6 COMPARING OF WELFARE INDICATORS BETWEEN TURKEY AND EUROPEAN UNION MEMBER STATES

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Abstract

This study considered pre-selected socio-economic indicators of the first 15 members of the European Union, subsequent 9 countries from East and Central Europe and Turkey, analyzing the situations of countries and variables according to one another and betraying the possible commonalities and disparities between them. Aiming at finding possible similarities and disparities between them selected social economic indicators from EUROSTAT (2005 data were used) is acquired and by using related variables the multidimensional scaling analysis is applied. As a result of the multidimensional scaling analysis the obtained stress value for the two-dimensional configuration was 0,18. The k=2 dimension the stress value explains the data in the rate of 0,85387. It is important to look at the inflation rate and gini coefficient first, when the objective is to investigate the development and welfare indicators of a country. According to distances between Countries, higher welfare and development level was demonstrated in the first 15 members of the European Union. In the second dimension, the distances between the countries of East-Central Europe that subsequently joined the Union and Turkey show that they have similar welfare and development level.

Key Words: Multidimensional Scaling, Social Economics Indicators, EUROSTAT
JEL Classification: F15, C02

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1. Introduction

Promotion of higher equality is an important policy issue in many countries. Similarly, in many societies welfare expands is an important goal of public policy. In present day, the welfare level that the countries are willing to measure, has been undertaken with a new approach and especially the socio-economic indicators takes up too much room at this point. This new approach stresses the significance of socio-economic indicators in determining the development level of nations. Welfare level is observable and measurable. A judiciously-selected set of indicators may provide that information for a good part of human needs, and may therefore be considered as a means for measuring the level of WELFARE satisfaction of an individual or a population.

The selected set of indicators consists of gini coefficient, poverty rate, long term unemployment rate, GDP per capita, inflation rate and general government dept. These indicators are selected to be able to compare the countries from the main socio-economic indicators which represent welfare level. The purpose of this paper is to present the significant results with using the multidimensional scaling which gives the opportunity to compare and analize the different indicators which are represented by different units such as percentage (%), currency ($, € etc.), person or kg, etc. (Kruskal JB, Wish M. 1978). The multidimensional scaling (MDS) obtains the underliying dimensions from respondents' judgements about the similarity of socio-economic indicators of European Union Member States and Turkey. It does not depend on researchers' judgments. Because of these advantages, MDS is the most common technique. So for multivariete data analysis with MDS, some indicators are determined in terms of welfare level. Those selected indicators are some of the most represensetive indicators for a country's economy. Gini coefficient's main advantage is that it is a measure of inequality by means of a *ratio analysis*, rather than a variable unrepresentative of most of the population, such as *per capita income*. The Gini coefficient can also be used to measure *wealth inequality*. Poor countries (those with low *per-capita GDP* (Vikipedia)) have Gini coefficients that fall over the whole range from low (0.25) to high (0.71), while rich countries have generally low Gini coefficient (under 0.40).The poverty rate is the percentage of people whose family income falls below an officially determined threshold, which varies by family size and composition. The standard definition of long-term unemployment is all unemployed persons with continuous periods of unemployment for a year or longer (52 weeks and over) it is expressed as a percentage of overall labour force. The cost of unemployment is social and economic which are increased crime, alienation, cost of unempoyment benefits, loss of output and tax revenue. Gross domestic product (GDP) measures the economic aggregate of a country, while per-capita GDP assesses the prosperity degree of the country. In the economic circle, people, in most cases, take per-capita GDP as an important index of dividing economic development stages. Unemployment and inflation are two important economic variables. Inflation is a sustained rise in the general level of prices of goods and services. The optimal rate of inflation relies on many factors and is likely to be different for each country. If the inflation rate is too high, both real income and economic activity are reduced. Government debt expressed as a percentage of GDP differs significantly from one Member State to another and it is one of the Maastricht Treaty criteria.

2. Material and Method

In our welfare analysis, we used extracts from EUROSTAT main economic indicators. The selected indicators were “GDP per capita”, “long term unemployment rate”, “general government debt” and “inflation rate”, “poverty rate” and “gini coefficient”.

This study intends to graphically demonstrate the relations between the first 15 member states of the European Union (Belgium, France, Germany, Italy, Luxemburg, Netherlands, Denmark, Ireland, United Kingdom, Greece, Portugal, Spain, Austria, Finland, Sweden), the new 9 member countries from East and Central Europe (Czech Republic, Estonia, Hungary, Latvia, Lithuaina, Poland, Slovakia, Bulgaria, Romania) and Turkey for betraying the possible commonalities and disparities between them.

In addition, as second analysis, this study also aims at demonstrating the potential for both similarities and disparities among the selected socio-economic indicators in the studied universe of countries. This analysis used the following indicators (data source: EUROSTAT): “GDP per capita”(GDP per capita in Purchasing Power Standards (PPS) (EU-25 = 100)), “long term unemployment rate” (Long-term unemployment in % of active population), “general government debt (general government consolidated gross debt as a percentage of GDP), “inflation rate” (annual average rate of change in Harmonized Indices of Consumer Prices (HICPs)), “poverty rate” (At-risk-of-poverty rate by gender and various age groups) and “Gini coefficient” (inequality of income distribution Gini coefficient). Standardized data was used because the variables have different unit scale value.

Multidimensional Scaling Analysis was used to demonstrate the similarities and disparities among these countries, as part of the multivariate statistical analysis technique - one of the basic methods of multidimensional scaling (MDS)(Kinnucan, Nelson, and Allen). The factor analysis was complemented with a multidimensional scaling analysis using SPSS. Such an additional procedure allowed for the verification of the structural dimensions of data, particularly useful when conducting cross-cultural analyses (Leung & Bond, 1989). Multidimensional scaling allows us to explore dimensions underpinning the four goals. MDS assists the researcher in determining the perceived relative position of a set of objects or items (Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C., 1995). MDS is typically used to determine similarities amongst a set of objects (rather than self-report questionnaire items). It is, however, considered appropriate for use in the present study not only in terms of its heuristic value, but also in terms of its focus on mapping constructs in multidimensional space as is relevant here. If two items are similarly rated by respondents, they will be located in multidimensional space in a way that the distance between them is smaller than the distance between other pairs of items. The resulting perceptual map indicates the relative positioning of all items. The researcher then interprets the underlying dimensions in a way that best explains the positioning of items on the map, particularly as it relates to an underlying theoretical rationale. Furthermore, MDS method allows a standardized (transformed) analysis of the data collected in different scales. This study is based on the data standardized by means of z score transformation. The present analysis used the multidimensional scaling procedure in SPSS 14.0, which created the similarity matrix from the raw data using the Euclidean distance measure (Howard and McCain, 1998).

3. Results

3.1. Results of Multidimensional Scaling According to Distances Between Variables

It is desirable for MDS analysis to determine the stress statistics to a level near zero. The compatibility of configuration distances to the original ones on the basis of stress values is expressed as follows:

Table 1

Stress values' responses

Stress value	Compatibility
|>0.20	Incompatible presentation
0.10-<0.20	Low compatibility
0.05-<0.10	Good compatibility
0.025-<0.0.5	Perfect compativility
0.00-<0.025	Full compatibility

RSQ values are the proportion of variance of the scaled data (disparities) in the partition (row, matrix, or entire data) which is accounted for by their corresponding distances. Stress values are calculated according to Kruskal's stress formula 1.

For matrix: stress = 0.18124; RSQ = 0.85387

MDS analysis in this study was carried out bi-dimensionally (k=2). It was iterated up to the value where the stress statistics for K=2 is less than 0.001. For MDS solutions, the dimensional solutions giving a stress value near 0 are considered to be desirable or appropriate.

The stress statistics, which are used for determining the appropriateness between the configuration distances and estimated distances, is found as 0.18 for the k=2 dimension. Kruskal Stress statistics is calculated by taking square root of the rate of the differences between the actual configuration dimension and the estimated ones to the estimated configuration distances, and represent the compatibility between data distances and configuration distances. In this context, for the k=2 dimension the stress value explains the data in the rate of 0.85387.

Table 2

Configuration derived in 2 dimensions stimulus Coordinates

Stimulus Number	Stimulus Name	Dimension	
		1	2
1	Poverty	0.7360	0.4503
2	Gini Coefficient	0.8065	0.3748
3	Unemployment Rate	0.6683	-1.255
4	GDP Per Capita	-2.1013	0.5396
5	Inflation Rate	0.8797	0.9396
6	Goverment Dept	-0.9892	-1.0493

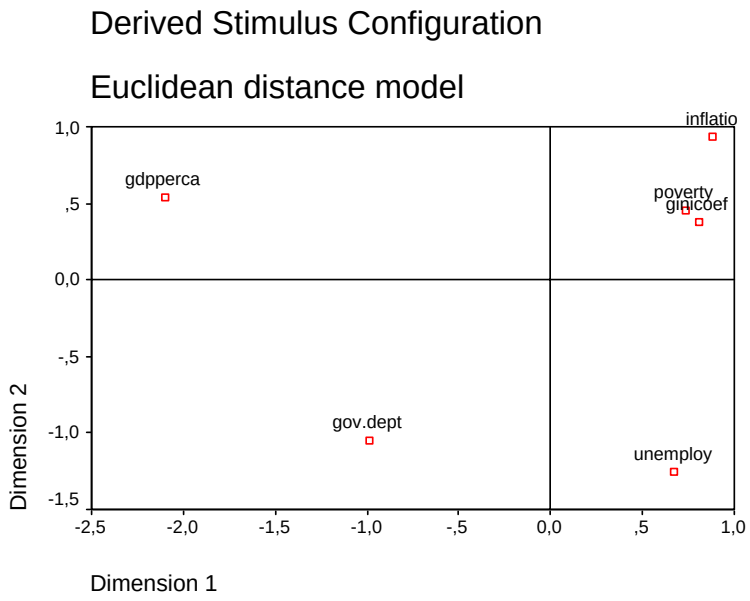
The above table shows the bi-dimensional coordinates (stimulus coordinates) of variables. It is understood from the table that the inflation, Gini Coefficient, poverty

and unemployment rate at the first dimension are positive, so that these 4 variables are perceived similar, and of primary importance. As for the second dimension, the inflation rate, GDP, Gini and poverty are also positive, and of secondary importance.

The Euclidean Distance Model that is computed according to distances of variables to one another is presented below in a two-dimensional graphic.

Figure 1

Euclidean Distance Model in terms of variables



Source: EUROSTAT, 2005

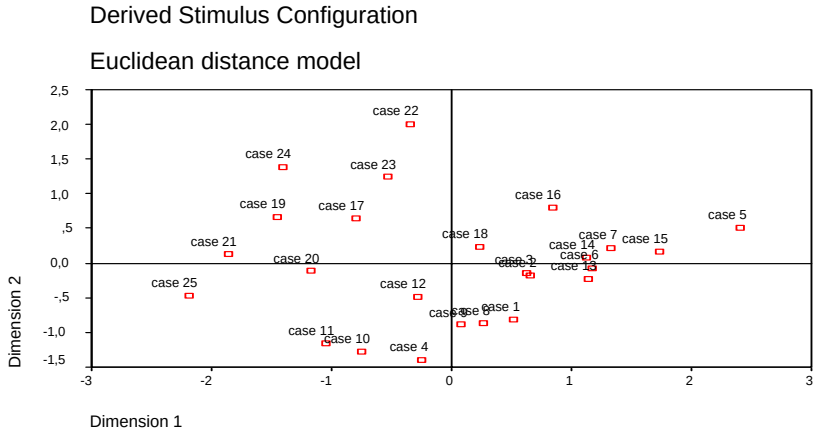
When we evaluated the data in two dimensions, in terms of the welfare level of the country, the most significant variable was Inflation Rate. It is followed by, in the order of, Gini Coefficient, Poverty, Unemployment Rate. “GDP Per Capita”, “Long Term Unemployment Rate” and “General Government Debt” exhibit disparity from the general tendency. When we looked at it in the second dimension, it could be argued that as the secondary choice group, positively charged Inflation Rate, GDP Per Capita, Poverty and Gini Coefficient variables were significant in choice. These attributes could be rated as the secondary importance. When analyzing the welfare and development indicators of countries, we concluded that poverty, gini coefficient and inflation rate indicators were important in both dimensions.

3.2. Results of Multidimensional Scaling Analysis According to Distances Between European Countries and Turkey

The Euclidean Distance Model that is computed according to distances of countries to one another is presented below in a two-dimensional Figure 2. *(Case:1 Belgium,Case:2 France, Case:3 Germany, Case:4 Italy, Case:5:Luxemburg, Case:6 Netherlands, Case:7 Denmark, Case:8 Ireland, Case:9 United Kingdom, Case:10 Greece, Case:11 Portugal, Case:12 Spain, Case:13 Austria, Case:14 Finland, Case:15 Sweden, Case:16 Czech Republic, Case:17 Estonia, Case:18 Hungary, Case:19 Latvia, Case:20 Lithuania, Case:21 Poland, Case:22 Slovakia, Case:23 Bulgaria, Case:24 Romania and Case:25 Turkey).*

Figure 2

Euclidean Distance Model in terms of cases (Countries)



Source: EUROSTAT, 2005

4. Conclusion

As a result of the analysis, if the first dimension is taken into consideration, the countries from East and Central Europe that have recently joined the European Unnion, have been placed on the left side of the graphic while the first member countries of the European Union were placed on the right side. The obvious differences among these two groups reflect the disparity of social-economic indicators. Euro 15 member countries have higher welfare and development levels. In the second dimension, there are stricking distances between the new member countries of East and Central Europe and the group composed by early EU members such as The Netherlands, Denmark, Sweden, Germany, France, United Kingdom and Luxembourg in the variables of inflation rate, gini coefficient and poverty rate.

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