

Adam P. Balcerzak & Ilona Pietryka (Eds.)
Proceedings of the 10th International Conference on Applied Economics
Contemporary Issues in Economy: Economics

Olsztyn: Institute of Economic Research
2019

DOI: 10.24136/eep.proc.2019.1 (eBook)
ISBN 978-83-65605-11-5; ISSN 2544-2384 (Online)

Alicja Sekuła
ORCID ID: 0000-0003-4396-3811
Gdańsk University of Technology, Poland

Kamila Adamowicz
ORCID ID: 0000-0002-9368-3407
Gdańsk University of Technology, Poland

Level of public finances decentralization in European Union countries

JEL Classification: *H71; E62; H50*

Keywords: *decentralization; public finances; public expenditure; European Union; fiscal decentralization*

Abstract

Research background: Despite of the universality of the implementation in democratic countries the principle of decentralization resulting from the belief that it is an instrument to improve the efficiency of public funds management, both the scope of public services and the level of decentralization in individual countries are not identical.

Purpose of the article: Comparison the scope of fiscal decentralization in the countries of the European Union; identification the features of countries in which the average level of decentralization from the years 2013-2016 is similar.

Methods: Cluster analysis method: hierarchical agglomeration method using full binding and Euclidean distance; measure of central tendency - arithmetic mean; data was obtained from Eurostat.

Findings & Value added: It was found that in the European Union countries the level of the decentralization index is diversified. Its average value over the period considered (2013-2016) ranged from 0.55% (Malta) to 35.13% (Denmark). The research method used initially (cluster analysis) did not allow achieving the goal: the distances between bonds did not differ significantly, groups of objects could not be separated and grouped into clusters, therefore the dendrograms were not unambiguous. The creation of groups was possible thanks to the use of the second research method - the central tendency. After assuming that the distances between groups must be at least 1 percentage point, 4 groups of countries were created: low,

**Proceedings of the 10th International Conference on Applied Economics
Contemporary Issues in Economy: Economics**

medium, high and the highest degree of decentralization, with group II being the most numerous, with 17 countries with decentralization levels within the borders 6-12%. This group includes all federal states - EU members and most of the countries that joined the EU in 2004 or later. One of the exceptions is Poland - assigned to group III.

Introduction

At present, it can be seen that the transfer of political and economic power to local governments is a global trend in fiscal policy reform (Mauro et al., 2018, p. 874) persisting in many democratic countries, despite existing differences between them related to their political systems. This trend has its sources in fiscal decentralization concepts coming from the second half of the last century. Implementation of the principle has had slightly different sources in different parts of Europe. While in most Western European countries decentralisation was a response to political pressure and changing economic conditions as well, in Eastern Europe the demand for local autonomy was one of the elements of political reform at the turn of the 1980s and 1990s (Devas, 1997, pp. 351-352).

There are many reasons to spread the process of delegating tasks at lower levels in the structure. Those of great importance include bringing power closer to the electorate, increasing knowledge about the needs of society and the resulting opportunity to satisfy them more quickly and fully (Bulut & Abdow, 2018, p. 183).

Explanation of the notion of decentralisation is relatively well presented in literature. It means self-limitation of central authorities in favour of other entities with regard to performance of tasks, disposal of public assets and management of public funds. Its application does not preclude the centralising of performance of certain tasks. The dynamics and scope of decentralisation carried out in a country depend, among other things, on political, demographic, geographical, economic and cultural factors. With regard to political conditions, decentralisation is possible in countries with a democratic system. There is a positive correlation between demographic and geographical conditions: countries with a large population and countries with a larger area have greater capacity to decentralise their authorities. It is also fostered by the liberal economic model and by multiculturalism and multinationalism. Historical conditions may be added to the aforementioned factors, including mainly the current directions in creating a political system of a state.

**Proceedings of the 10th International Conference on Applied Economics
Contemporary Issues in Economy: Economics**

From a substance point of view, decentralisation to lower governance levels always involves delegation of tasks. Most often it refers to state structures and concerns the assignment of tasks to local government, however, it needs to be stressed that tasks can also be transferred within private organisations (Poitevin, 2000, p. 878), and in the case of the public sector - the transfer does not necessarily have to take place in the relationship: government sub-sector - local government sub-sector, because tasks can be transferred to an institutionally separated part of state administration, e.g. to special offices representing a subjectively separate part of state administration. The delegation of tasks according to the above scheme is referred to as sectoral decentralisation, as opposed to territorial decentralisation, which is much more common in the case of local government.

The main effect of the decentralization of tasks and public finances should be to increase economic and social effectiveness of the public sector, and as a result to achieve higher economic growth rates, which will bring about an improvement in the standard of living and quality of life of society.

Although, from the theoretical point of view, the above objective of decentralisation of tasks is often emphasised, a review of empirical studies dedicated to this issue indicates that apart from those which indicate positive economic effects of decentralisation, it is also observed that there is a lack of such effects, or in fact there are negative ones occurring (Mauro et al., 2018, p. 873), and with regard to poverty reduction opportunities, it is noted that decentralisation itself, without strengthening and expanding mechanisms of responsibility at a local and national level will not bring results beneficial to poor parts of society (Crook, 2003, p. 77).

The above statement emphasises that the delegation of tasks alone does not exhaust the notion of decentralisation. The definition covers three issues:

- the aforementioned delegation of tasks from a central to local level,
- the use of assets and powers guaranteeing independence and ability to decide on matters relating to a particular area by the authorities at this level,
- local authorities having the appropriate means to implement their own policies.



Measurement of decentralisation

As has already been pointed out, there are no fully decentralised democratic states. There are areas of centralisation in all of them. However, studies have shown that it is possible to determine in which country the level of decentralisation is greater and in which it is less.

In line with the 3 aspects of territorial decentralisation shown in Figure 1, indicators for measuring decentralisation are divided into 3 groups, i.e. the indicators for decentralisation of public finances, administrative and political decentralisation.

Apart from assigning the indicators to one of the three aspects of decentralisation, they can be divided into those which are qualitative (descriptive) variables, e.g. a list of competences of particular levels of local government in a country, and those which are quantitative variables, e.g. the relationship of local government sector expenditure to global public expenditure.

The indicators of the first group, i.e. the decentralisation of public finances, provide information on the division of powers between the central government and the lower level entities of territorial division within the financial economy, especially on competences in collecting and shaping revenues, directions and the volume of their disbursement or powers related to incurring liabilities. Quantitative information can be obtained by calculating, among others, the following indicators – the share of:

- local government sub-sector revenue in total public revenue,
- tax revenue of the local government sub-sector in tax revenue of the state budget,
- own revenue in the total revenue of the local government sub-sector (Sanogo, 2019, p. 218),
- local government sub-sector revenue in relation to the GDP (gross domestic product),
- local government expenditure in total public expenditure,
- local government sub-sector expenditure in government sub-sector expenditure (Stein, 1999, p. 370),
- local government sub-sector expenditure in relation to GDP (Guziejewska, 2018, p. 110).

A comprehensive assessment for the level of decentralisation of public finances would require the use of these indicators. The survey has to be complemented by an analysis of qualitative variables. Due to the complexity of this procedure, only one indicator, the latter, is more commonly used. The share of expenditures of local government entities in



relation to GDP is considered to be a measure which comprehensively shows the process of decentralisation. It allows for the determination of the size and dynamics of decentralisation.

Research methodology

Cluster analysis is a general name for various mathematical methods that can be applied to find out which objects in a set are similar. Objects with similar characteristics are mathematically clustered in the same cluster (Romesburg, 2004, p. 5).

Cluster analysis is a multidimensional technique used to sort data and place similar observations and objects in the same group called a cluster. Both the number of clusters and the number of observations in each cluster are unknown (Migdał-Najman & Najman, 2013, pp. 179-194). There are two types of approaches in cluster analysis: hierarchical and non-hierarchical grouping (Alkarkhi & Alqaraghuli, 2019, pp. 177-186), the first of which was used in the article. Within its framework, agglomeration techniques can be applied, as was the case in the studies presented, and dividing techniques as well. The principle of joining objects can be done according to the nearest or farthest neighborhood (Kaufman & Rousseeuw, 1990, pp. 44, 47). The first method was used in the presented calculations.

In a hierarchical agglomeration cluster analysis, dendrogram diagrams are used to visualize how clusters are formed. A dendrogram is also called a tree diagram. The tree diagram visualization consists in showing all objects that are gradually aggregated into larger clusters. On the horizontal axis of the dendrogram you can read the distance at which appropriate elements form a new cluster. On the vertical axis all objects taken into account in the analysis are shown.

A quantitative description of similarities or dissimilarities of two data points or two clusters requires a prior decision as to the choice of distance and similarity in the cluster analysis (Anderberg, 1973, pp. 131-155). The distance of Czybyszew, urban, Euclidean or Euclidean to a square can be used to create dendrograms. The third of the mentioned, otherwise geometric distance in multidimensional space, is most often used in cluster analysis. It is calculated on the basis of raw data and not on the basis of standardized data.



Results and findings

The main objective of the research was to determine the extent of decentralisation in EU states and to identify characteristics of countries with a similar level to it. Data were subjected to statistical analysis - hierarchical grouping. For this purpose, the cluster analysis module of the software Statistica was used. A clustering procedure consists in connecting closely neighbouring objects (single linkage) using the measurement of Euclidean distance. The results are presented in table 1. On their basis dendrograms have been created - each for one year in which the analysis was performed (Figures 2, 3, 4, 5).

After the calculations and dendrograms had been performed, it turned out that differences between the distances of linkages were not large enough to clearly distinguish groups of countries similar to each other and to combine them into clusters on the basis of the statistical programme. As the method used did not allow clusters to be distinguished, they were created based on the results of the average decentralisation for the period 2013-2016, assigning countries to one of the four groups on the assumption that there must be a difference of at least 1 p.p. between the groups. As a result, the countries were divided into groups with a low, medium, high and highest level of decentralisation, with numbers I-IV assigned to them respectively.

The first group consists of 5 countries with an average level of decentralisation not exceeding 5%. Due to such a low level it is reasonable to say that they are centralised countries. Their characteristic feature is a relatively small area and small population, hence it seems that the central distribution of public funds does not slow down the management of a country to a significant extent.

The second group is the most numerous, consisting of 17 countries, which accounts for nearly 2/3 of all analysed countries (61% to be precise), hence it should be concluded that this level, ranging from 6 to 12%, dominates in the EU countries and is a certain standard in force in the European Union. This group includes all federal member states of the EU, i.e. Austria, Belgium and Germany (their indicator is relatively stable at a similar level of 7-8%), as well as Spain which is not a federal state, but where finances of the Spanish autonomous regions are separated from those of its local government.

The remaining 6 countries were assigned to two groups, where Poland also belongs to the third group, with a high level of decentralisation. The last bracket includes Scandinavian countries with a very high level of decentralisation - within the limits of 1/4-1/3 (23.4-35.1% exactly).



The proposed grouping fits quite well into the model of J. Loughlin, who, describing relations between local government and government powers, distinguished 4 types of states: federal and 3 unitary - regional, decentralised and centralised. Comparing the results obtained in the article with the Loughlin classification propositions (Loughlin, 2000, p. 26) it has to be stated that, with a few exceptions, centralised states correspond to group I, decentralised states belong to group IV, federal states and most of the countries that joined the EU in 2004 or later - to group II, and regional states to group III. In addition, the results are in line with earlier studies, according to which countries with a very high level of decentralisation, e.g. Finland, are characterised by a high degree of autonomy of local governments and a broad spectrum of their own resources (Sekuła & Smiechowicz, 2016, p. 731).

Conclusions

On the basis of the analysis carried out, it can be concluded that there is a varying level of decentralisation in the European Union states. The dominant level is 6-12%, which occurs in 61% of countries. This means that such a part of the GDP makes up the expenditure of the local government sub-sector. The 3 countries where it is highest are Sweden, Finland and Denmark.

In addition, it has been found that minor variations in the indicator occur in all countries over the 4 years covered by the survey.

At the same time, the presented study examined usefulness of the cluster analysis method in a hierarchical form (agglomeration method) with the use of full linkage and Euclidean distance to determine the possibility of joining EU countries into clusters with regard to the level of decentralisation occurring in them. The use of agglomeration by means of simple connections showed the fact that the objects form clusters joined together in a "rope", creating long connections and long chains. It is not possible to clearly distinguish groups of objects, because the distance of linkages from clusters does not differ significantly. Therefore, it was concluded that the originally applied agglomeration method of statistical analysis of a single linkage does not seem useful to perform this type of analysis due to the tendency to create poorly defined clusters with the structure of long "chains". In order to verify the above statement in the future, one should consider broadening the study horizon or adding a second measure, e.g. local government sub-sector revenue in relation to GDP.



**Proceedings of the 10th International Conference on Applied Economics
Contemporary Issues in Economy: Economics**

References

- Anderberg M.R. (1973), Cluster analysis for applications, *Academic Press*, New York, San Francisco, London. DOI: 10.1016/B978-0-12-057650-0.50012-0
- Bulut, E. & Abdow, I. (2018). Decentralization and Poverty Reduction: Opportunities and Challenges in Kenya. *Sosyoekonomi*. DOI: 10.17233/sosyoekonomi.2018.02.10
- Crook, R. (2003). Decentralisation and poverty reduction in Africa: the politics of local-central relations. *Public Administration and Development*, 23(1). DOI: 10.1002/pad.261
- Devas, N., (1997). Indonesia: what do we mean by decentralization?, *Public Administration and Development*, Vol. 17.
- Guziejewska, B. (2018). Normative Versus Positive Approach to Fiscal Decentralisation and the Measures of Decentralisation, *Comparative Economic Research*, Vol. 21, No 1. DOI: 10.2478/ser-2018-0006
- Kaufman, L.& Rousseeuw, P. (1990), *Finding Groups in Data: An Introduction to Cluster Analysis*, John Wiley & Sons, Inc. DOI:10.1002/9780470316801
- Loughlin, J. (2000). Regional autonomy and state paradigm shifts in Western Europe, *Regional & Federal Studies* Vol. 10 No 2. DOI: 10.1080/13597560008421118
- Mauro, L., Pigliaru, F. and Carmeci, G. (2018). Decentralization and growth: Do informal institutions and rule of law matter?, *Journal of Policy Modeling*, 40(5). DOI: 10.1016/j.jpolmod.2018.05.003
- Migdał-Najman, K. & Najman, K. (2013), A Comparative Analysis of Selected Methods of Cluster Analysis in the Grouping Units with a Complex Group Structure, *Zarządzanie i Finanse*, R.11, nr 3, cz. 2
- Poitevin, M. (2000). Can the theory of incentives explain decentralization?, *Canadian Journal of Economics/Revue Canadienne d'Economique*, 33(4). DOI: 10.1111/0008-4085.00046
- Romesburg, Ch. (2004). *Cluster Analysis for Researchers*. Lulu Press
- Sanogo, T. (2019). Does fiscal decentralization enhance citizens' access to public services and reduce poverty? Evidence from Côte d'Ivoire municipalities in a conflict setting, *World Development* Vol. 113. DOI: 10.1016/j.worlddev.2018.09.008
- Sekuła, A. & Śmiechowicz, J. (2016). Systems of general grants for local governments in selected EU countries against the background of the general theory of fiscal policy, *Equilibrium* 2016 Vol. 11, Is. 4. DOI: 10.12775/EQUIL.2016.032
- Stein, E. (1999). Fiscal Decentralization and Government Size in Latin America, *Journal of Applied Economics*, 2(2). DOI: 10.1080/15140326.1999.12040543



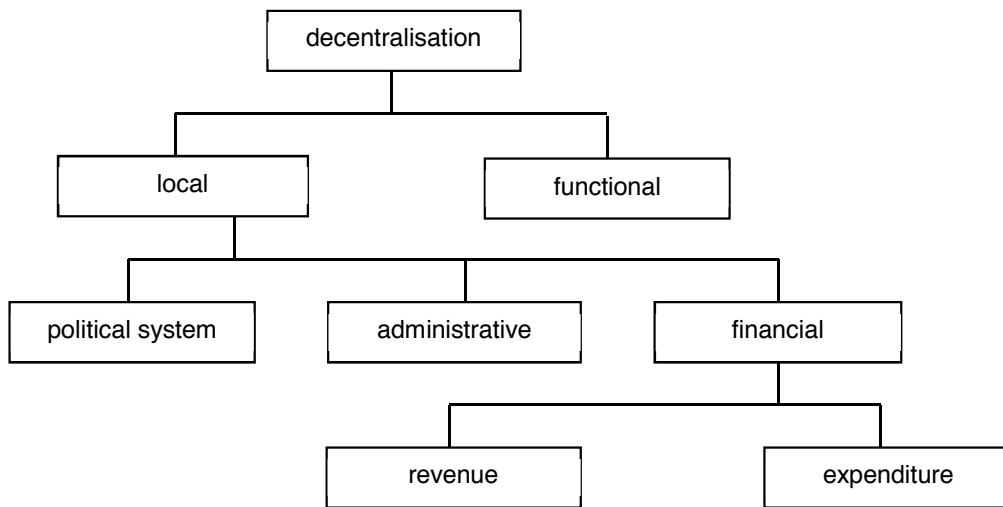
Annex

Table 1. Local government sub-sector expenditure to GDP in EU countries in 2013-2016 (%).

State	2013	2014	2015	2016	average	group
Malta	0,7	0,6	0,5	0,4	0,55	I
Cyprus	1,5	1,6	1,6	1,4	1,53	I
Ireland	3,6	2,8	2,2	2	2,65	I
Greece	3,6	3,3	3,5	3,5	3,48	I
Luxemburg	5	4,8	4,5	4,9	4,8	I
Spain	5,9	6,1	6	5,8	5,95	II
Portugal	6,6	6	5,9	5,7	6,05	II
Slovakia	6,4	6,7	7,4	6,6	6,78	II
Hungary	7,5	7,8	7,8	6	7,28	II
Belgium	7,6	7,4	7,2	7,1	7,33	II
Germany	7,7	7,8	7,8	8	7,83	II
Lithuania	8,3	7,9	7,8	7,8	7,95	II
Austria	8,5	8,5	8,6	8,5	8,53	II
Bulgaria	7,9	9	10,4	6,9	8,55	II
Slovenia	9,7	9,8	8,9	8,2	9,15	II
Romania	9,2	9	9,7	9	9,23	II
Estonia	9,9	9,3	9,4	9,4	9,5	II
Latvia	10,2	10	9,3	9,5	9,75	II
Great Britain	11,1	10,7	10,5	10,1	10,6	II
Czechia	11,4	11,5	11,3	10,2	11,1	II
France	11,9	11,8	11,4	11,1	11,55	II
Croatia	12	12,6	12,1	11,5	12,05	II
Poland	13,1	13,3	12,8	12,9	13,03	III
Holland	13,8	13,9	14,3	13,8	13,95	III
Italy	15	14,7	14,5	14,3	14,63	III
Finland	23,8	23,8	23,2	22,6	23,35	IV
Sweden	24,9	24,9	24,6	25	24,85	IV
Denmark	35,5	35,3	34,9	34,8	35,13	IV

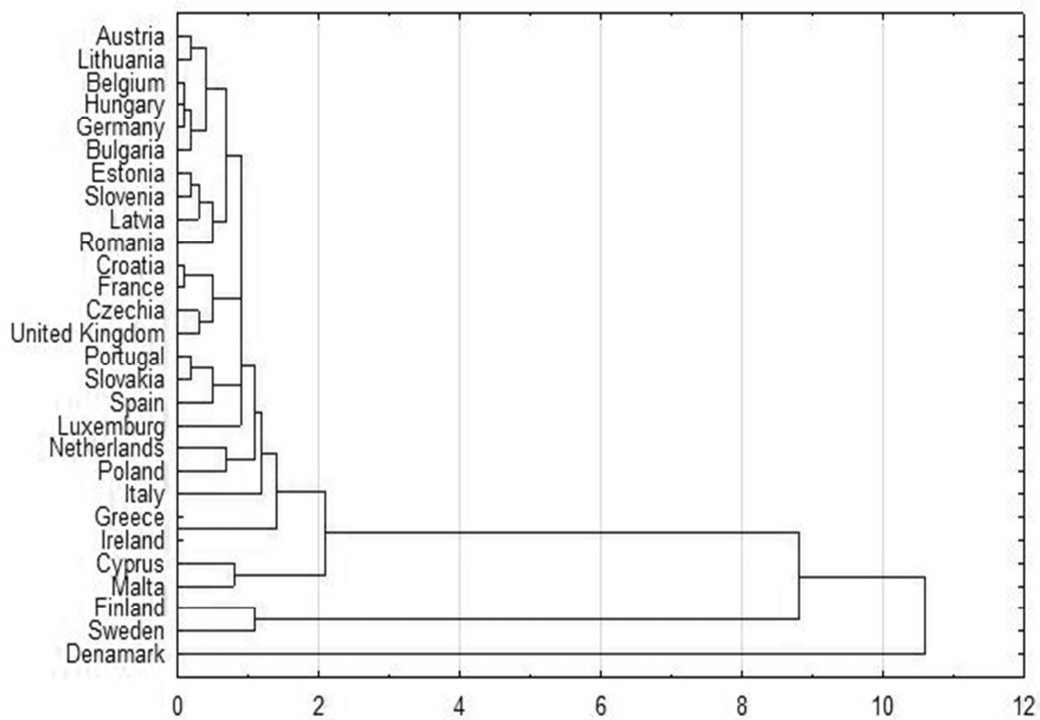
Source: Own elaboration based on Eurostat data: epp.eurostat.ec.europa.eu.

Figure 1. Types of decentralisation



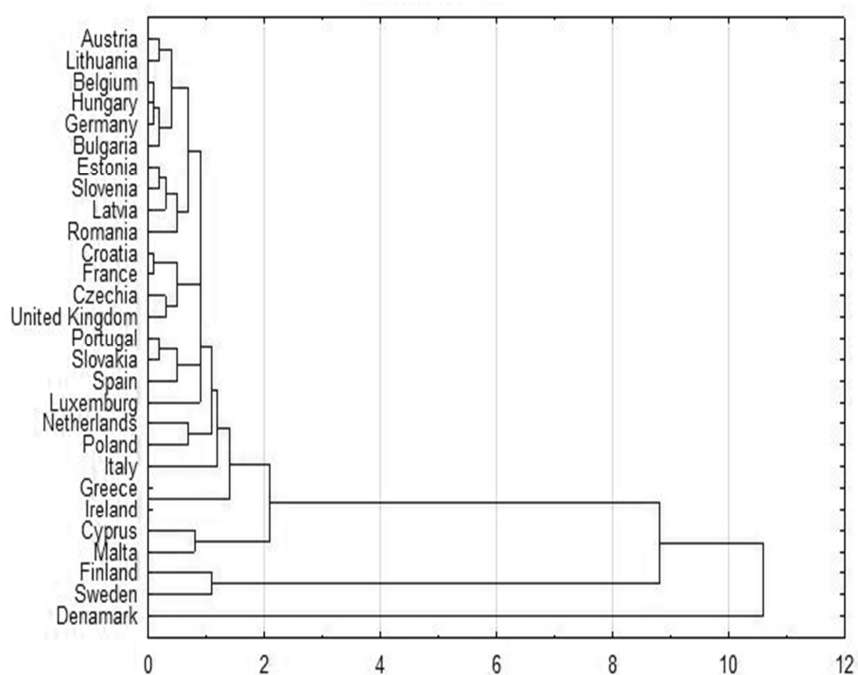
Source: own study.

Figure 2. Dendrogram: Decentralisation of public expenditure in EU countries - 2013.



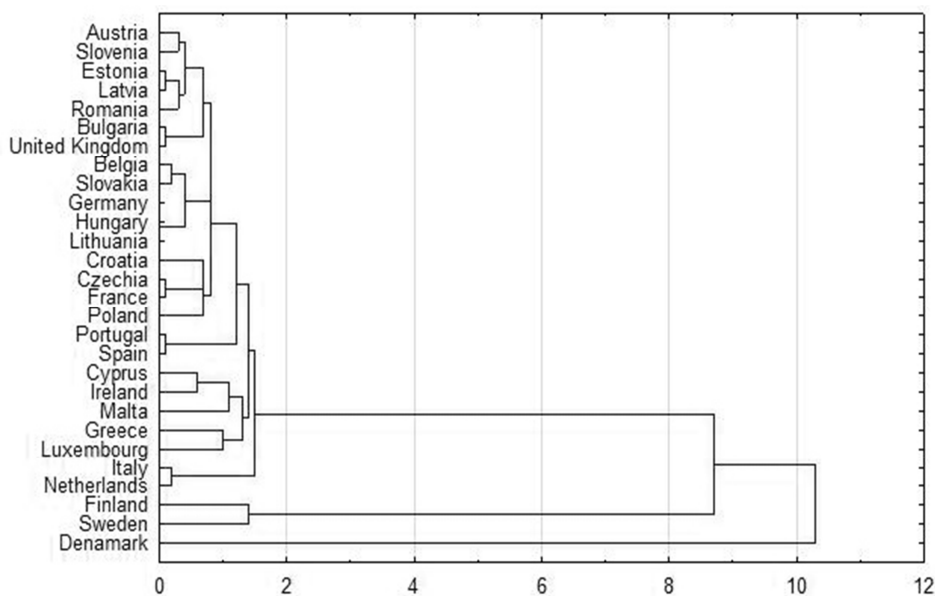
Source: Own elaboration in the Statistica software on the basis of Eurostat data: epp.eurostat.ec.europa.eu.

Figure 3. Dendrogram: Decentralisation of public expenditure in EU countries – 2014.



Source: Own elaboration in the Statistica software on the basis of Eurostat data: epp.eurostat.ec.europa.eu.

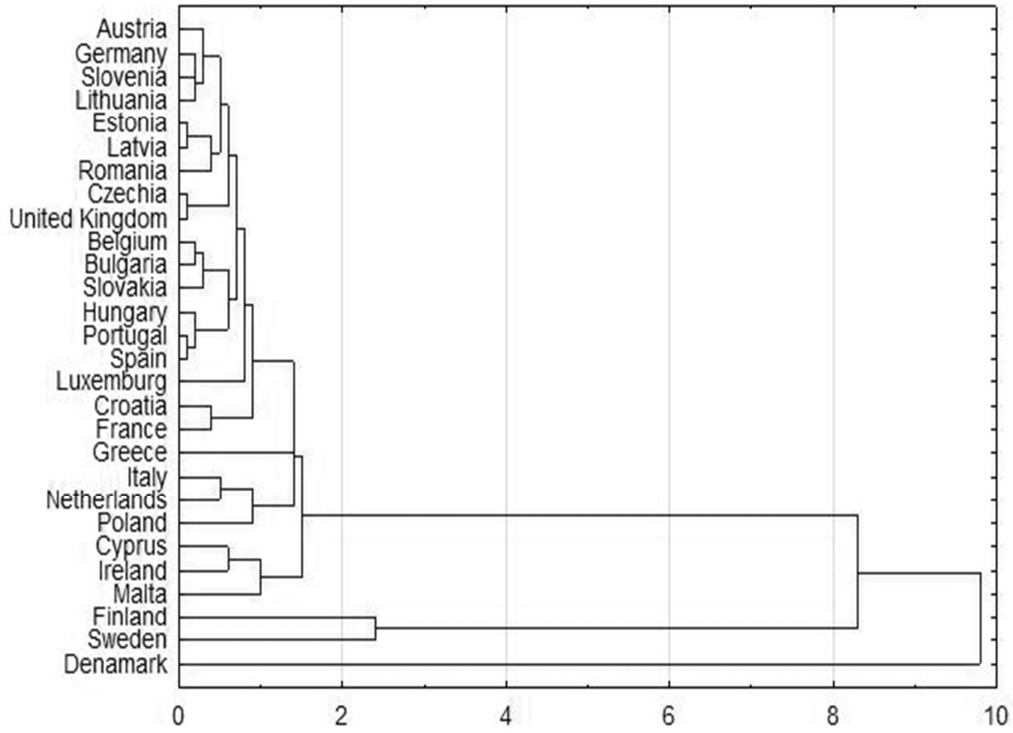
Figure 4. Dendrogram: Decentralisation of public expenditure in EU countries – 2015



Source: Own elaboration in the Statistica software on the basis of Eurostat data: epp.eurostat.ec.europa.eu.



Figure 5. Dendrogram: Decentralisation of public expenditure in EU countries – 2016.



Source: Own elaboration in the Statistica software on the basis of Eurostat data: epp.eurostat.ec.europa.eu.