	20.45	36.84	12.67	10.81	31.68	65.07	65.77	56.83	60.79	31.97	34.29	21.57	25.75	14.63	7.51	9.89	4.70	22.23
SEX	14.49	33.69	52.09	26.10	8.80	22.54	20.02	67.74	52.51	44.72	48.06	15.75	12.59	7.13	47.76	29.31	18.07	18.03	18.42	26.16
SAN	45.65	67.15	76.14	60.62	50.27	58.69	65.67	80.51	69.52	66.72	59.53	60.30	51.31	45.93	76.01	9.59	43.20	7.61	82.13	99.06
AGR	5.37	12.89	13.29	12.64	8.54	10.47	14.75	50.00	50.42	13.62	14.18	21.59	35.42	12.75	21.03	15.91	25.91	8.97	55.04	40.03
IND	70.95	43.33	9.26	72.92	60.57	18.58	29.65	69.20	46.33	76.39	15.74	44.50	67.15	45.01	38.84	57.86	90.97	92.71	29.75	83.68
TER	23.52	49.17	74.19	27.45	33.40	65.20	60.40	58.37	75.22	25.75	69.92	54.85	48.87	47.81	58.50	40.98	24.56	10.53	90.73	40.60
AUTO	44.57	44.91	42.89	55.67	61.53	35.50	61.27	71.14	85.70	53.80	71.84	64.91	58.52	83.92	33.09	65.89	0.00	48.27	78.07	76.23
SUI	56.86	43.21	29.50	65.47	31.21	43.59	58.64	19.16	27.00	15.09	24.36	76.18	71.44	24.87	31.64	26.99	20.32	31.15	6.09	70.21
AMB	57.93	53.54	40.12	50.41	66.46	68.62	82.10	40.06	41.56	28.34	29.95	36.37	54.66	62.91	77.82	40.92	0.00	35.80	42.38	75.82

TABLE III

Subjective indicators: cutting the culstering tree at the different levels (20-16-8-4)

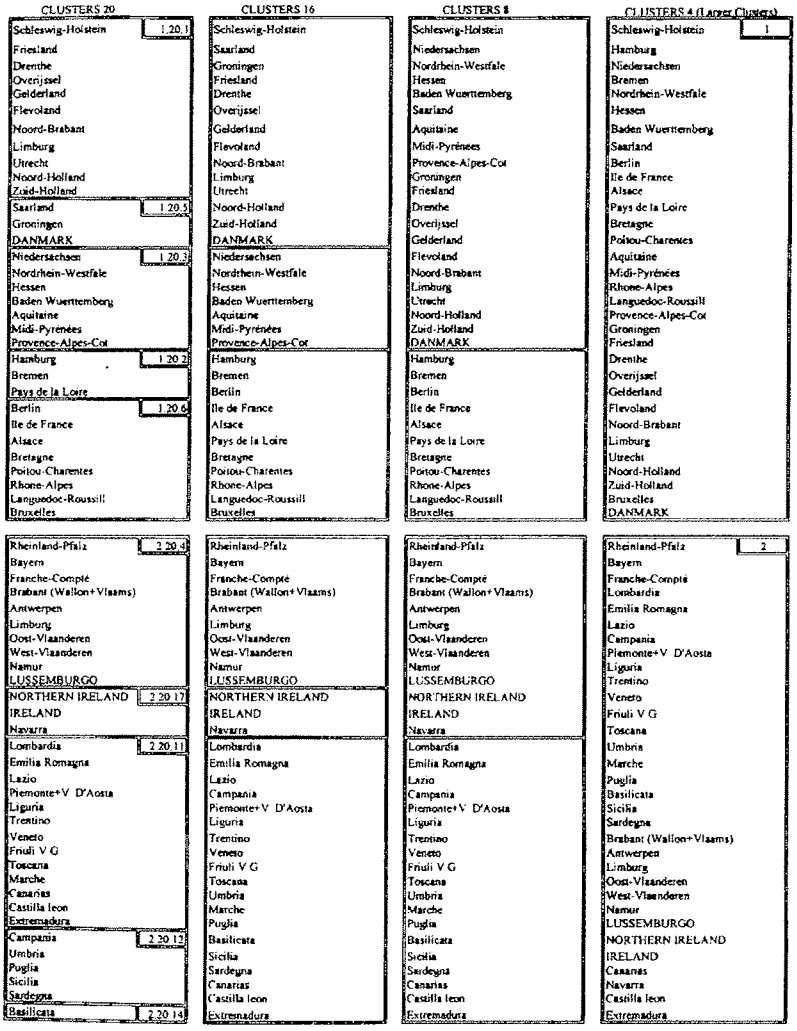
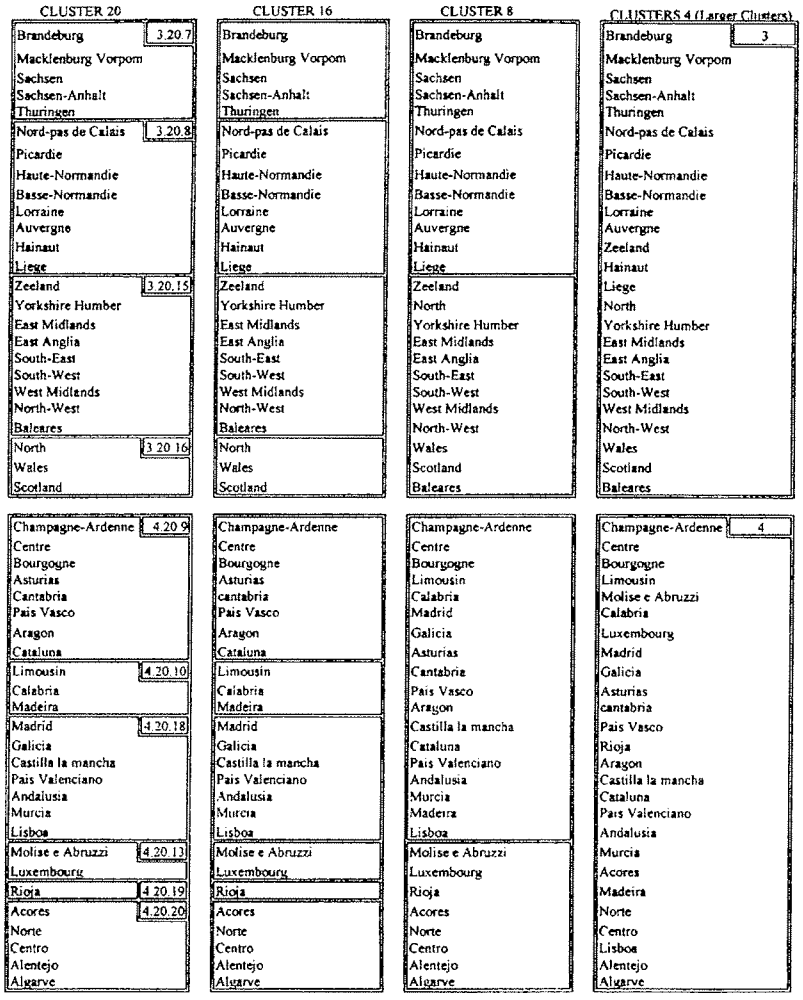


TABLE III

Continued



The first number is referred to the larger cluster, the second is referred to the cut of the clustering tree, the third is referred to the cluster number.

TABLE IV

Subjective indicators: cluster related averages at the different aggregation levels (20-4)

	Clusters					20 Clusters																		
Indicators	1	2	3	4	Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
M SOD	25.76	19.41	21.75	11.12	M SOD	38.01	10.01	18.53	23.39	40.94	15.44	10.22	13.40	12.77	3.36	14.82	11.25	12.94	10.00	32.92	29.73	42.74	15.70	0.00	8.22
ASOD	61.13	62.11	57.88	62.06	ASOD	54.36	73.96	67.07	62.99	54.70	62.83	64.41	61.95	67.03	62.83	66.54	53.47	73.50	80.00	50.84	57.27	48.37	50.67	85.71	60.26
AINSOD	10.08	15.16	14.97	20.45	AINSOD	5.67	14.13	10.61	10.41	4.16	16.36	21.46	17.08	15.62	27.20	15.68	28.99	10.78	10.00	11.12	10.05	7.41	26.31	14.29	21.01
MINSOD	3.04	3.33	5.40	6.37	MINSOD	1.96	1.90	3.79	3.21	0.20	5.37	3.91	7.57	4.57	6.60	2.96	6.28	2.78	0.00	5.12	2.95	1.48	7.32	0.00	10.51
COPERAI	20.54	25.53	48.13	27.23	COPERAI	22.12	8.59	19.41	38.98	30.25	20.20	47.62	45.31	14.82	14.02	15.08	21.39	42.86	10.00	44.10	68.63	38.08	26.17	71.43	41.42
CMEINF	60.80	65.91	45.49	65.52	CMEINF	55.60	70.47	64.26	51.93	54.05	63.80	49.09	43.65	76.89	82.31	75.68	69.69	19.05	80.00	49.97	30.98	59.20	70.79	28.57	55.85
CMESUP	18.66	8.56	6.37	7.25	CMESUP	22.28	20.94	16.33	9.09	15.70	16.00	3.29	11.04	8.29	3.68	9.24	8.92	38.10	10.00	5.93	0.39	2.73	3.04	0.00	2.73
NOREL	50.73	19.94	54.13	23.99	NOREL	42.97	66.82	40.66	25.09	62.68	59.68	73.71	52.61	44.35	6.14	20.31	7.91	5.36	0.00	51.50	33.39	27.84	27.33	28.57	3.98
REL	49.27	80.06	45.87	76.01	REL	57.03	33.18	59.34	74.91	37.32	40.32	26.29	47.39	55.65	93.86	79.69	92.09	94.64	100.00	48.50	66.61	72.16	72.67	71.43	96.02
MAXESG	64.82	51.46	45.17	30.40	MAXESG	69.89	72.35	60.09	54.49	60.32	60.86	49.28	34.48	35.57	26.66	52.03	48.92	41.67	60.00	54.96	37.42	40.29	34.34	33.33	13.79
NEUESG	19.20	18.11	23.34	18.81	NEUESG	14.34	21.20	23.51	21.25	31.59	16.71	32.46	27.06	23.07	17.53	17.02	16.35	16.86	10.00	15.95	20.41	18.06	17.08	16.67	16.39
MINESG	15.98	30.43	31.49	50.79	MINESG	15.77	6.45	16.40	24.27	8.09	22.44	18.26	38.45	41.36	55.82	30.95	34.73	41.48	30.00	29.09	42.16	41.65	48.58	50.00	69.82
ECOPES	37.64	33.77	43.73	45.05	ECOPES	40.40	46.90	32.68	37.20	33.73	36.19	32.00	41.05	39.04	37.85	36.91	33.59	60.58	0.00	45.75	64.43	20.26	51.57	14.29	49.78
ECONEU	19.92	18.40	18.31	20.88	ECONEU	13.15	36.72	21.61	26.14	8.00	25.90	18.13	27.49	22.63	24.38	17.01	12.84	27.78	10.00	12.52	11.50	10.64	12.75	42.86	20.20
ECOOTT	42.44	47.84	37.96	34.08	ECOOTT	46.45	16.38	45.71	36.66	58.26	37.91	49.87	31.46	38.33	37.77	46.08	53.57	11.65	90.00	41.74	24.07	69.11	35.68	42.86	30.02
FINPES	33.84	19.96	36.93	31.74	FINPES	34.23	47.38	31.83	22.42	24.98	33.29	32.66	30.15	31.26	26.60	18.17	19.95	37.29	20.00	40.94	50.08	19.52	30.57	14.29	38.50
FINNEU	36.78	48.09	29.49	40.64	FINNEU	35.66	33.86	43.60	50.04	37.57	33.14	31.39	44.07	43.09	26.52	49.85	43.31	48.61	70.00	18.96	19.04	34.67	38.37	85.71	36.16
FINOTT	29.39	31.95	33.58	27.62	FINOTT	30.11	18.76	24.57	27.54	37.45	33.57	35.95	25.78	25.65	46.88	31.98	36.74	14.10	10.00	40.09	30.88	45.80	31.06	0.00	25.35

TABLE IV

Continued

Objective and subjective indicators: cluster related averages at the different aggregation levels (20-4)

Indicators	Clusters				Indicators	20 Clusters																	
	1	2	3	4		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEM	71.12	55.90	63.19	65.75	DEM	63.02	79.86	58.71	79.73	46.90	57.88	59.04	57.09	63.15	83.51	57.58	74.68	52.85	56.81	58.27	46.99	62.51	82.60	52.43	75.23
ECO	50.87	60.79	73.12	81.68	ECO	53.46	13.51	64.12	91.76	46.51	69.02	67.26	66.39	73.99	53.50	82.24	80.41	68.81	40.95	72.30	75.68	91.62	77.45	96.45	89.53
OCC	17.31	19.28	33.91	50.08	OCC	10.15	15.80	23.50	31.68	15.77	41.40	30.16	28.80	25.38	23.56	69.09	57.97	13.89	15.03	17.07	35.06	77.66	65.65	7.20	22.23
SEX	35.61	16.05	17.04	46.59	SEX	21.62	13.43	15.43	20.02	15.61	18.85	14.54	43.01	18.94	49.11	60.53	72.45	30.31	28.29	2.31	21.58	48.34	51.46	38.81	26.16
SAN	67.85	32.36	60.56	73.38	SAN	59.36	36.48	40.26	65.67	23.42	63.38	56.44	73.04	62.12	74.34	76.47	74.91	8.66	67.14	46.01	45.69	77.78	62.56	82.11	99.06
AGR	11.87	8.98	16.98	30.11	AGR	8.42	1.96	8.51	11.59	7.05	11.79	22.74	16.91	13.08	15.67	29.54	38.51	12.66	9.03	5.74	22.85	47.62	25.36	44.06	31.46
IND	37.07	63.18	46.84	54.78	IND	25.39	60.24	66.77	29.65	90.80	45.73	55.37	38.19	74.49	39.46	75.74	38.89	54.80	50.49	39.58	61.29	60.49	35.89	39.06	83.68
TER	52.83	32.17	50.74	57.26	TER	57.69	27.87	29.26	57.66	11.32	46.75	50.13	56.52	28.03	54.68	42.28	75.96	41.35	41.00	45.41	46.29	69.38	65.91	80.92	38.76
AUTO	30.80	48.54	48.34	57.63	AUTO	28.59	18.78	49.85	48.15	32.18	49.65	47.59	45.00	47.12	27.81	50.91	60.75	49.46	40.90	63.34	73.69	71.08	63.29	61.71	59.91
SUI	38.70	32.38	71.18	30.54	SUI	43.50	65.16	33.79	58.64	34.74	79.23	71.75	45.51	62.46	28.75	16.05	24.49	26.75	52.91	23.47	29.08	25.64	25.27	8.89	70.21
AMB	65.46	50.88	50.48	41.70	AMB	68.83	77.71	56.35	82.10	29.64	40.51	42.46	40.61	56.24	67.41	27.43	38.88	38.02	55.75	69.55	43.01	38.44	38.39	48.25	75.82
MSOD	20.56	31.62	12.98	13.17	MSOD	19.70	9.30	29.25	10.22	32.89	14.60	13.20	17.69	12.57	15.37	9.53	5.00	38.57	33.37	31.64	41.03	18.86	17.64	5.78	8.99
ASOD	66.22	55.01	64.36	60.39	ASOD	69.30	77.37	52.22	64.41	53.23	58.66	67.97	64.14	63.54	67.48	53.68	82.86	56.77	58.53	54.05	49.48	49.73	63.31	68.82	45.69
AINSOD	10.94	9.77	17.03	20.74	AINSOD	9.41	13.33	13.17	21.46	9.87	18.09	14.34	15.21	17.07	14.11	29.98	12.14	3.25	6.43	10.14	7.27	24.79	15.46	22.46	22.99
MINSOD	2.28	3.61	5.63	5.70	MINSOD	1.60	0.00	5.36	3.91	4.01	8.65	4.49	2.96	6.82	3.04	6.81	0.00	1.41	1.67	4.17	2.23	6.63	3.59	2.94	22.33
COPERAI	21.76	33.62	34.48	27.63	COPERAI	23.25	5.26	35.52	47.62	15.34	46.52	20.85	45.28	30.94	15.72	20.92	40.71	26.82	32.65	58.65	52.57	25.44	15.97	25.94	51.67
CMEINF	65.54	53.29	53.91	66.04	CMEINF	58.52	73.50	56.14	49.09	56.80	43.87	62.48	32.99	62.38	74.42	71.46	54.29	55.57	57.22	39.36	43.34	71.93	81.02	71.21	47.20
CMESUP	12.71	13.09	11.62	6.33	CMESUP	18.23	21.24	8.34	3.29	27.86	9.61	16.67	21.73	6.68	9.87	7.62	5.00	17.61	10.12	1.99	4.09	2.64	3.01	2.85	1.14
NOREL	28.86	48.24	56.68	19.39	NOREL	41.24	63.46	55.51	73.71	52.45	52.61	51.53	11.86	19.53	18.59	12.98	14.29	39.35	31.67	42.03	29.26	27.64	36.40	2.59	6.69
REL	71.14	51.76	43.32	80.61	REL	58.76	36.54	44.49	26.29	47.55	47.39	48.47	88.14	80.47	81.41	87.02	85.71	60.65	68.33	57.97	70.74	72.36	63.60	97.41	93.31
MAXESG	57.19	59.60	45.28	36.65	MAXESG	63.18	75.44	58.84	49.28	73.13	34.41	50.38	43.93	40.89	52.50	49.02	46.67	66.88	57.93	42.10	37.71	39.37	33.21	15.15	10.18
NEUESG	19.76	17.45	26.15	17.57	EUESG	21.03	19.30	18.99	32.46	13.02	25.22	23.87	19.61	22.19	17.39	15.55	13.33	16.15	22.94	18.28	22.55	14.37	20.01	15.85	17.27
MINESG	23.04	22.95	28.57	45.78	MINESG	15.78	5.26	22.18	18.26	13.85	40.38	25.75	36.46	36.91	30.11	35.43	40.00	16.97	19.13	39.62	39.75	46.26	46.77	69.01	72.55
ECOPES	34.93	42.32	36.99	41.84	ECOPES	37.61	50.35	38.85	32.00	35.65	44.05	34.76	54.55	42.36	35.58	41.47	7.14	41.98	29.21	60.30	18.84	46.77	37.55	46.46	46.92
ECONEU	17.50	15.68	26.75	19.16	ECONEU	15.31	35.79	15.22	18.13	18.85	25.71	31.34	25.94	25.72	15.03	15.18	26.43	10.58	26.42	11.55	15.96	14.16	15.64	20.49	22.99
ECOOTT	47.57	42.00	36.26	39.01	ECOOTT	47.07	13.86	45.93	49.87	45.50	30.24	33.90	19.51	31.92	49.39	43.35	66.43	47.44	44.36	28.15	65.20	39.07	46.80	33.05	30.09
FINPES	21.56	38.35	32.56	27.12	FINPES	28.60	50.35	38.86	32.66	32.12	31.60	33.12	32.91	28.46	19.11	24.45	17.14	34.11	15.71	49.56	21.59	24.95	23.15	31.85	44.09
FINNEU	48.88	28.34	39.43	42.31	FINNEU	45.93	35.79	22.70	31.39	33.79	43.23	40.67	46.74	38.01	50.12	38.64	77.86	35.53	50.85	18.58	40.47	41.53	41.85	37.17	33.36
FINOTT	29.56	33.31	28.01	30.57	FINOTT	25.47	13.86	38.44	35.95	34.10	25.17	26.21	20.35	33.54	30.77	36.91	5.00	30.36	33.43	31.86	37.94	33.52	35.01	30.99	22.55

TABLE V

Social well-being: cutting the clsutering tree at the different levels (20-16-12-4)

CLUSTER 20	CLUSTER 16	CLUSTER 8	CLUSTER 4
Schleswig-Holstein	Schleswig-Holstein	Schleswig-Holstein	Schleswig-Holstein
Niedersachsen	Niedersachsen	Niedersachsen	Niedersachsen
Hessen	Hessen	Hessen	Hessen
Limburg	Baden Wuerttemberg	Baden Wuerttemberg	Rheinland-Pfalz
Pais Vasco	Saarland	Saarland	Baden Wuerttemberg
Baden Wuerttemberg	Liguria	Picardie	Bayern
Saarland	Limburg	Provence-Alpes-Cot	Saarland
Liguria	cantabria	Liguria	Nord-pas de Calais
Cantabria	Pais Vasco	Limburg	Picardie
Aragon	Aragon	Madrid	Aquitaine
Rheinland-Pfalz	Rheinland-Pfalz	galicia	Midi-Pyrénées
Bayern	Bayern	cantabria	Provence-Alpes-Cot
Nord-pas de Calais	Nord-pas de Calais	Pais Vasco	Emilia Romagna
Aquitaine	Aquitaine	Aragon	Lazio
Emilia Romagna	Emilia Romagna	cataluna	Piemonte+V. D'Aost
Lazio	Lazio	Pais Valenciano	Liguria
Piemonte+V. D'Aosta	Piemonte+V. D'Aost	Andalusia	Trentino
Friuli V G.	Friuli V G	Murcia	Friuli V.G.
Toscana	Toscana	Rheinland-Pfalz	Toscana
Brabant (Wallon+Vlaams)	Brabant (Wallon+Vlaams)	Bayern	Limburg
Limburg	Limburg	Nord-pas de Calais	Brabant (Wallon+Vlaams)
Oost-Vlaanderen	Oost-Vlaanderen	Aquitaine	Antwerpen
West-Vlaanderen	West-Vlaanderen	Midi-Pyrénées	Limburg
LUSSEMBURGO	LUSSEMBURGO	Emilia Romagna	Oost-Vlaanderen
Castilla Leon	castilla leon	Lazio	West-Vlaanderen
Extremadura	extremadura	Piemonte+V. D'Aost	LUSSEMBURGO
Picardie	Picardie	Trentino	Madrid
Provence-Alpes-Cot	Provence-Alpes-Cot	Friuli V.G	galicia
Madrid	Madrid	Toscana	Asturias
Galicia	galicia	Brabant (Wallon+Vlaams)	cantabria
Cataluna	cataluna	Antwerpen	Pais Vasco
Pais Valenciano	Pais Valenciano	Limburg	Rioja
Andalusia	Andalusia	Oost-Vlaanderen	Aragon
Murcia	Murcia	West-Vlaanderen	castilla leon
Midi-Pyrénées	Midi-Pyrénées	LUSSEMBURGO	extremadura
Trentino	Trentino	Asturias	cataluna
Antwerpen	Antwerpen	Rioja	Pais Valenciano
Asturias	Asturias	castilla leon	Andalusia
Rioja	Rioja	extremadura	Murcia
Franche-Compté	Franche-Compte	Franche-Compté	Franche-Compté
Namur	Molise e Abruzzi	Molise e Abruzzi	Limousin
Canarias	Luxembourg	Luxembourg	Lombardia
Castilla la mancha	Namur	Namur	Campania
Lisboa	Canarias	Canarias	Veneto
Alentejo	Castilla la mancha	Castilla la mancha	Umbria
Algarve	Acores	Acores	Marche
Abruzzi e Molise	Lisboa	Lisboa	Molise e Abruzzi
Luxembourg	Alentejo	Alentejo	Puglia
Acores	Algarve	Algarve	Basilicata
Limousin	Limousin	Limousin	Calabria
Calabria	Campania	Lombardia	Sicilia
Madeira	Calabria	Campania	Sardegna
Norte	Sicilia	Veneto	Luxembourg
Centro	Sardegna	Umbria	Namur
Campania	Madeira	Marche	Canarias
Sicilia	Norte	Puglia	Castilla la mancha
Sardegna	Centro	Basilicata	Acores
Lombardia	Lombardia	Calabria	Madeira
Veneto	Veneto	Sicilia	Norte
Umbria	Umbria	Sardegna	Centro
Marche	Marche	Madeira	Lisboa
Puglia	Puglia	Norte	Alentejo
Basilicata	Basilicata	Centro	Algarve

TABLE V

Continued

CLUSTER 20	CLUSTER 16	CLUSTER 8	CLUSTER 4
Hamburg	Hamburg	Hamberg	Hamburg
Basse-Normandie	Basse-Normandie	Bremen	Bremen
Pays de la Loire	Pays de la Loire	Nordrhein-Westfalen	Nordrhein-Westfalen
Bremen	Bremen	Ile de France	Berlin
Centre	Centre	Champagne-Ardenne	Brandeburg
Bourgogne	Bourgogne	Haute-Normandie	Mecklenburg Vorpom
Alsace	Alsace	Centre	Sachsen
Hainaut	Hainaut	Basse-Normandie	Sachsen-Anhalt
Liege	Liege	Bourgogne	Thuringen
Nordrhein-Westfalen	Nordrhein-Westfalen	Lorraine	Ile de France
Champagne-Ardenne	Ile de France	Alsace	Champagne-Ardenne
Poitou-Charentes	Champagne-Ardenne	Pays de la Loire	Haute-Normandie
Auvergne	Haute-Normandie	Bretagne	Centre
Ile de France	Lorraine	Poitou-Charentes	Basse-Normandie
Haute-Normandie	Bretagne	Rhone-Alpes	Bourgogne
Lorraine	Poitou-Charentes	Auvergne	Lorraine
Bretagne	Rhone-Alpes	Languedoc-Roussill	Alsace
Rhone-Alpes	Auvergne	Bruxelles	Pays de la Loire
Languedoc-Roussill	Languedoc-Roussill	Hainaut	Bretagne
Bruxelles	Bruxelles	Liege	Poitou-Charentes
Berlin	Berlin	Berlin	Rhone-Alpes
Brandeburg	Brandeburg	Brandeburg	Auvergne
Macklenburg Vorpom	Macklenburg Vorpom	Macklenburg Vorpom	Languedoc-Roussill
Sachsen	Sachsen	Sachsen	Bruxelles
Sachsen-Anhalt	Sachsen-Anhalt	Sachsen-Anhalt	Hainaut
Thuringen	Thuringen	Thuringen	Liege

CLUSTER 20	CLUSTER 16	CLUSTER 8	CLUSTER 4
Groningen	Groningen	Groningen	Groningen
East Anglia	East Anglia	Friesland	Friesland
Baleares	Baleares	Drenthe	Drenthe
Friesland	Friesland	Overijssel	Overijssel
Drenthe	Drenthe	Gelderland	Gelderland
Overijssel	Overijssel	Flevoland	Flevoland
Gelderland	Gelderland	Noord-Brabant	Noord-Brabant
Flevoland	Flevoland	Utrecht	Utrecht
Noord-Brabant	Noord-Brabant	Noord-Holland	Noord-Holland
Utrecht	Utrecht	Zuid-Holland	Zuid-Holland
Noord-Holland	Noord-Holland	Zeeland	Zeeland
Zuid-Holland	Zuid-Holland	East Anglia	North
Zeeland	Zeeland	South East	Yorkshire Humber
South East	South East	South East	East Midlands
South West	South West	North West	East Anglia
North West	North West	NORTHERN IRELAND	South East
North	North	IRELAND	South West
Yorkshire Humber	Yorkshire Humber	DANMARK	West Midlands
East Midlands	East Midlands	Navarra	North West
West Midlands	West Midlands	Baleares	Wales
Wales	Wales	North	SCOTLAND
SCOTLAND	SCOTLAND	Yorkshire Humber	NORTHERN IRELAND
NORTHERN IRELAND	NORTHERN IRELAND	East Midlands	IRELAND
IRELAND	IRELAND	West Midlands	DANMARK
DANMARK	DANMARK	Wales	Navarra
Navarra	Navarra	SCOTLAND	Baleares

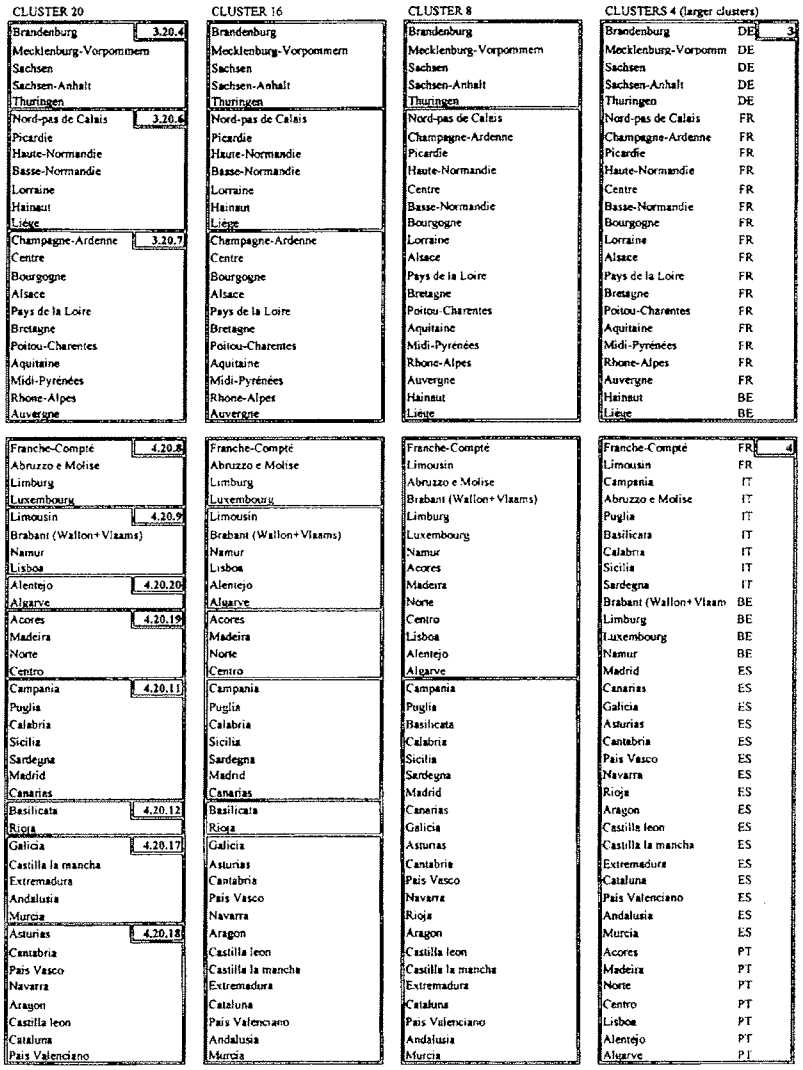
TABLE VI

Objective and subjective indicators: cutting the clustering tree at the different levels (20-16-8-4)

CLUSTERS 20		CLUSTERS 16	CLUSTERS 8	CLUSTERS 4 (larger clusters)	
Schleswig-Holstein	1.20.1*	Schleswig-Holstein	Schleswig-Holstein	Schleswig-Holstein	DE 1
Niedersachsen		Niedersachsen	Niedersachsen	Niedersachsen	DE
Nordrhein-Westfalen		Nordrhein-Westfalen	Nordrhein-Westfalen	Nordrhein-Westfale	DE
Hessen		Hessen	Hessen	Hessen	DE
Rheinland-Pfalz		Rheinland-Pfalz	Rheinland-Pfalz	Rheinland-Pfalz	DE
Baden Wuerttemberg		Baden Wuerttemberg	Baden Wuerttemberg	Baden-Wurttemberg	DE
Bayern		Bayern	Bayern	Bayern	DE
Saarland		Saarland	Saarland	Saarland	DE
Antwerpen	1.20.14	Antwerpen	Antwerpen	Lombardia	IT
Oost-Vlaanderen		Oost-Vlaanderen	Oost-Vlaanderen	Emilia Romagna	IT
West-Vlaanderen		West-Vlaanderen	West-Vlaanderen	Lazio	IT
LUSSEMBURGO		LUSSEMBURGO	LUSSEMBURGO	Piemonte+Valle D'Aosta	IT
DANMARK		DANMARK	DANMARK	Liguria	IT
Lombardia	1.20.10	Lombardia	Lombardia	Trentino	IT
Emilia Romagna		Emilia Romagna	Emilia Romagna	Veneto	IT
Lazio		Lazio	Lazio	Friuli V G.	IT
Piemonte+Valle D'Aosta		Piemonte+Valle D'Aosta	Piemonte+Valle D'Aosta	Toscana	IT
Liguria		Liguria	Liguria	Umbria	IT
Trentino		Trentino	Trentino	Marche	IT
Veneto		Veneto	Veneto	Antwerpen	BE
Friuli V G		Friuli V G	Friuli V G	Oost-Vlaanderen	BE
Toscana		Toscana	Toscana	West-Vlaanderen	BE
Umbria		Umbria	Umbria	LUSSEMBURGO	LU
Marche		Marche	Marche	DANMARK	DK
Hamburg	2.20.2	Hamburg	Hamburg	Hamburg	DE 2
Bremen		Bremen	Bremen	Bremen	DE
Berlin	2.20.3	Berlin	Berlin	Berlin	DE
Languedoc-Roussillon		Languedoc-Roussillon	Ile de France	Ile de France	FR
Provence-Alpes-Cot		Provence-Alpes-Cot	Languedoc-Roussillon	Languedoc-Roussillon	FR
Groningen		Groningen	Provence-Alpes-Cot	Provence-Alpes-Cote d'.	FR
Zeeland		Zeeland	Groningen	Groningen	NL
East Anglia		East Anglia	Friesland	Friesland	NL
South-East		South-East	Drenthe	Drenthe	NL
South-West		South-West	Overijssel	Overijssel	NL
North-West		North-West	Gelderland	Gelderland	NL
Baleares		NORTHERN IRELAND	Flevoland	Flevoland	NL
NORTHERN IRELAND	2.20.16	IRELAND	Noord-Brabant	Noord-Brabant	NL
IRELAND		Baleares	Limburg	Limburg	NL
Ile de France	2.20.5	Ile de France	Utrecht	Utrecht	NL
Flevoland		Flevoland	Noord-Holland	Noord-Holland	NL
Utrecht		Utrecht	Zuid-Holland	Zuid-Holland	NL
Noord-Holland		Noord-Holland	Zeeland	Zeeland	NL
Zuid-Holland		Zuid-Holland	Bruxelles	Bruxelles	BE
Bruxelles		Bruxelles	East Anglia	North	UK
Friesland	2.20.13	Friesland	South-East	Yorkshire e Humber	UK
Drenthe		Drenthe	South-West	East Midlands	UK
Overijssel		Overijssel	North-West	East Anglia	UK
Gelderland		Gelderland	NORTHERN IRELAND	South-East	UK
Noord-Brabant		Noord-Brabant	IRELAND	South-West	UK
Limburg		Limburg	Baleares	West Midlands	UK
North	2.20.15	North	North	North-West	UK
Yorkshire e Humber		Yorkshire e Humber	Yorkshire e Humber	Wales	UK
East Midlands		East Midlands	East Midlands	Scotland	UK
West Midlands		West Midlands	West Midlands	NORTHERN IRELANI	UK
Wales		Wales	Wales	IRELAND	IE
Scotland		Scotland	Scotland	Baleares	ES

TABLE VI

Continued



The first number is referred to the larger cluster, the second is referred to the cut of the clustering tree, the third is referred to the cluster number.

NOTES

[1] In the social sciences the geographical maps have been neglected as an analytic tool for a long time. The reason of this appears to lie largely in the common difficulties of using maps effectively and efficiently. Geographical Information System (GIS) is a computer technology for handling "geographic" data i.e. data where the detailed physical location is an essential element. GIS technology is a combination of digital mapping techniques and specialised data base management procedures. GIS are used to encode, store, maintain, retrieve, process, analyse and display data in their spatial context. GIS gives substantial advantages in data handling, analysis and presentation. The ability to link and display from different data sets (not necessarily with one identical geo-coding system) is both a powerful analytic tool and a way of presenting results with maximum impact. In this paper we considered the GIS for this ability to facilitate the statistical cluster analysis.

[2] Alongside this study C. Rampichini and S. Schifini D'Andrea (Social Indicators Research, Vol. 44, n. 1, 1998) analysed individual satisfaction between Italian regions. Moreover, work is now underway to develop a multilevel model for the analysis of life satisfaction among European regions (C. Rampichini and S. Schifini D'Andrea: 1998, Subjective, Objective and Contextual Components of Life Satisfaction in Europe, *Draft only*).

[3] For purposes of demonstration, in this paper, we have chosen a negative aspect of quality of life, that of "socio-economic unease."

[4] By "macro" we refer to a country-wide study, as opposed to "micro" which we use to refer to a study at the individual level.

[5] Eurostat data refer to 1994 and are found in the 1995–1996 and 1997 volumes (Cfr. Eurostat, Regions Series, Theme 1A).

[6] The regions of Eurostat are not exactly comparable with those of Eurobarometer, and thus, right from the phase of the singling out of territorial units there is already a lack of uniformity. For example, the Eurostat data show some countries without regional divisions (Luxembourg, Denmark, Ireland), Eurobarometer divides these same countries into regions (Luxembourg = 4; Denmark = 4; Ireland = 9). There are regions that Eurostat separate (for example, Italy: Piedmont and Val d'Aosta) which are grouped together by Eurobarometer; and in other cases, vice versa. There are countries in which there is Eurobarometer data but not Eurostat data (ex: Norway), and others in which there is Eurostat data but not Eurobarometer data (Finland, Sverige). We have excluded Greece due to the impossibility of isolating l'Attiki, with the city of Athens, which in Eurobarometer data is not reported as a separate region.

[7] Edited Eurostat data even have gaps at the level of single territorial units. For certain phenomena (e.g., for Holland: number of doctors; for the UK: number of hospital beds, cause of death) in the absence of regional data, data for the next level up was given. In particular, the UK is more problematic for purposes of comparison and thus the objective indicators often demonstrate a uniformity that most probably does not correspond to reality.

[8] This method is distinct from all other methods because it uses an analysis of variance approach to evaluate the distance between clusters. In short, this method attempts to minimize the Sum of Squares of any two (hypothetical) clusters that can be formed at each step. In general this method tends to create clusters of small size. We have noticed that when the similarity between observations is strong, analogous aggregations result even when other methods are used For example, here is the first cluster that is confirmed with Ward's method and with the complete tie method.

Hainaut	Liege		
Namur	Luxembourg		
Baden Wuerttemberg	Bayern		
Brandeburg	Macklenburg Vorpommern		
Sachsen	Sachsen-Anhalt	Thuringen	
Aragon	La Rioja		
Asturias	Pais Velenciano		
Cantabria	Castilla Leon		
Cataluna	Pais Vasco		
Champagne-Ardenne	Centre	Bourgogne	Pays de la Loire

[9] Clusters are indicated by three numbers in parentheses: the first is in reference to the larger cluster obtained at the level of 4 European divisions; the second to the level at which the tree is cut (in this case comprised of 20 parts); the third to the number of the particular cluster within the grouping under consideration.

[10] See note n. 7.

[11] See note n. 2.

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