

EU BALKAN MEMBER STATES' CATCHING UP PROCESS IN THE CONTEXT OF EUROPE 2020 STRATEGY

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Abstract: The paper focuses on the analyses of the Europe 2020 Strategy's indicators and on the economic growth trend. The analysis is built on three steps: regression under ANOVA approach, two-step cluster analysis based on Euclidean distance and forecasting under ARIMA procedure. The main conclusions of the paper are connected to the increasing of the socio-economic disparities between the Balkan economies and between them and EU average during 2014-2020.

JEL classification: E60, F15, F63, O11, R11.

Key words: critical; economic disparities, cluster approach, strategy targets, economic forecasting, economic trend.

1. INTRODUCTION

Nowadays, Greece, Slovenia, Bulgaria, Croatia and Romania are Member States. Moreover, Greece and Slovenia belong to the Euro area, as well. All these economies faced to the impact of the global economic crisis. As a result, the catching up process is very difficult. The problem is if the Balkan Member States will be able to achieve the Strategy's goals in 2020 and to decrease the great disparities between them and EU average.

2. RELATED WORK

There are official opinions that not all Balkan Member States belong to the Balkans. Greece and Bulgaria belong 100% to the Balkans, while Croatia (49%), Slovenia (27%) and Romania (9%) only partially (Crampton Richard J., 2014). Moreover, the delimitation of the Balkan economies is reiterated as area from the east of Serbia to the Black Sea at the east of Bulgaria (Gray Colin S. & Sloan Geoffrey, 2013).

A fast industrial development in the Balkans started in the 1950s and supported the whole economic development based on massive exports. The public sector is still important (Réti Tomás, 2010). All Balkan economies suffered the most from the global crisis. The decrease of the FDI flows (especially in Bulgaria) and banking crisis from Greece affected the economic growth in the region (Klein Tobias J., 2012).

The world economic crisis of 2008 interrupted the positive trend of the development in Balkans and the recovery process is too slowly (Pere Engjell & Hashorva Albana, 2012). An interesting analysis is that focused on foreign direct investment in the Balkan economies. The result is that the Western Balkans countries

received less FDI (Estrin Saul & Uvalic Milica, 2013). The recovery process in Balkan economies was accompanied by a significant progress in the reorientation of trade and started the process of reintegration into the international financial flows (Ganić Mehmed, 2013). One of the greatest challenges for the Balkan economies is the unemployment rate (Kovtun Dmitriy et al., 2014).

3. METHODOLOGY

The analysis in the paper is made on three steps. The regression is based on ANOVA approach, where the individual indicators represent the dependent variables and time is the independent variable. The two-step cluster analysis is based on Euclidean distance. The individual indicators are continuous variables and specify fixed number of clusters is two. The forecasting procedure uses the individual indicators' values as dependent variables, time as independent variable and ARIMA procedure.

The analysis takes into account: GDP growth rate, employment rate, gross domestic expenditure in R&D, greenhouse gas emissions, tertiary educational attainment rate and people at risk of poverty. These indicators were selected from the Strategy's targets.

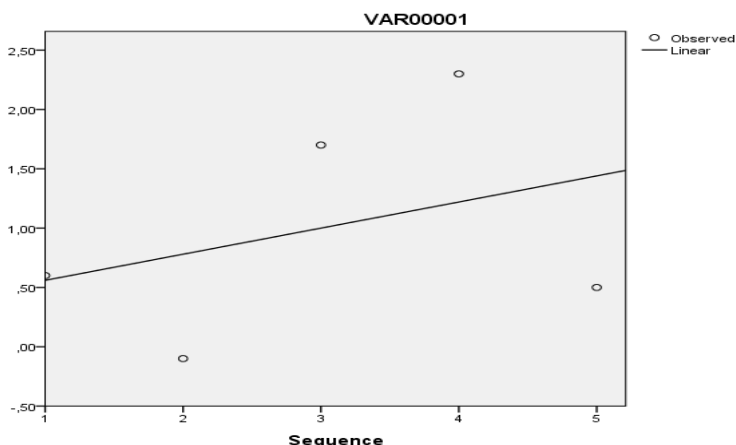
4. ANALYSES

The Balkan countries present great disparities connected to the economic growth rate (see Table 1).

Table no. 1 GDP growth rate (%)

	2009	2010	2011	2012	2013	2014
Greece	1.6	-4.9	-7.1	-6.4	-3.7	0.6
Slovenia	2.3	1.3	0.7	-2.5	-1.6	-0.1
Bulgaria	3.9	0.4	1.8	0.8	0.6	1.7
Romania	3.7	-1.1	2.2	0.7	3.5	2.3
Croatia	1.8	-2.3	0.0	-2.0	-0.7	0.5
EU28	0.9	2.0	1.7	-0.4	0.1	1.5

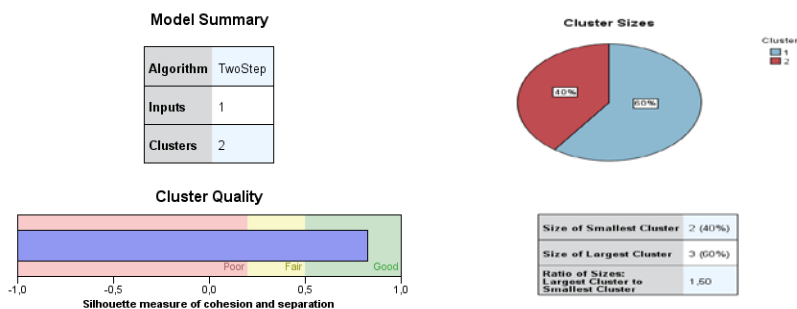
Almost all Balkan states achieved positive GDP growth rate trends during 2012-2014. Romania is the exception for 2014 (European Commission, 2014). The regression can quantify the disparities related to the above indicator (see Figure 1). The analysis is supported by data from 2014. The situation in Figure 1 suggests us a cluster approach for the Balkan economies.



Source: personal contribution using IBM-SPSS software

Figure no.1 Real GDP growth rate's disparities

The viability of such approach is supported by Figure 2. The cluster quality is good enough (0.8) and the ratio of cluster sizes is 1.5. These two results support the viability of the analysis approach.



Source: personal contribution using IBM-SPSS software

Figure no. 2 Real GDP growth rate under cluster analysis

As a result, the GDP disparities between the Balkan economies can be quantified and analyzed under two clusters (Romania and Bulgaria, on a hand and Greece, Slovenia and Croatia, on the other hand).

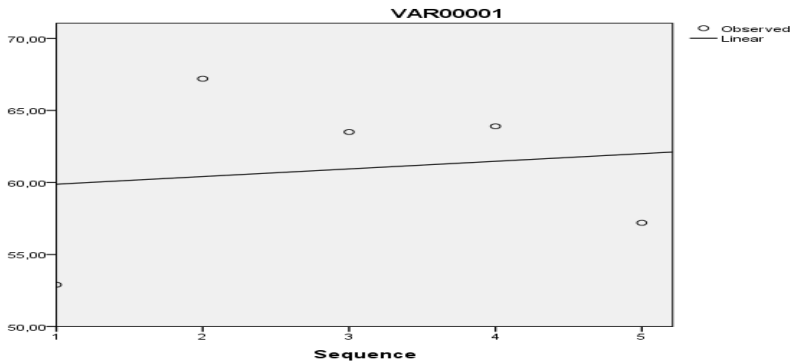
The official statistic data for the employment rates are presented in Table 2 (Eurostat, 2014).

Table no. 2 Employment rate (% of age group 20-64)

	2008	2009	2010	2011	2012	2013
Greece	66.3	65.6	63.8	59.6	55.0	52.9
Slovenia	73.0	71.9	70.3	68.4	68.3	67.2
Bulgaria	70.7	68.8	65.4	62.9	63.0	63.5
Romania	64.4	63.5	63.3	62.8	63.8	63.9

Croatia	62.9	61.7	58.7	57.0	55.4	57.2
EU28	70.3	69.0	68.5	68.5	68.4	68.4

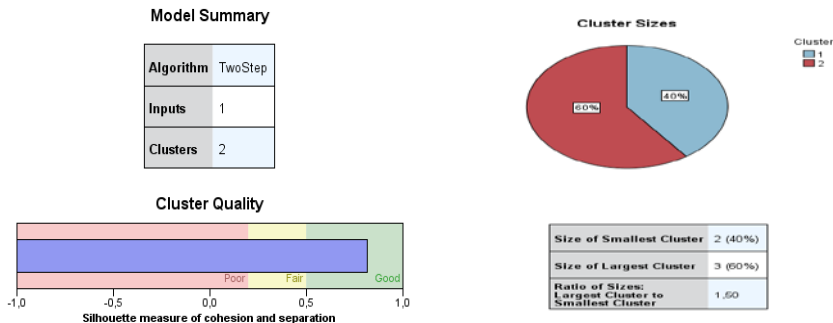
Romania and Bulgaria succeeded in achieving positive trends for the employment rate during 2011-2013, while the other Balkan economies and the EU average faced to a decrease or a stagnation of this indicator. This is why the employment is another element of increasing disparities between the Balkan countries (see Figure 3).



Source: personal contribution using IBM-SPSS software

Figure no. 3 Employment rate's disparities

According to Figure 3, the cluster approach is obviously. The results of this approach are presented in Figure 4.



Source: personal contribution using IBM-SPSS software

Figure no. 4 Employment rate under cluster analysis

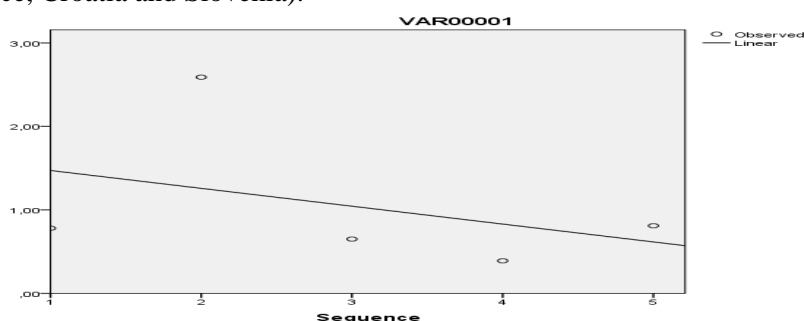
The cluster has the same good quality and the same distance as the previous economic indicator. Moreover, the clusters' structure is 70% the same as for GDP growth rate.

The expenditure on R&D as % of GDP created the same high disparities across the Balkans (Eurostat, 2014 – see Table 3). Slovenia is the single Balkan Member State which achieved expenditure on R&D rate closed to the Strategy's goal.

Table no.3 Gross domestic expenditure on R&D (% of GDP)

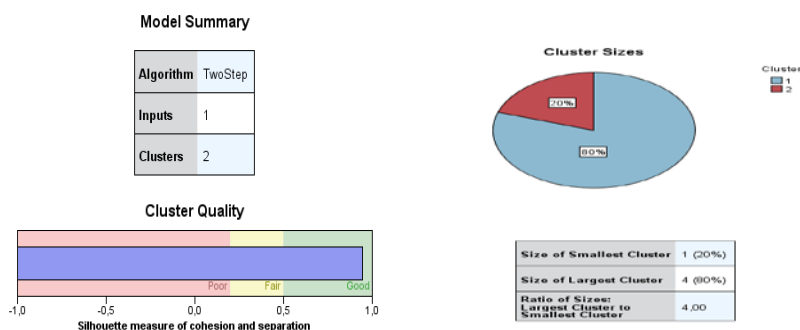
	2008	2009	2010	2011	2012	2013
Greece	0.66	0.63	0.60	0.67	0.69	0.78
Slovenia	1.63	1.82	2.06	2.43	2.58	2.59
Bulgaria	0.46	0.51	0.59	0.55	0.62	0.65
Romania	0.57	0.46	0.45	0.49	0.48	0.39
Croatia	0.88	0.84	0.74	0.75	0.75	0.81
EU28	1.85	1.94	1.93	1.97	2.01	2.02

Romania faces to the worst situation, while Greece, Bulgaria and Croatia have low rates, even that their trends are positive (see Figure 5). The curve in Figure 5, divides the Balkan Member States into two clusters. The quality of the cluster is good (0.9), but the disparities are high. This is why the analysis in the paper forced the approach and maintained the initial clusters (Bulgaria and Romania, respectively Greece, Croatia and Slovenia).



Source: personal contribution using IBM-SPSS software

Figure no. 5 Expenditure on R&D rate's disparities



Source: personal contribution using IBM-SPSS software

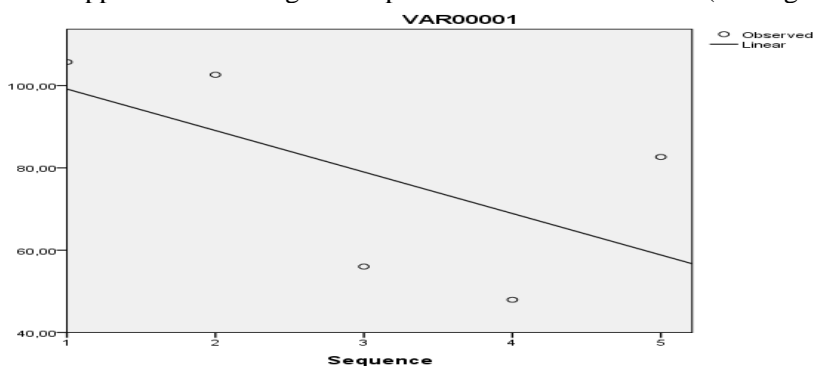
Figure no. 6 Expenditure on R&D rate under cluster analysis

The environment quality is an important goal for the EU28. In order to quantify the trend of this indicator, the analysis uses the greenhouse gas emissions.

Table no. 4 Greenhouse gas emissions (1990=100%)

	2007	2008	2009	2010	2011	2012
Greece	128.11	124.61	118.02	111.73	108.97	105.71
Slovenia	112.29	116.20	105.18	105.37	105.62	102.62
Bulgaria	62.79	61.43	52.97	55.33	60.54	56.02
Romania	57.64	56.46	48.44	46.81	49.08	47.96
Croatia	102.17	98.10	91.75	90.26	89.21	82.65
EU28	92.36	90.41	83.83	85.73	83.21	82.14

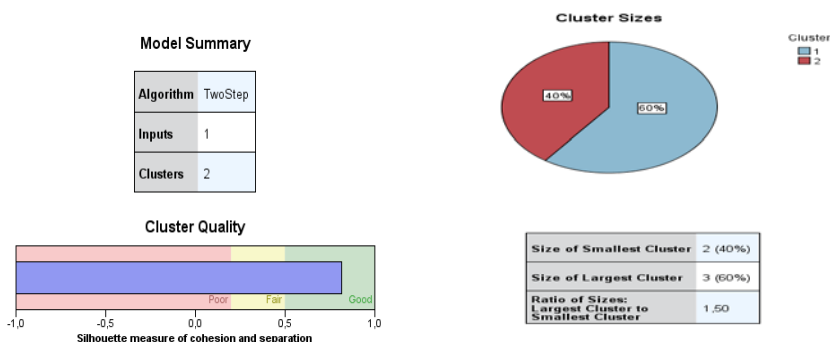
During 2010-2012, the gas emissions' trend was decreasing in Greece and Croatia and fluctuated in the other Balkan Member States. The same decrease was achieved by EU average (Eurostat, 2014). The latest official data regarding this indicator support the idea of great disparities across the Balkans (see Figure 7).



Source: personal contribution using IBM-SPSS software

Figure no. 7 Gas emissions' disparities

Based on the Strategy's goal of 80% pollution index (1990=100%), the above cluster approach is correct again. Bulgaria and Romania achieved emission rates lower than 80%, while the second cluster (Greece, Croatia and Slovenia) faces to rates higher than 80% (see Figure 8).



Source: personal contribution using IBM-SPSS software

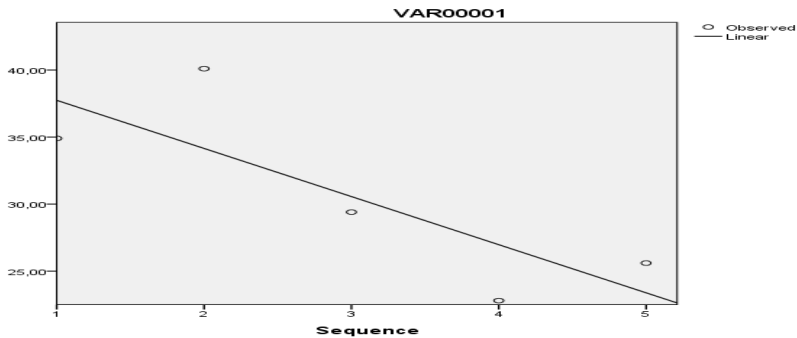
Figure no. 8 Gas emissions' rate under cluster analysis

The analysis in the paper focused on a pertinent indicator related to tertiary educational attainment. The EU average (36.9%) is closed to the Europe 2020 Strategy’s goal of 40% (see Table 5).

Table no. 5 Tertiary educational attainment (age group 30-34, %)

	2008	2009	2010	2011	2012	2013
Greece	25.7	26.6	28.6	29.1	31.2	34.9
Slovenia	30.9	31.6	34.8	37.9	39.2	40.1
Bulgaria	27.1	27.9	27.7	27.3	26.9	29.4
Romania	16.0	16.8	18.1	20.4	21.8	22.8
Croatia	18.5	20.6	24.3	24.5	23.7	25.6
EU28	31.2	32.3	33.6	34.7	35.9	36.9

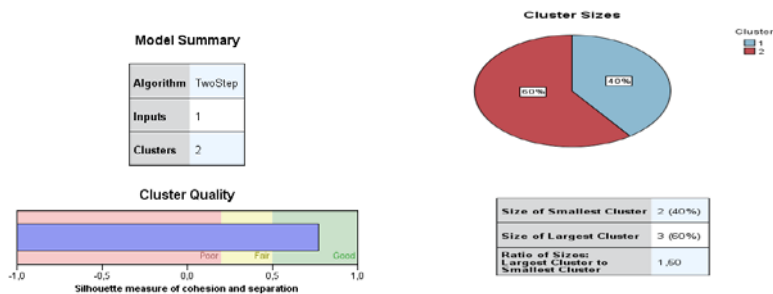
According to Table 5, the EU average tertiary educational attainment rate increased during 2008-2013, as in the Balkan Member States excepting Bulgaria (Eurostat, 2014). On the other hand, only Slovenia was able to achieve the Strategy’s goal. The disparities across the other Balkan Member States are high.



Source: personal contribution using IBM-SPSS software

Figure no. 9: Tertiary educational attainment’s disparities

Figure 9 suggests the “classic” two clusters approach. These clusters cover 2/3 of the initial clusters’ structure. The cluster quality is good enough (0.75) and the ration of the clusters size maintains to 1.5 (see Figure 10).



Source: personal contribution using IBM-SPSS software

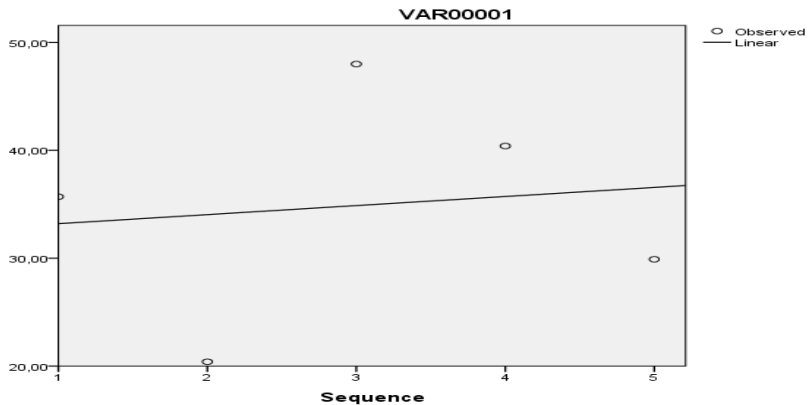
Figure no. 10 Tertiary educational attainment under cluster analysis

The last indicator of the Europe 2020 Strategy is that connected to poverty and social exclusion. In order to analyze them, the paper focused on people at risk of poverty or social exclusion rate (see Table 6).

Table no. 6 People at risk of poverty or social exclusion (% of total population)

	2008	2009	2010	2011	2012	2013
Greece	28.1	27.6	27.7	31.0	34.6	35.7
Slovenia	18.5	17.1	18.3	19.3	19.6	20.4
Bulgaria	44.8	46.2	49.2	49.1	49.3	48.0
Romania	44.2	43.1	41.4	40.3	41.7	40.4
Croatia	31.1	31.1	31.1	32.6	32.6	29.9
EU28	23.8	23.3	23.8	24.4	24.8	24.5

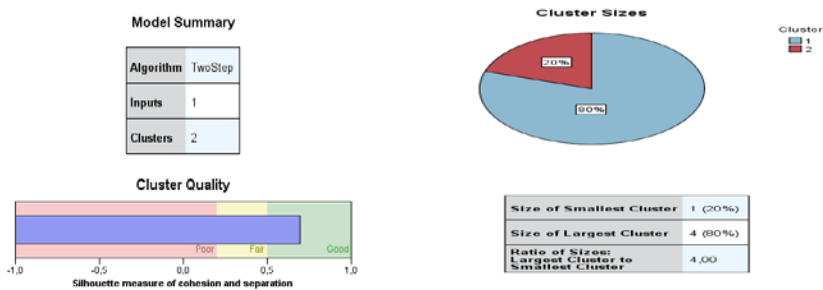
The EU average risk of poverty rate fluctuated during 2008-2013 (Eurostat, 2014). The impact of the global crisis on the Balkan economies was powerful and supported great disparities (see Figure 11).



Source: personal contribution using IBM-SPSS software

Figure no. 11: Risk of poverty rate's disparities

On the other hand the initial cluster approach is supported again by the trend of this indicator (see Figure 12).

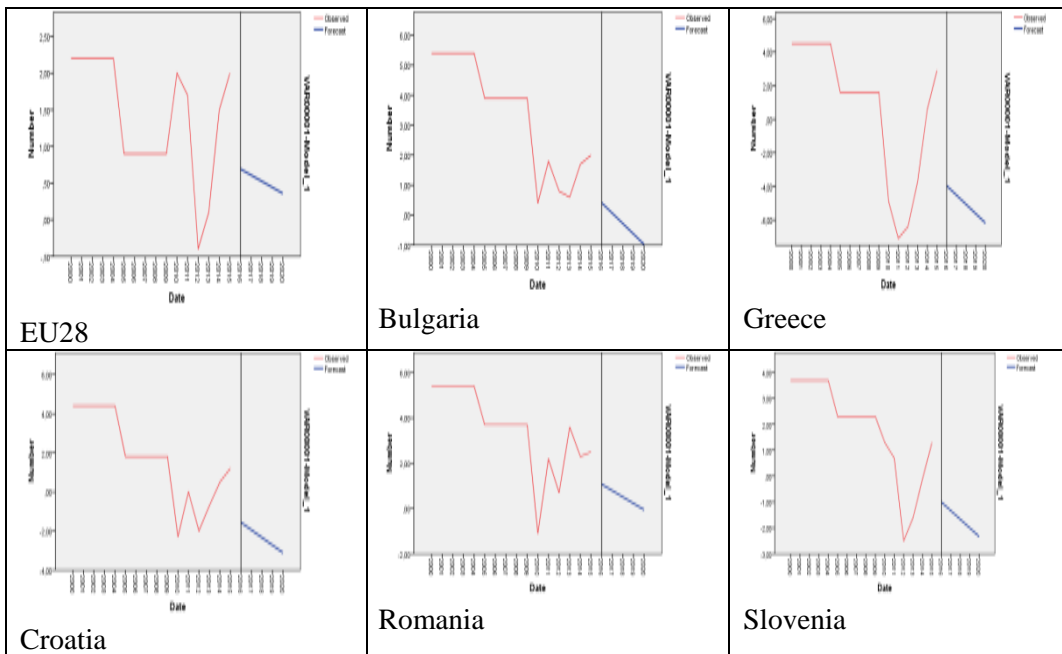


Source: personal contribution using IBM-SPSS software

Figure no. 12 Risk of poverty rate under cluster analysis

Moreover, the cluster quality is 0.72, but the ratio of the clusters size is high (4.0). Finally, the analysis supports, as intermediate conclusion, the two clusters approach for the Balkan Member States: Bulgaria and Romania in the first cluster and Greece, Croatia and Slovenia in the second cluster.

The next step of the analysis is forecasting of the above six indicators. In order to obtain better results the statistic data was enlarged to 2000-2014. The forecast horizon is 2020. The GDP growth rate forecast is presented in Figure 13.

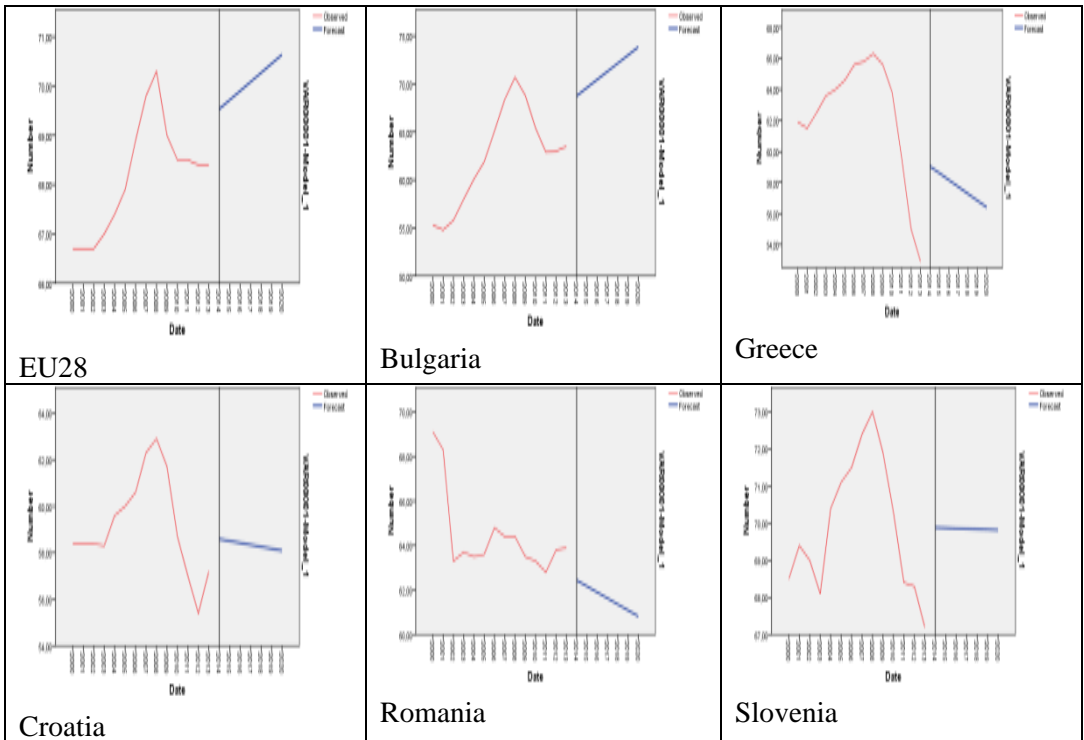


Source: personal contribution using IBM-SPSS software

Figure no. 13 GDP growth rate forecasting (%)

The EU average trend will achieve a GDP growth rate of about 0.36% in 2020, while all Balkan Member States will face to negative GDP growth rates in the same year. As a result, these countries will be not able to recover the economic distance to the average.

According to Europe 2020 Strategy, the employment rate which covers population aged 20-64 should be 75%. The employment rate forecasting leads to the following results:

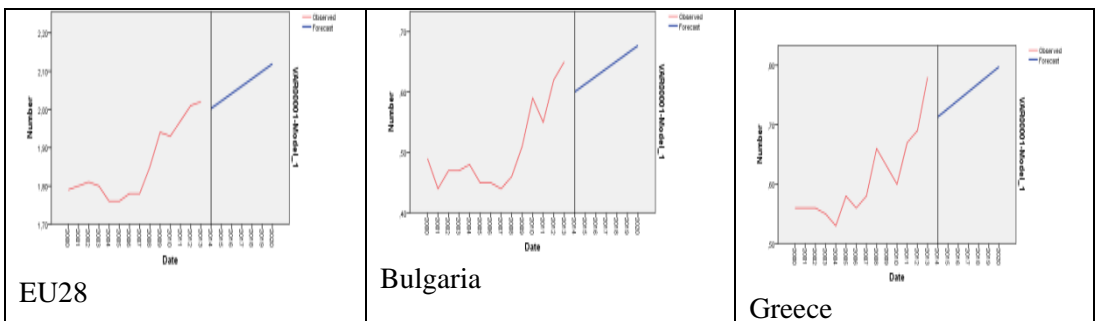


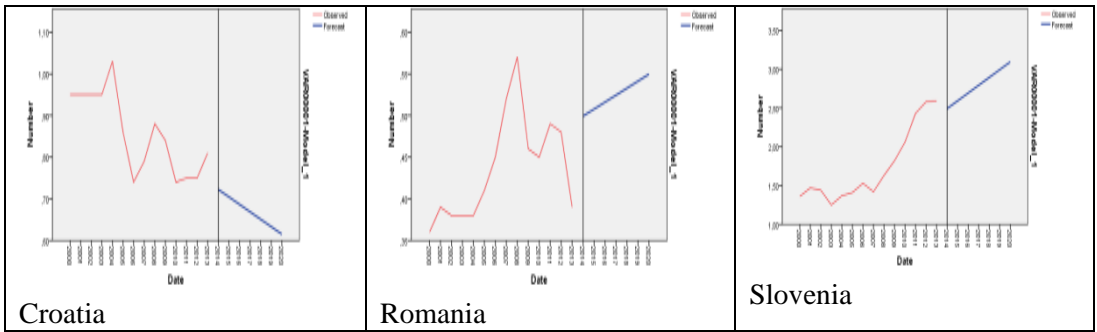
Source: personal contribution using IBM-SPSS software

Figure no. 14 Employment rate forecasting (%)

The employment rate target of 75% will be not achieved by EU average in 2020. Only Bulgaria will achieve a higher rate (73.85%), while the other Balkan economies will face to employment rates less than 70%.

The same Strategy stipulates that 3% of the GDP should be invested in R&D until 2020. This target seems to be too high even for EU average, which will achieve a rate of 2.12% in 2020 (see Figure 15).



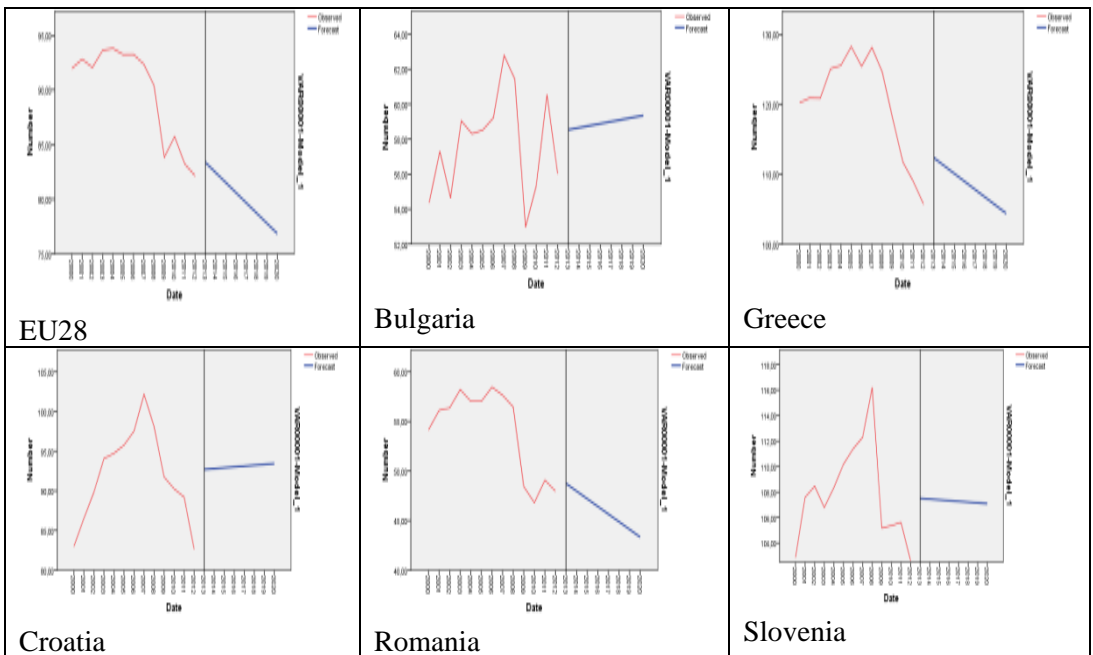


Source: personal contribution using IBM-SPSS software

Figure no. 15 Expenditure on R&D forecasting (%)

Slovenia will be able to achieve the Strategy’s target in 2020. Croatia will face to a negative trend of the expenditure on R&D, while the other Balkan Member States will achieve low positive rates.

An ambitious target is that the greenhouse emissions across the EU should be reduced by 20% compared to 1990. EU will be able to achieve this target (76.85% compared to 1990).

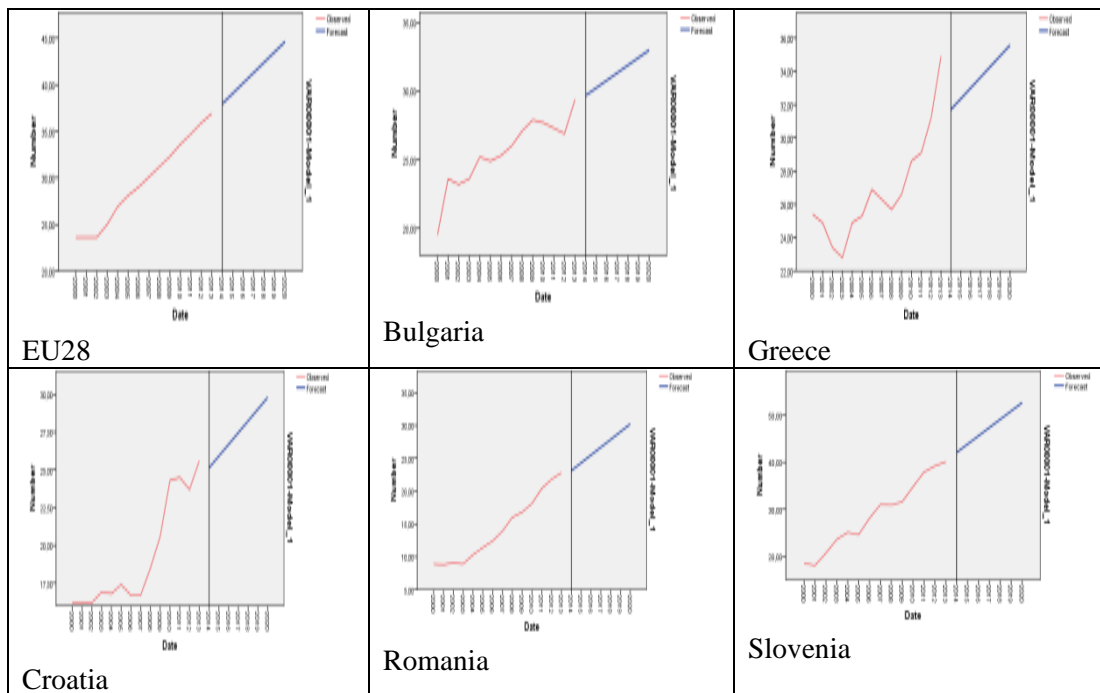


Source: personal contribution using IBM-SPSS software

Figure no. 16 Gas emissions forecasting (%)

Greece, Slovenia and Croatia will not be able to achieve the target of 80% in 2020. Bulgaria and Romania achieved low gas emissions rates as a result of the contraction in the economic activity during 2008-2010.

Education represents an important goal of Europe 2020 Strategy. As a result, at least 40% of 30-34 years old should have completed a tertiary or equivalent education until 2020. In order to forecast the evolution of this indicator, the analysis in the paper uses tertiary educational attainment rate (see Figure 17).

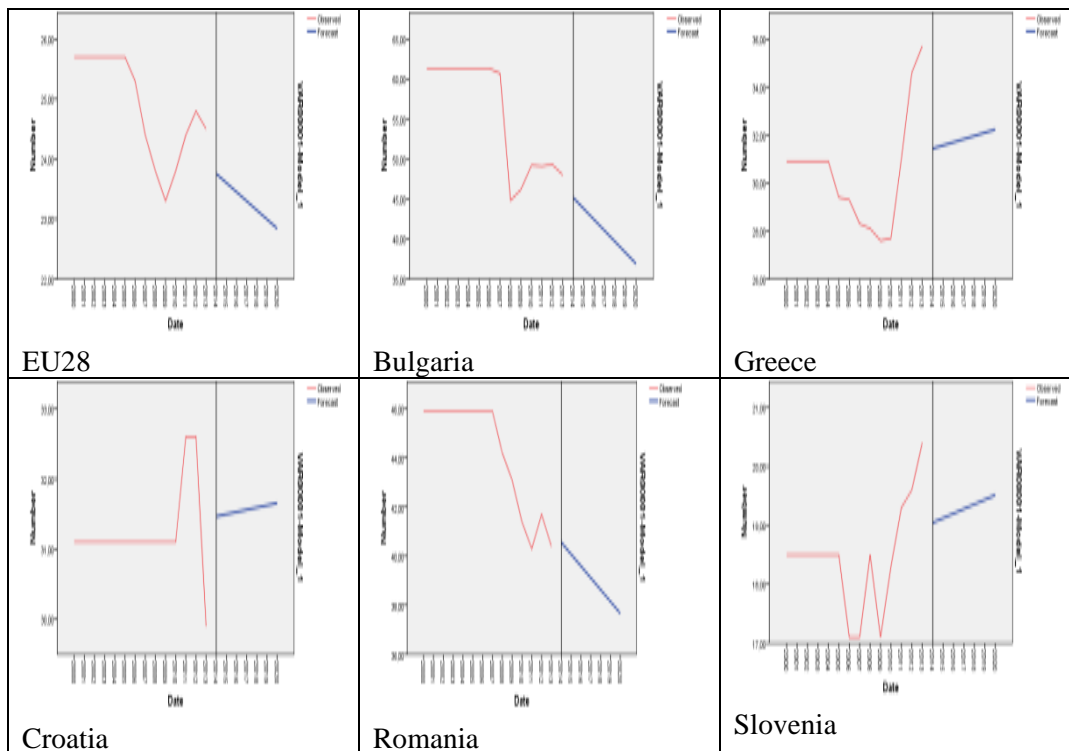


Source: personal contribution using IBM-SPSS software

Figure no. 17 Tertiary educational attainment forecasting (%)

According to Figure 17, EU average will achieve this target in 2016, while Slovenia achieved it in 2013. The other Balkan Member States will face to lower than the target educational rates.

Finally, the Europe 2020 Strategy focuses on lifting at least 20 million people out of the risk of poverty or social exclusion. In order to quantify the viability of this goal for the Balkan economies, the analysis uses people at risk of poverty or social exclusion as percentage of total population (see Figure 18).



Source: personal contribution using IBM-SPSS software

Figure no.18 Risk of poverty forecasting (%)

EU risk of poverty trend is positive. The risk rate will decrease to 22.84% in 2020, but the value is too high. Slovenia will achieve the lowest poverty rate in 2020, lower than EU average. Unfortunately, the other four Balkan economies will face to high poverty rates in 2020.

5. CONCLUSIONS

There are great disparities between the Balkan Member States and between them and the EU average. On the other hand, EU28 is not able to achieve all targets of the Europe 2020 Strategy until 2020. The economic trend for EU average and the Balkan economies leads to a cluster approach for all economic analysis. The existence of such cluster approach supports the idea that Europe 2020 Strategy is not viable at least for the Balkan economies. This is why the Balkan Member States established individual targets related to the Strategy's goals less than the official targets' values.

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