

Regional food consumption patterns in the EU

J.M. Gil, A. Gracia
Unidad de Economía Agraria
Zaragoza, Espagne

The objective of this paper is to analyse similarities and differences in regional food consumption patterns across EU countries in order to identify whether the globalisation of food markets induces also a homogenisation of food consumption patterns. Several cluster analyses using expenditure share of different food products for EU regions have been conducted. The main conclusion is that food consumption patterns in Europe are still different even between regions within the same country.

L'objectif de cet article est d'analyser les ressemblances et les différences des modèles de consommation alimentaire entre les pays de l'Union européenne pour identifier comment la globalisation des marchés alimentaires permet de mettre en relief leur homogénéisation. En utilisant la participation budgétaire de différents produits alimentaires dans ces régions, diverses analyses cluster ont été spécifiées. Les résultats montrent que les modèles de consommation alimentaire restent différents aussi bien en Europe que entre les régions du même pays.

I. – INTRODUCTION

The European Union (EU) is undergoing an integration process that has several effects on the economies involved including: trade liberalisation, internationalisation of industries, enhancement of distribution channels and markets, homogenisation of economic parameters and similar public policies. These factors are promoting an economic convergence process among countries, which is also provoking a

degree of homogenisation of living habits, including behaviour, attitudes and diet.

Concerning the agro-food system and food consumption, a trend toward more globalisation and homogenisation of food consumption patterns is observed. However, this process is slow because of persistent regional and cultural differences. Consumers have different tastes and preferences and, therefore, food habits due also to the different production patterns. Moreover, consumers are more affluent, better educated and informed and demand a larger variety of food products of higher quality. Changes in food suppliers' (processors and retailers) result in an increasing number and more diversified food products in the shelves. The last two facts have induced a homogenisation of food consumption restrained, to a certain extent, by the persistence of regional, cultural and food habit differences.

The objective of this paper is to analyse similarities and differences in food consumption patterns across EU countries in order to identify whether the globalisation of food markets have also induced an homogenisation of such patterns. Previous works have analysed the same topic but only using food consumption information at national level. Blandford (1984) for OECD countries and Wheelock and Frank (1989) suggested that food dietary patterns are getting similar for nine developed countries. Grigg (1993) related these similarities in food patterns to economic development and to concerns about health. Herrmann and Röder (1995) and Gil *et al.* (1995) used different methodologies to measure food consumption convergence. The main contribution of this paper is that it searches for differences or similarities across EU regions.

To achieve this objective, the paper is organised as follows. First, countries are grouped in clusters according to national food expenditure. Second, the same analysis has been done with regional data and results from both analyses are compared. Finally, some concluding remarks are included.

II. – GLOBALISATION OF FOOD CONSUMPTION IN EU COUNTRIES

The objective of this section is to analyse whether, if food consumption structures across EU countries are similar or not. Food consumption data come from a household budget survey in each country. Data coming from surveys have two main limitations for this analysis. Firstly, available data differ from one country to another, not only in the number of recorded food items but also in the type of collected

information (often expenditure but not quantities are recorded). Secondly, methodological differences in both the data collection and the coding system exist.

For comparison purposes, available information was homogenised. Each country provides information in its national currency and the reporting year also differs. Available information refers to 1994 or 1995 for most of the countries, and then it does not represent an important problem. The other problem is more difficult to deal with. Two possibilities are available: 1) convert data to a single year of reference taking into account national inflation rates and, then, transform them in an homogeneous measure taking into account the Purchasing Power Parity (PPP) of each country; or 2) work with expenditure share. We have taken the second alternative, so that, food expenditure structures have been analysed.

A second problem is the level of aggregation of the product categories. For instance, Belgian survey provides information for a highly disaggregated level while in the case of Italy and Portugal information is given more aggregated. Therefore, the maximum disintegration level for which information is available for all countries has been used. Ten broad food categories are considered: 1) bread and cereals; 2) meat; 3) fish; 4) milk, dairy products and eggs, 5) oils and fats; 6) fruits and vegetables; 7) potatoes; 8) sugar; 9) coffee, tea and cocoa; and 10) other processed food.

Table 1 shows the food expenditure structure for the EU countries. To find out similarities and differences across EU countries a cluster analysis has been done using this information. Results indicate that seven clusters can be distinguished. Table 2 shows the average proportion of the different products on the total food expenditure for each cluster.

The first group consists of Austria, Great Britain and The Netherlands. It shows the highest cereals and sugar expenditure in relation to total food expenditure. Conversely, potatoes and fish expenditures are the lowest. Cluster 2 corresponds to Finland that has the lowest meat expenditure share. Cluster 3 includes four countries: Belgium, Luxembourg, France and Germany. We can define this group as the average cluster. The relative importance of cereals, meat, and other processed food is slightly above the EU average (Table 1). The relative importance of fish, milk products and fruit and vegetables is below the average. Finally, it is interesting to note that these countries have the lowest sugar expenditure. Cluster 4 consists of Ireland, Denmark and Sweden and it is characterised by the highest expenditure on other foods along with Finland.

TABLE 1
Food expenditure structure in EU countries (%)

	Bread and cereals	Meat	Fish	Milk, cheese and eggs	Oils and fats	Fruit and Vegetab.	Potatoes	Sugar	Coffee, tea and cocoa	Other foods
Austria	17.00	26.80	2.60	16.20	4.10	14.50	1.20	1.30	4.00	12.30
Belgium	16.50	27.90	6.30	12.40	2.90	14.60	2.50	0.50	2.60	13.80
Denmark	16.52	23.31	6.15	14.33	3.29	14.54	2.68	0.62	4.39	14.17
Finland	15.67	20.0	3.72	18.12	2.95	15.86	2.90	1.37	4.21	15.20
France	15.60	34.30	4.70	14.60	2.60	16.10	1.70	0.60	2.20	7.60
Germany	17.34	28.55	2.43	15.03	3.72	14.49	2.01	0.84	0.14	15.45
Greece	11.30	30.00	6.10	16.30	6.20	18.30	2.20	1.20	1.60	6.70
Ireland	16.00	26.00	3.00	15.00	3.00	13.00	4.00	1.00	2.00	17.00
Italy	17.79	28.04	7.58	16.45	5.94	12.33	4.11	1.07	3.22	3.45
Luxemb.	15.30	32.30	4.20	13.40	3.50	15.50	1.70	0.60	2.70	10.80
The Neth	19.0	22.5	2.43	16.27	2.65	15.71	2.25	0.74	4.3	14.0
Norway	11.20	24.00	6.80	19.50	2.90	14.40	3.30	0.90	3.40	13.60
Portugal	15.30	29.70	15.50	11.90	5.70	13.40	4.00	1.30	1.40	1.80
Spain	13.42	30.24	13.32	14.13	4.27	16.92	1.89	0.73	1.59	3.49
Sweden	16.20	23.20	5.20	17.40	3.90	9.90	3.80	0.80	4.50	15.10
G.Britain	17.35	25.80	5.14	14.65	2.63	20.17	2.30	1.26	2.96	7.71
Average	15.70	27.00	5.90	15.37	3.70	15.00	2.70	0.93	2.86	10.70

Source : Information provided by the different National Institutes of Statistics

TABLE 2
Food expenditure structure in EU cluster sat national level (%)

	Bread and cereals	Meat	Fish	Milk, cheese and eggs	Oils and fats	Fruit and Vegetab.	Potatoes	Sugar	Coffee, tea and cocoa	Other foods
Cluster 1 Austria G.Britain The Neth	17.8	25.0	3.4	15.7	3.1	16.8	1.9	1.1	3.7	11.3
Cluster 2 Finland	15.7	20.0	3.7	18.1	2.9	15.8	2.9	1.4	4.2	15.2
Cluster 3 Belgium Luxemb France Germany	16.2	30.80	4.4	13.8	3.2	15.2	2.0	0.6	1.9	11.9
Cluster 4 Denmark Ireland Sweden.	16.2	24.2	4.8	15.6	3.4	12.5	3.5	0.8	3.6	15.4
Cluster 5 Greece Spain	12.3	30.1	9.7	15.2	5.2	17.6	2.0	0.9	1.6	5.1
Cluster 6 Norway	11.2	24.0	6.8	19.5	2.9	14.4	3.3	0.9	3.4	13.6
Cluster 7 Italy Portugal	16.5	28.9	11.5	14.2	5.8	12.8	4.0	1.2	2.3	2.6

Mediterranean countries are divided in two groups. Spain and Greece form cluster 5, while Italy and Portugal are cluster 7. Both clusters are characterised by a high percentage of food expenditure devoted to meat, fish, and oils and fats. In Spain and Greece, meat expenditure is more important as well as fruits and vegetables. In Italy and Portugal, cereals and fish consumption is relatively more important. Finally, Norway is cluster 6. Cereal participation on food expenditure is the lowest among the considered clusters while milk products share is the highest.

III. – REGIONALISATION VS. GLOBALISATION

Similar analysis has been carried out for food expenditure at regional level. In this case, 128 regions have been used. In Luxembourg and The Netherlands no regions have been considered because of the small size of the country. The same ten groups of food products as in the country level analysis are considered.¹

Another cluster analysis has been done using regional data. Countries have been grouped according to two different aggregation criteria. In the first case, 16 clusters are selected. This is precisely the number of countries included in the analysis. The objective was to detect whether some national identities exist. In other words, to analyse the correlation between the 16 homogenous groups according to food expenditure structure and the countries. Results are shown in Figure 1 and food expenditure shares for each cluster in Table 3.

The first conclusion is that national identities are less important at regional level. Although these clusters do not differ much from those obtained at the country level analysis, some specific regions have been joined to other clusters. It can be pointed out the case of cluster 4 at national level (Denmark, Ireland and Sweden) which persists at regional level (now cluster 1) with the addition of some Austrian, German and Dutch regions. On the other hand, three Swedish regions have been grouped in a new cluster (cluster 2).

Cluster 1 at national level (Austria, Great Britain and The Netherlands) also persists but it only consists of some Austrian and British regions along with Ostlandet (Norway). The rest of Norwegian regions and the Finish ones have been grouped in one cluster along with Salzburg (Austria). Central Europe (Belgium, Luxembourg, France and

¹ The food expenditure structure in all regions is not shown due to space limitations but is available from authors upon request.

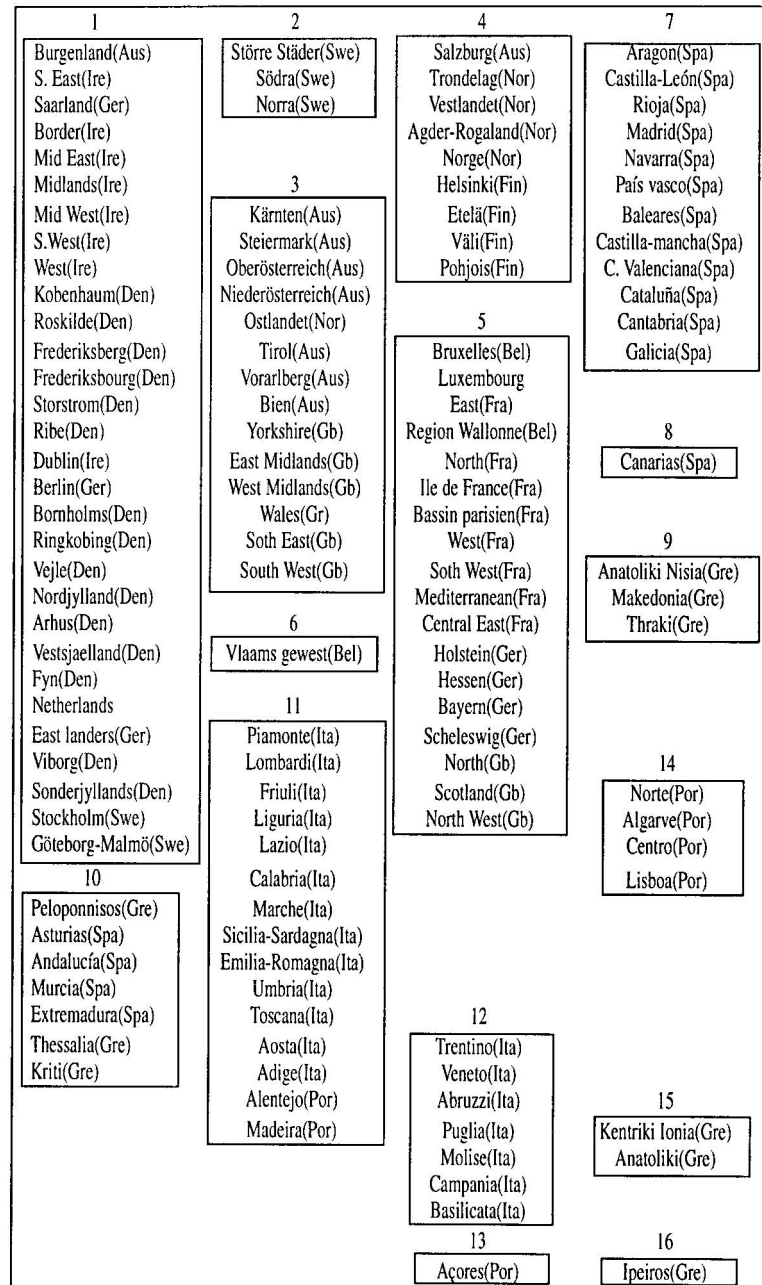


Figure 1.
Grouping of EU regions with cluster analysis

Germany) also constitutes a cluster but some Northern British regions have been joined to them. All these clusters are mainly characterised by the highest expenditure share of other foods, especially in Northern Europe and the lowest expenditure on fish and oils and fats.

For the Mediterranean countries no national identities can be observed and countries have been split into clusters of regions within the country. Only some Greek and Spanish regions are mixed up in the same cluster (cluster 10). Therefore, it can be said that each Mediterranean country follows specific food expenditure patterns and also that food patterns differ between regions within the country. Most of the Spanish regions form a cluster (Cluster 7) characterised by the highest expenditure share on meat, fish (along with Portugal) and the lowest of potatoes. The Canary Islands constitute a separated cluster while Spanish southern regions have been grouped with central Greek regions. The rest of Greek regions are split into three different clusters: Islands (cluster 9), Makedonia (cluster 15) and northern regions (cluster 16). Greek clusters are characterised by the lowest fish and cereals expenditure among Mediterranean regions. Finally, Italy has been divided into two groups according to food expenditure structure: cluster 11

TABLE 3.
Structure of food expenditure
in EU clusters using regional data

	Bread and cereals	Meat	Fish	Milk, cheese and eggs	Oils and fats	Fruit and Vegetab.	Potatoes	Sugar	Coffee, tea and cocoa	Other foods
Cluster 1	16.79	24.53	4.65	15.04	3.56	13.55	2.86	0.76	3.59	14.67
Cluster 2	16.00	23.77	4.53	17.77	4.17	9.67	3.73	1.07	4.63	14.70
Cluster 3	16.62	26.00	3.90	16.00	3.50	16.89	1.84	1.23	3.57	10.47
Cluster 4	13.68	21.88	5.17	18.76	3.15	15.14	2.90	1.21	3.91	14.24
Cluster 5	15.97	31.23	4.41	14.45	2.98	15.96	1.97	0.77	1.98	10.26
Cluster 6	17.50	27.70	6.40	11.60	2.50	14.60	2.50	0.40	2.50	14.30
Cluster 7	12.81	31.90	13.87	13.47	4.36	16.36	1.46	0.73	1.51	3.55
Cluster 8	12.83	20.64	10.80	18.04	3.71	20.44	5.83	0.76	2.48	4.47
Cluster 9	11.57	30.37	7.47	15.43	4.00	19.37	2.70	1.30	1.57	6.20
Cluster 10	13.70	30.27	11.44	15.20	4.56	16.00	2.06	1.01	1.66	4.07
Cluster 11	18.18	28.43	7.93	15.29	5.92	12.96	4.14	1.02	2.87	3.25
Cluster 12	17.40	26.47	7.69	18.06	5.97	12.06	4.02	1.33	3.56	3.43
Cluster 13	17.20	24.50	12.60	14.80	4.70	13.60	4.80	2.50	2.60	2.60
Cluster 14	15.15	29.38	16.45	11.70	5.98	13.25	3.95	1.25	1.28	1.68
Cluster 15	11.65	27.95	4.95	17.05	8.00	18.25	1.90	1.50	1.75	7.05
Cluster 16	13.00	25.80	4.20	15.60	8.80	19.10	1.30	2.60	1.70	7.70

Note: regions included are shown in figure 1

(central and north Italy) and cluster 12 consisting of two northern regions and the south of Italy.

Most of the Portuguese regions belong to the same cluster (Cluster 14) except for Açores which constitutes a separated cluster and Alentejo and Madeira which were joined to Central Italy. Portugal is characterised by the highest expenditure share on fish and Italy for the highest expenditure on cereals.

As a second step in this analysis we have allowed for 50 clusters shown in figure 1 by horizontal lines within each group. Only four countries (Spain, Italy, Portugal and Greece) concentrate 24 of the 50 clusters. The most interesting aspect is that each region in Greece shows a different food expenditure structure. In general, the same happens in Portugal where the seven regions are divided into 5 clusters. In Spain, seven clusters are defined for 17 regions. Italy is more homogeneous as most of the northern and central regions show a similar food expenditure structure. In Italian Southern regions it is possible to distinguish between east and west.

Conversely, Northern countries exhibit more homogeneity. In the case of Austria and Ireland, most of the regions are included in the same cluster. In Great Britain and Sweden the country is divided in two and three main regions, respectively. In the case of Great Britain, Scotland and North England food expenditure structure differs from the rest. In Sweden, the division depends on urbanisation because food consumption in regions where the most important towns are located is different from consumption in the other regions.

In France, food expenditure structure is quite heterogeneous and also some regions have similar structure to Belgium, Luxembourg and some German regions. Middle East regions have a similar food expenditure pattern in relation to Western and Southern Germany, while the East is similar to Luxembourg and Belgium (except for Vlaams Gewest). Norway also shows a great heterogeneity in food expenditure structure and almost each region belongs to a different cluster. Finland has a homogeneous food expenditure structure and except for Helsinki, all regions belong to the same cluster. Finally, Denmark is more homogeneous and eleven regions were divided into two main groups although the four remaining regions were disintegrated into three groups.

IV. – CONCLUDING REMARKS

Results along this study strongly suggest that a similar diet in the EU does not exist even within a country. It is not possible either to talk

about a European consumer or a Mediterranean diet but it is also difficult to refer to a single Swedish, Spanish or Greek consumer. Food consumption patterns are not similar. On the contrary, different food patterns exist, even between regions within a country. The main implication of this finding is that food suppliers (processors and retailers) must offer different food products and define different marketing strategies depending on geographical criteria. They should find out either the differences or similarities in food consumption patterns across regions in Europe and provide European consumers different products according to those differences.

Northern and Central European countries, on one hand, and Mediterranean, on the other, show different food consumption patterns but some similarities among northern and central regions have been observed while Mediterranean regions show larger differences in food consumption, specially in Greece and Portugal. From the 16 regional clusters considered, ten refer to Southern European countries (Greece, Italy, Portugal and Spain) whilst regions from Northern countries are only grouped in 6 clusters. Moreover, only in two of the 10 southern clusters, regions from different countries are included. On the other hand, with the exception of two clusters, northern regions show more similarities.

When we further disintegrate (considering 50 clusters) the situation mentioned above is more evident. Half of the clusters correspond to southern countries and only in one case, Greek and Spanish regions are mixed. With respect to northern countries, and more specifically to Nordic countries, most of the clusters refer to regions within a country. For the rest of countries, most of the clusters are formed by an important nucleus of regions from a specific country complemented by a small number of regions from other countries.

Although it is clear that regional data are more appropriate when analysing food expenditure structures across Western countries, results from this study have to be interpreted at least with some caution due to data limitations. Finally, in spite of the results obtained in this paper, it is not unreliable to think about homogeneous segments across Western European regions based on similar income level, age, lifestyles and education, on one hand, and heterogeneous segments within a specific region based on the same characteristics, on the other. However, this information is not available in most of the countries, what makes difficult to carry out cross-country comparisons.

RÉFÉRENCES BIBLIOGRAPHIQUES

- BLANFORD D. [1984], "Changes in food consumption patterns in the OECD area". *European Review of Agricultural Economics*, 11 (1), p. 43-65.
- GIL J.M., GRACIA A., PEREZ Y PEREZ L. [1995] "Food Consumption and Economic Development in the European Union". *European Review of Agricultural Economics*, 22(3), p. 385-99.
- GRIGG D. [1993], "The European diet: regional variations in food consumption in the 1980s". *Geoforum* 24(3), p. 279-289.
- HERRMANN R., RÖDER C. [1995], "Does food consumption converge internationally?. Measurement, empirical tests and the influence of policy". *European Review of Agricultural Economics*, 22 (3), p. 400-414.
- WHEELOCK J.V., FRANK J.D. [1989], "Food consumption patterns in developed countries", in B.TRAIL (ed.), *Prospects for the European Food System*, Elsevier Applied Science. London.