

FACTOR ANALYSES FOR ECONOMIC GROWTH IN EU-28 AND MENA-4 COUNTRIES

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ABSTRACT

This study uses eight main different statistical fields, as components between 2005-2014. The following step of the research is that the factor analyses, when in case of the first FACT1 three variances of the first component are, namely GDPVol2014, UnEmploy2014 and RisPov2014 are compared with two variances of the second component, namely GovDebt2014 and SocProt2014. In the second FACT2 analyse three variances of the first component, namely GDPVol2014, UnEmploy2014 and RisPov2014 are compared with two variances of the third component, namely LLearn2014 and GDPcap2014. The cluster analyse system separates the EU-28 member states and shows how these countries are closed by their special performance. The biggest group includes 22 member states closed to each other in field of their economic performance. The biggest country group originally also can be separated into 10 smaller country-group. The second country-group was consisting of two member states, namely France and Portugal, which countries were connected by mostly similarly economic growth rate with different economic developed levels. The third country-group included Spain, Cyprus, Greece and Ireland, where the low economic growth and low level of GDP volume growth were closed in case of Spain and Cyprus, but in Greece the unemployment rate was so highly and Ireland realised highly strong GovDebt2014 and SocProt2014 in its economic performance with low level for GDPVol2014 and GDPcap2014. The factor analyses and dendrogram system can show the clear selection methods for the economies, which help the researchers and policy makers to create the economic policy strategy and financial support for those countries which have the biggest backwardness in their economic development.

Keywords: variances, cluster analyses, correlation, country-groups, dendrogram

INTRODUCTION

This study uses eight main different statistical fields, as components between 2005-2014: namely Total unemployment rate in % (UnEmploy2014); GDP and main components – volumes (GDPVol2014); HICP - inflation rate (HICP: Harmonised index of consumer prices, HICPan2014); General government gross debt (GovDebt2014); Expenditure on social protection (SocProt2014); Lifelong learning in %, Total (LLearn2014)); People at risk of poverty or social exclusion by age and sex (RiskPov2014); Real GDP per capita, growth rate and totals (GDPcap2014).

MATERIAL AND METHOD

Factor analyses

The following step of the research is that the factor analyses, when in case of the first FACT1 three variances of the first component are, namely GDPVol2014, UnEmploy2014 and RisPov2014 are compared with two variances of the second component, namely

GovDebt2014 and SocProt2014. In the second FACT2 analyse three variances of the first component, namely GDPVol2014, UnEmploy2014 and RisPov2014 are compared with two variances of the third component, namely LLearn2014 and GDPcap2014. Those countries from EU-28 are under “X” line and PLUS side, the GDPVol2014 is at high level, and the RisPov2014 and UnEmploy2014 are at low level (See more detailed in SAJTOS ET AL, 2007; structure of SPSS in applied study for Czech Republic in SZÉLES, ET AL, 2010; factor analyses concern the controlling system and financial issues, in ZÉMAN ET AL, 2014).

RESULTS

FACT1 (“X”) and FACT2 (“Y”) analyses

The first FACT1 analysis can be seen in the *Figure 1*: Factor-1 and Factor-2 analysis for EU-28. In the *Figure 1* the average value of the two, First and Second principle components is equal with zero, 0. The “X” and “Y” lines are the reference lines, which are average values of the countries, as EU-28 member states. In the “X” line concerning the FACT1 including three variances, namely GDPVol2014, UnEmploy2014 and RisPov2014, from the “0” to the right side is PLUS and from the left side is MINUS. From these approach the -0,907 value of GDPVol2014 is in this MINUS left side of “X” line. In case of those countries, which are under the “X” line in MINUS sector - they have high increase level of GDPVol2014, and because the value of Unemploy2014 and RisPov2014 are plus, therefore these countries have low level in RisPov2014 and UnEmploy2014 in this same sector (also see the *Figure 1* and the *Table 1*).

In the “Y” line concerning the FACT2 including two variances, namely GovDebt2014 and SocProt2014, from the “0” to the upper side is PLUS and from the down side is MINUS. From this approach the 0,902 value of GovDebt2014 and 0,800 value of SocProt2014 are in this PLUS upper side of “Y” line. In Left-Upper-Side Sector in case of those countries, which are upper side of “Y” line in PLUS sector - they have high increase level of GovDebt2014 and SocProt2014. Also from the earlier analysed conditions the GDPvol2014 is also high. But the UnEmploy2014 and the RiskPov2014 are at low level.

In the Left-Down-Side Sector the GovDebt2014 and the SocProt2014 are at low level, the GDPVol2014 is high, the UnEmploy2014 is low, because of the consequence of high GDPVol2014, also the RisPov2014 is low.

In the Right-Down Side Sector the GDPVol2014 is at low level and the UnEmploy2014 and RiskPov2014 are at highly level. But the GovDebt2014 and SocProt2014 are at low level.

In the Right-Up-Side Sector the GDPVol2014 is at low level and the UnEmploy2014 and RiskPov2014 are at high level. The GovDebt2014 and SocProt2014 are also at high level.

FACT1 (“X”) and FACT3 (“Y”) Analyses

Starting from the first FACT1 analyses can be seen in the *Figure 2*: Factor-1 and Factor-3 Analysis for EU-28. In the *Figure 2* also the average value of the two, First and Second principle components is equal with zero, 0. The “X” and “Y” lines are the reference lines, which are average values of the countries, as EU-28 member states. In the “X” line concerning the FACT1 including three variances, namely GDPVol2014, UnEmploy2014 and RisPov2014, from the “0” to the right side is PLUS and from the left side is MINUS.

In the “Y” line concerning the FACT3 including two variances, namely LLearn2014 and GDPcap2014, from the “0” to the upper side is PLUS and from the down side is MINUS. From these approach the 0,779 value of LLearn2014 and 0,737 value of GDPcap2014 are in this PLUS upper side of “Y” line.

In Left-Upper-Side Sector in case of those countries, which are upper side of “Y” line in PLUS sector - they have high increase level of LLearn2014 and GDPcap2014. Also from the earlier analysed conditions the GDPvol2014 is also at high level. But the UnEmploy2014 and the RiskPov2014 are at low level.

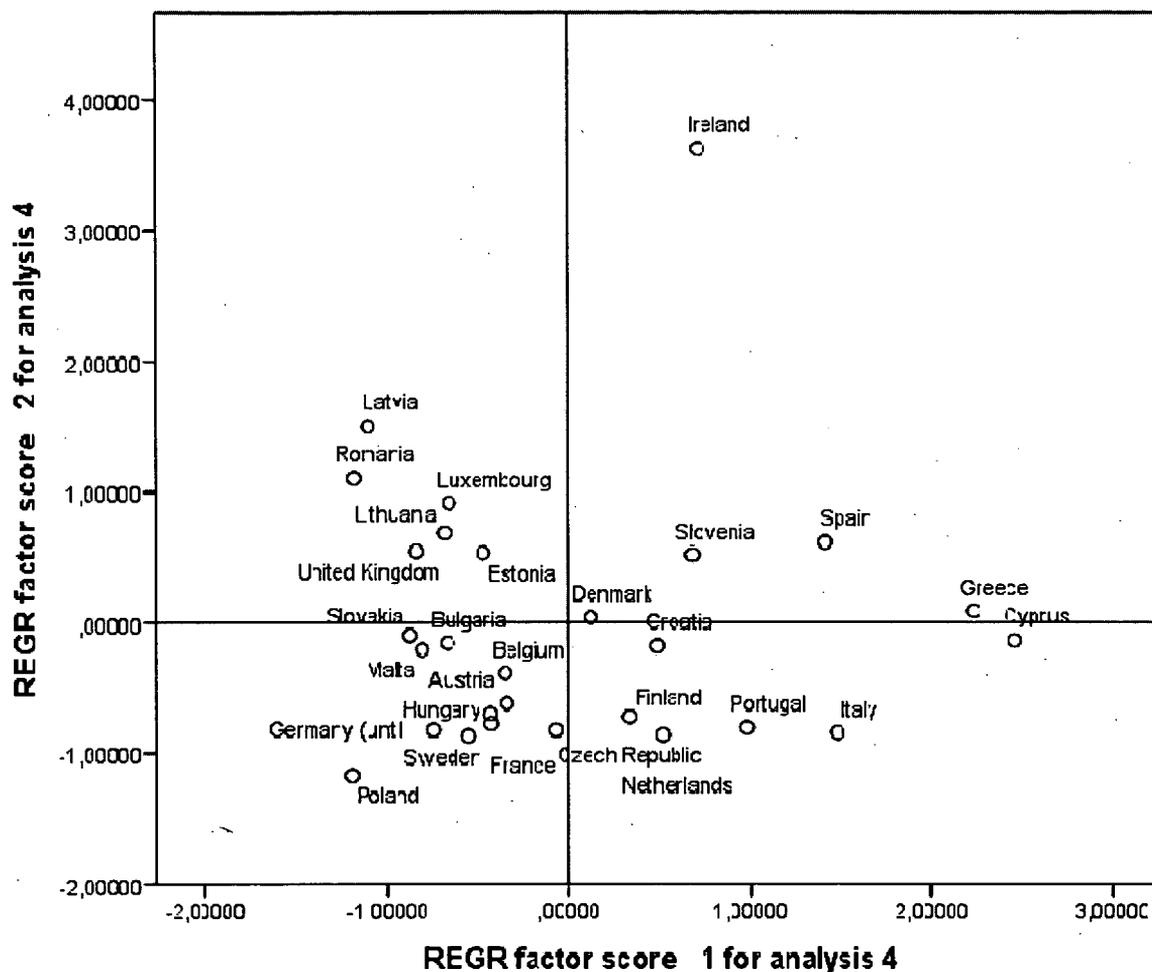
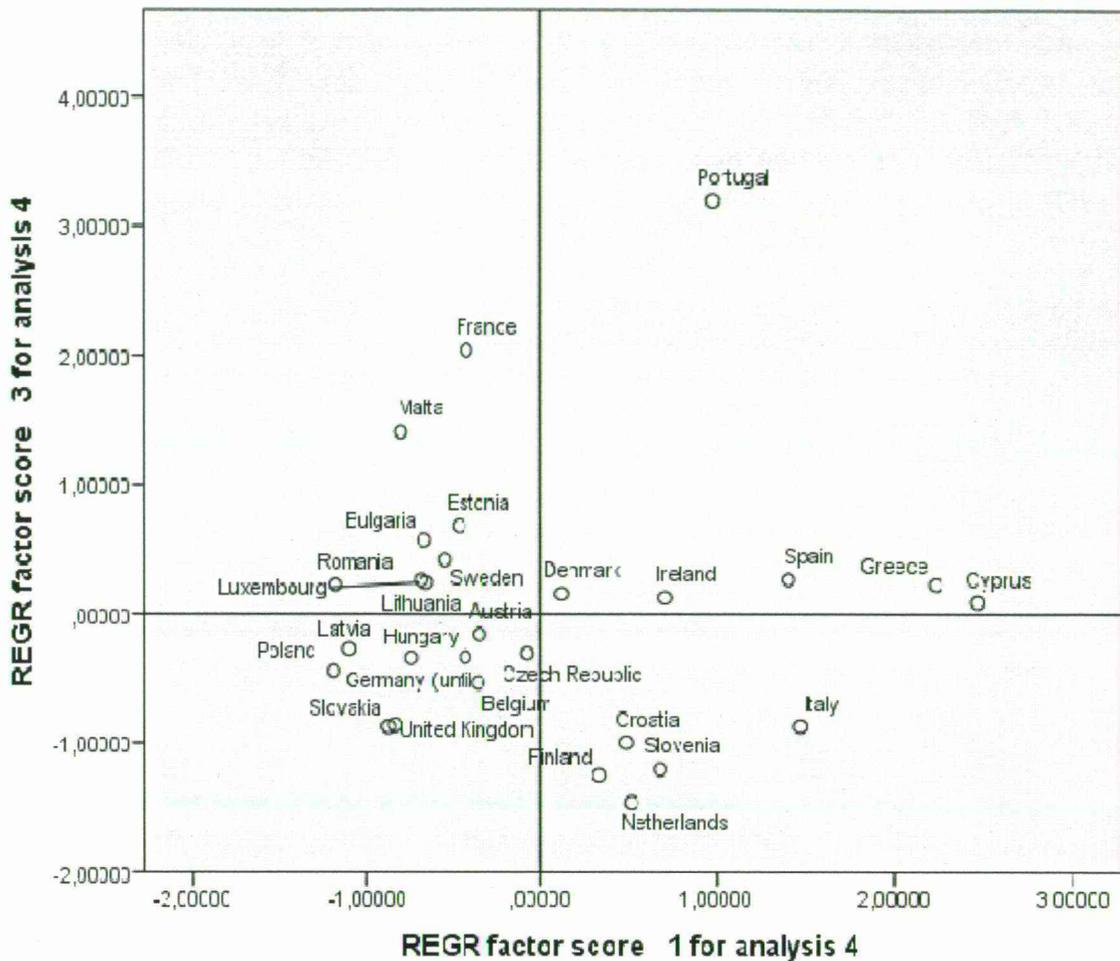


Figure 1. Factor-1 (“X”) and Factor-2 (“Y”) Analysis for EU-28

* Chart Builder.

Table 1. Case Processing Summary^a for Figure 1

Cases					
Valid		Missing		Total	
N	Percent	N	Percent	N	Percent
28	100,0%	0	0,0%	28	100,0%



DATASET DECLARE D0.7638405787722926.

Figure 2. Factor-1 (“X”) and Factor-3 (“Y”) Analysis for EU-28

In the Left-Down-Side Sector the GovDebt2014 and the SocProt2014 are at low level, the GDPVol2014 is high, the UnEmploy2014 is low, because of the consequence of high GDPVol2014, also the RisPov2014 is low. But the LLearn2014 and GDPcap2014 are at low level.

In the Right-Down Side Sector the GDPVol2014 is at low level and the UnEmploy2014 and RiskPov2014 are at high level. But the GovDebt2014 and SocProt2014 are at low level. But the LLearn2014 and GDPcap2014 are at low level.

In the Right-Up-Side Sector the GDPVol2014 is at low level and the UnEmploy2014 and RiskPov2014 are at high level. But the GovDebt2014 and SocProt2014 are at high level. Also the LLearn2014 and GDPcap2014 are at highly level.

Cluster Analyses for EU-28

The cluster analyses show the separation of the EU-28 member states based on their economic capacity and growing rate according to the eight variances within three principle components and factor analyses, how three components are within two compares the

FACT1 with FACT2 and FACT1 with FACT3. The cluster analysis system separates the EU-28 member states and shows how these countries are closed by their special performance. Those EU member states can be selected in a group, which have the smallest distance from each other. From point of view of the Dendrogram for EU-28 shows very clearly the structure system for the different groups of the EU-28 member states. Based on the data base Agglomeration Schedule for EU-28, the dendrogram structure can be cut between 10 and 15 value of the Dendrogram, by which three main country-groups can be created (see *Figure 3*).

The biggest group includes 22 member states closed to each other in field of their economic performance. The biggest country group originally also can be separated into 10 smaller country-group. The explain is for the large number of the biggest country group within EU-28 is that the economic grow rate of this EU-member state group closed to different developed EU member states. The highly developed economies have decreasing grow rate and less developed economies have higher grow rate for their GDP volume and GDP per capita. Two contradicting growing rates within this group of 22 EU-member states became closed to each other. Therefore for example Germany, Belgium, Austria, Hungary, Sweden, Denmark, United Kingdom, Netherlands and Italy with Bulgaria, Romania, Poland, Croatia and Lithuania became members of this country group. Naturally the last world economic recession started in 2008 made a large brake for the economic growth of the EU-member states, but this was for a shorter period than in case of developing countries.

The second country-group was consisting of two member states, namely France and Portugal, which countries were connected by mostly similarly economic grow rate with different levels of economic development.

The third country-group included Spain, Cyprus, Greece and Ireland, where the low economic growth and low level of GDP volume growth were closed in case of Spain and Cyprus, but in Greece the unemployment rate was so high and Ireland realised highly strong GovDebt2014 and SocProt2014 in its economic performance with low level for GDPVol2014 and GDPcap2014, in spite of the financial support given by the EU per capita for Ireland has been the highest level for several years in 2010s. The GovDebt2014 and SocProt2014 of Ireland could be kept at high level, because of high level of social protection, like pension system and health care were strengthened by EU support.

The Squared Euclidean Distance for EU-28 shows the distance among the EU member states in fields of economic growth rate, namely GDPVol2014 and GDPcap2014 also with other variances of the factor analyses. The largest distance is between Ireland from Poland by 71,260; from France by 54,691; from Hungary by 52,408 and from Germany by 54,314. Also the distance is very large between grow rate level of Ireland, Greece and Spain of the third country group and the grow rate level of the other EU-member states.

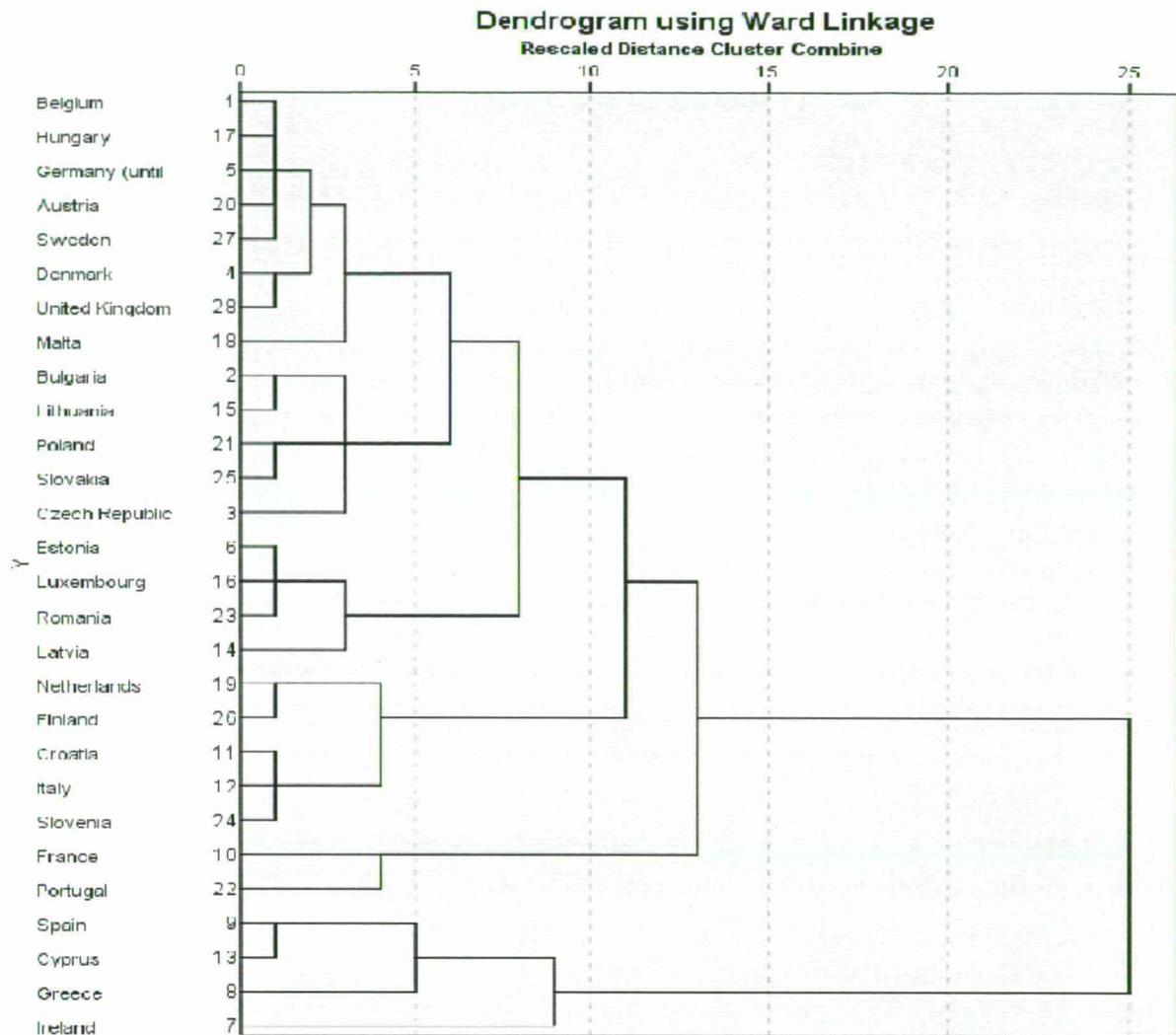


Figure-3. Dendrogram for EU-28

CONCLUSIONS

The factor analyses and dendrogram system can show the clear selection methods for the economies, which help the researchers and policy makers to create the economic policy strategy and financial support for those countries which have the biggest backwardness in their economic development. Also the economic development of countries needs for wide side cooperation among countries of each international economic integration, as EU-28.

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