

PIGS COUNTRIES' NEW CHALLENGES UNDER EUROPE 2020 STRATEGY

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Abstract:

The paper deals with the idea that Europe 2020 Strategy is a too ambitious project for many Member States. The analysis is focused on PIGS countries. In order to demonstrate the impossibility to achieve the Strategy's goals, the analysis uses six representative economic indicators: GDP growth rate, employment, R&D investment, gas emissions, educational attainment and risk of poverty and social exclusion. The analysis uses regression, clusters, forecasting models and comparisons with Euro area average. The intermediate conclusion of the paper is that PIGS countries can be analysis under a cluster approach. The final conclusion is that PIGS countries are not able to achieve the Strategy's goals in 2020, even that their socio-economic trend is positive for almost all indicators.

The analysis and the conclusions in the paper are supported by pertinent statistic tables and diagrams, coupled with dedicated IBM-SPSS software.

Key words: economic growth rate, R&D investment, gas emissions, educational attainment, risk of poverty, clusters, economic forecasting.

JEL classification: E6, O5, R1.

1 INTRODUCTION

Portugal, Italy, Greece and Spain were defined under PIGS acronym in the 90s. At that moment, it was a pejorative term, used in order to delimit those economies which were able to create problems for the European Union.

Under the recent global crisis's impact, PIGS economies faced to great socio-economic challenges. These challenges were higher because all these four economies are members of the European area.

The economic recovery period was longer in these countries. Moreover, the idea of four peripheral European Union states with the weakest economies is still available.

The Europe 2020 Strategy brought new strategic goals for the Member States, connected to labour, R&D investment, gas emissions, educational attainment and risk of poverty and social exclusion. These above objectives can be achieved only under a sustainable economic growth.

The analysis in the paper covers at least three steps: a comparative analysis between the PIGS economies and Euro area average, a cluster approach as a result of a regression analysis and forecasting of six specific indicators in the context of Europe 2020 Strategy.

The comparative analysis uses the latest official statistic data, while the regression analysis is made under ANOVA conditions. The two-step cluster approach is based on IBM-SPSS software. The same software will support the forecasting processes, as well.

2 RELATED WORKS

There are enough researches focused on PIGS economies started with the use of their acronym (Vernet D., 1997).

These four economies represented a real challenge for the EU and the latter Euro area. As a result, the adhering euphoria did not last long (Dainotto R. M., 2006).

The banking crisis in Ireland added the Irish economy to PIGS under the new acronym of PIIGS. Ireland was the first Euro area state which faced to the crisis in 2007 (Krouse S., 2012).

The difficulties in passing the global crisis made the PIGS economies to be considered as zombie economies, which are not able to recover quickly (Quiggin J., 2012).

Almost all economic analyses are focused on the debt crisis and lead to various conclusions and proposals connected to the including of Ireland and UK in PIGS. Moreover, under a global debt approach, USA is considered a good partner for PIGS (Sparke M., 2012).

3 PIGS COUNTRIES' ECONOMIC DEVELOPMENT UNDER THE GLOBAL CRISIS

The PIGS economies' evolution is analysed using six specific indicators: GDP growth rate, employment rate, expenditure on R&D, gas emissions, educational attainment and risk of poverty. The latest trends in GDP growth rates are presented in Table 1 (European Commission, 2014).

Table 1: GDP growth rates (%)

	2012	2013	2014	2015
Euro area	-0.7	-0.4	1.2	1.8
Portugal	-3.2	-1.6	0.8	1.5
Italy	-2.5	-1.9	0.6	1.2
Greece	-6.4	-3.7	0.6	2.9
Spain	-1.6	-1.2	1.0	1.7

According to Table 1, PIGS states' GDP growth rates will be close to the Euro area average at the end of 2014. The same situation will be in 2015, excepting Greece, which will achieve an economic growth rate higher than Euro area average.

Basically, will be great disparities between the above five economic entities in 2015 (see Figure 1).

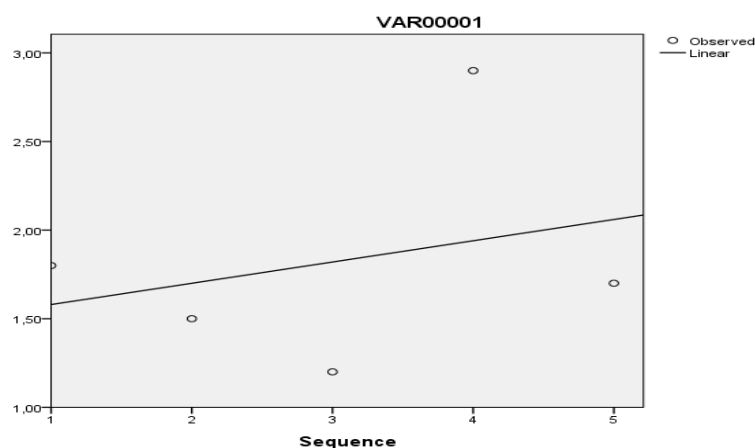


Figure 1: Real GDP growth rate's disparities

Source: personal contribution using IBM-SPSS software

Figure 1 supports the idea of cluster approaching for PIGS economies. The analysis takes into consideration two clusters. The viability of such approach is quantified in Figure 2.

The cluster quality is fair and the ratio of cluster sizes is 1. These data support the cluster approach in Figure 2.

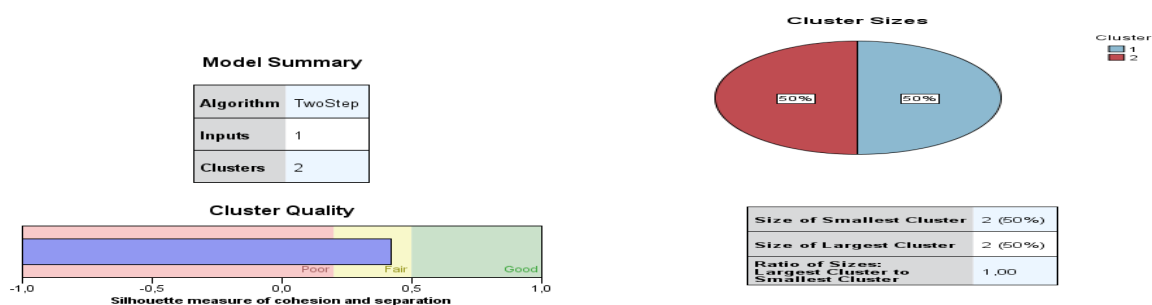


Figure 2: Real GDP growth rate under cluster analysis

Source: personal contribution using IBM-SPSS software

Europe 2020 Strategy establishes specific targets. One of these is the employment rate and covers population aged 20-64. Its evolution is presented in Figure 2 (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_10&tableSelection=1).

Table 2: Employment rates trend (%)

	2010	2011	2012	2013
Euro area	68.8	68.4	68.1	67.7
Portugal	70.3	68.8	66.3	65.4
Italy	61.1	61.2	61.0	59.8
Greece	63.8	59.6	55.0	52.9
Spain	62.8	62.0	59.6	58.6

The employment average trend is negative during 2010-2013 in Euro area as in PIGS economies. Greece, Spain and Italy faced to the lowest employment rates, while Portugal was close to the average in 2013 (see Figure 3).

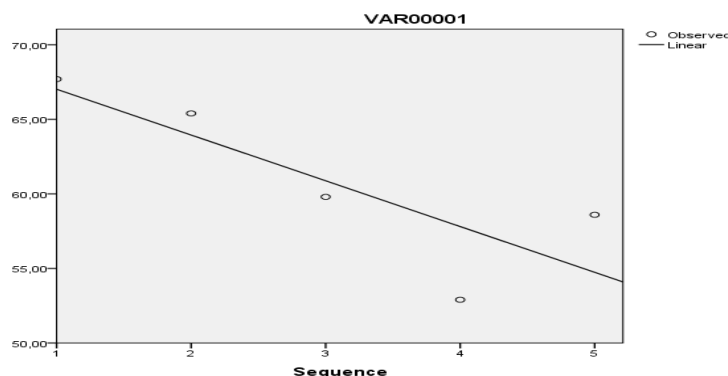


Figure 3: Employment rate's disparities

Source: personal contribution using IBM-SPSS software

The fair quality of the cluster and the same ratio of cluster sizes support the cluster approach for this indicator, as for GDP growth rate.

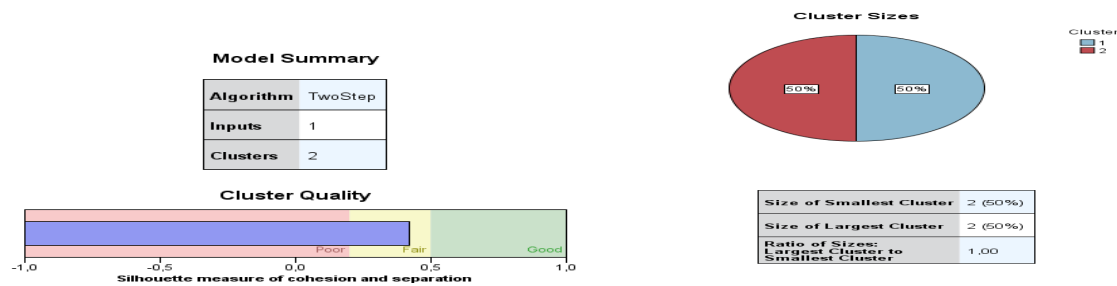


Figure 4: Employment rate under cluster analysis

Source: personal contribution using IBM-SPSS software

Another target of the Europe 2020 Strategy is that 3% of the GDP should be invested in R&D. There are great disparities between the Euro area average and PIGS countries (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_20&tableSelection=1) as in Table 3.

Table 3: Gross domestic expenditure on R&D (% of GDP)

	2010	2011	2012	2013
Euro area	2.00	2.04	2.09	2.12
Portugal	1.53	1.46	1.37	1.36
Italy	1.22	1.21	1.26	1.25
Greece	0.60	0.67	0.69	0.78
Spain	1.35	1.32	1.27	1.24

According to Table 3, the Euro area average investment in R&D increased during 2010-2013, while they decreased in Portugal, Italy and Spain. Greece achieved the same positive trend as Euro area average. On the other hand, there are greater disparities related to the value of the R&D investment between PIGS countries in 2013, as well (see Figure 5).

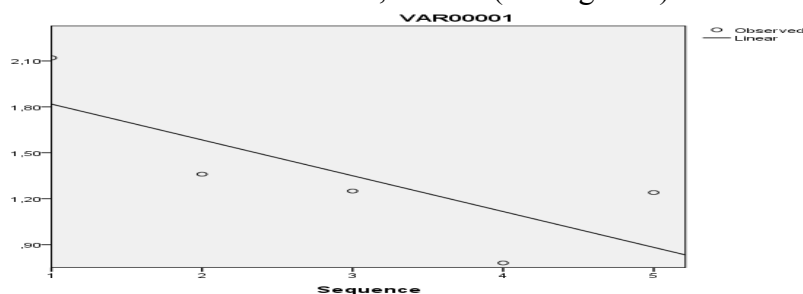


Figure 5: Gross domestic expenditure on R&D's disparities

Source: personal contribution using IBM-SPSS software

The same cluster test seems to be fair as quality and ratio sizes (see Figure 6).

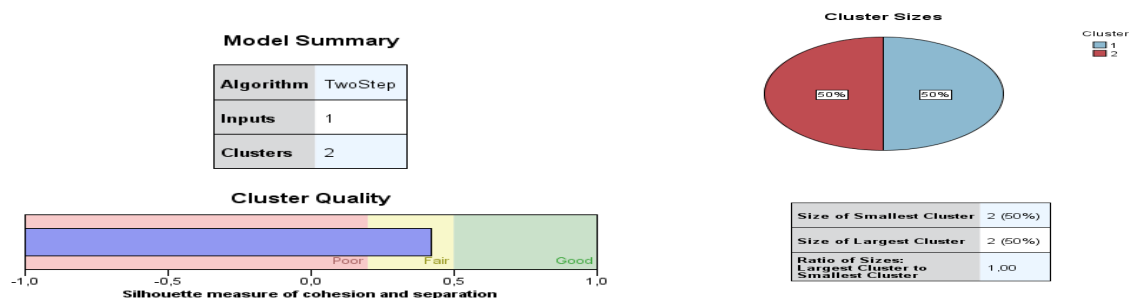


Figure 6: R&D expenditure under cluster analysis

Source: personal contribution using IBM-SPSS software

According to Europe 2020 Strategy, the greenhouse emissions should be reduced by 20% compared to 1990. The trend of this indicator is presented in Table 4 (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_10&tableSelection=1).

Table 4: Greenhouse gas emissions (1990=100%)

	2010	2011	2012	2013
Euro area	83.83	85.73	83.21	82.14
Portugal	124.10	117.70	115.74	114.87
Italy	95.39	97.25	94.87	89.72
Greece	118.02	111.73	108.97	105.71
Spain	128.57	124.41	124.41	122.48

No one of PIGS economies was able to achieve the Euro area average related to greenhouse gas emissions in 2013 and the disparities are great (see Figure 7).

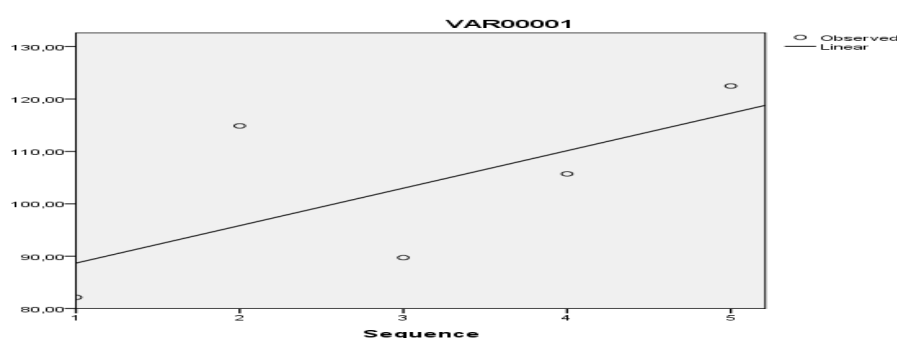


Figure 7: Gas emissions' disparities

Source: personal contribution using IBM-SPSS software

Figure 7 allows anticipating the existence of two clusters across the PIGS countries (see Figure 8).

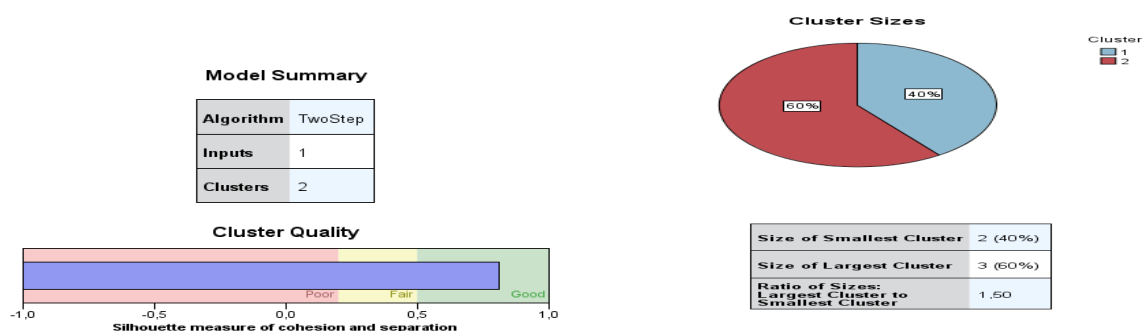


Figure 8: Gas emissions under cluster analysis

Source: personal contribution using IBM-SPSS software

The cluster quality is good, better than the above ones and the ratio of the cluster sizes is good enough (1.5). As a result, the cluster assumption for PIGS economies is supported to this step of the analysis.

According to Europe 2020 Strategy, at least 40% of 30-34 years old should have completed a tertiary or equivalent education. At this level, the analysis selected the tertiary educational attainment

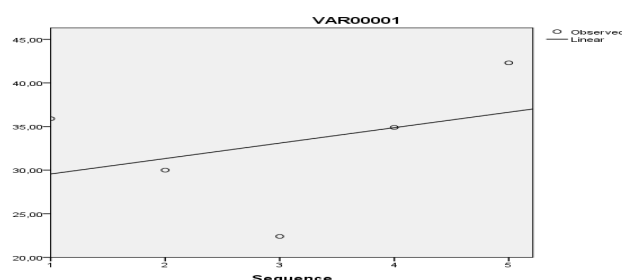
(http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_41&tableSelection=1). The statistical data are presented in Table 5.

Table 5: Tertiary educational attainment (%)

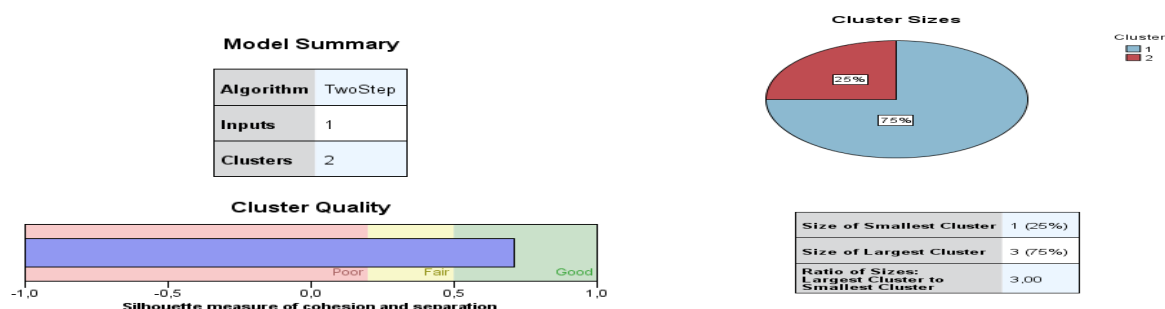
	2010	2011	2012	2013
Euro area	33.6	34.0	34.9	35.9
Portugal	24.0	26.7	27.8	30.0
Italy	19.8	20.3	21.7	22.4
Greece	28.6	29.1	31.2	34.9
Spain	42.0	41.9	41.5	42.3

Spain achieved a higher rate than the Euro area average in 2013, while Greece was closed to that average. On the other hand, Portugal and Italy faced to low tertiary educational attainment rates in the same year (see Figure 9).

Tertiary educational attainment supports the cluster grouping of the PIGS economies, as in Figure 10. The cluster quality is good, while the ratio of cluster sizes increases at 3.

**Figure 9: Tertiary educational attainment's disparities**

Source: personal contribution using IBM-SPSS software

**Figure 10: Tertiary educational attainment under cluster analysis**

Source: personal contribution using IBM-SPSS software

The last target of Europe 2020 Strategy is poverty, which should be reduced by lifting at least 20 million people out of the risk of poverty or social exclusion. According to this, the paper focuses on people at risk of poverty as % of total population. The trend of this indicator is presented in Table 6. (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=t2020_50&tableSelection=2).

Table 6: People at risk of poverty (% of total population)

	2010	2011	2012	2013
Euro area	21.9	23.0	23.4	23.0
Portugal	25.3	24.4	25.3	27.4
Italy	24.5	28.2	29.9	28.4
Greece	27.7	31.0	34.6	35.7
Spain	26.7	27.7	28.2	27.3

Italy and Spain succeeded to achieve lower poverty rates in 2013 than in 2012, while Portugal and Greece faced to an increase of these rates (see Figure 11).

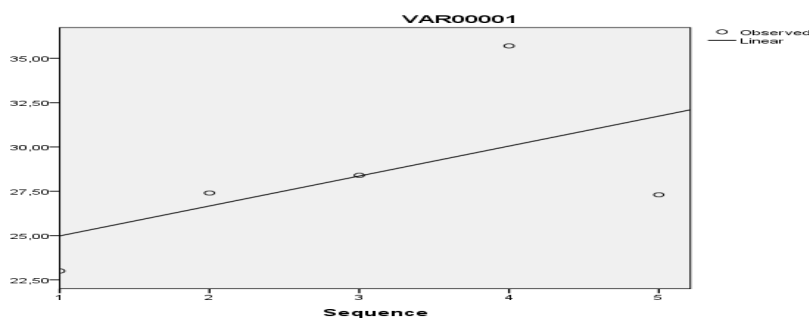


Figure 11: Poverty risk's disparities

Source: personal contribution using IBM-SPSS software

On the other hand, all PIGS economies face to poverty rates higher than Euro area average. The trend of this indicator leads to the same clustering conclusion (see Figure 12).

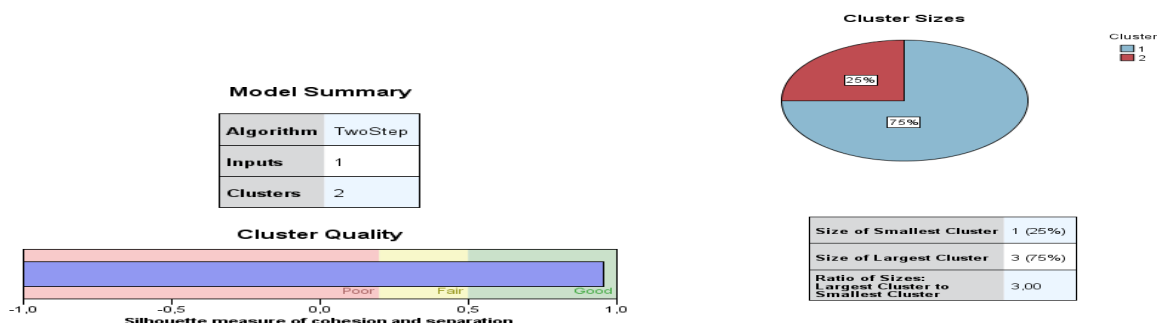


Figure 12: Poverty rate under cluster analysis

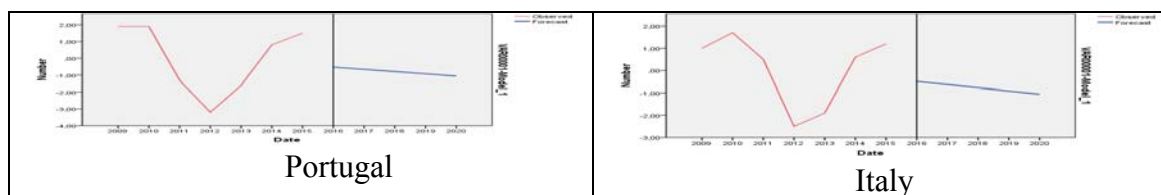
Source: personal contribution using IBM-SPSS software

The best cluster quality in this analysis (close to 1) is doubled by a high ratio of cluster sizes (3).

The first intermediate conclusions of the paper are the existence of great disparities between PIGS countries related to the Europe 2020 Strategy's targets and the possibility to have a cluster approach in analyzing these countries.

4 THE VIABILITY OF EUROPE 2020 STRATEGY'S TARGETS FOR PIGS COUNTRIES

The next step of the analysis is to realize forecasts for the specific targets at 2020 horizon. In order to do this, the paper uses a larger time-period (2003-2014) covered by official statistic data. The forecasting is realized under ARIMA conditions. The dependent variables are the annual rates for each indicator and the independent variable is the forecasting period. The economic growth rate forecast in PIGS countries is presented in Figure 13.



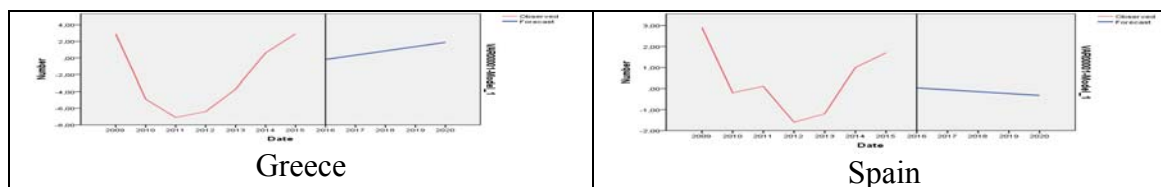


Figure 13: GDP forecasting (%)

Source: personal contribution using IBM-SPSS software

According to Figure 13, only Greece will achieve positive economic growth trend, while the other PIGS economies will face to great economic challenges until the end of 2020. The employment rate's forecasting result has to be compared to Europe 2020 Strategy's goal of 75% in 2020. The employment rate's forecast is presented in Figure 14.

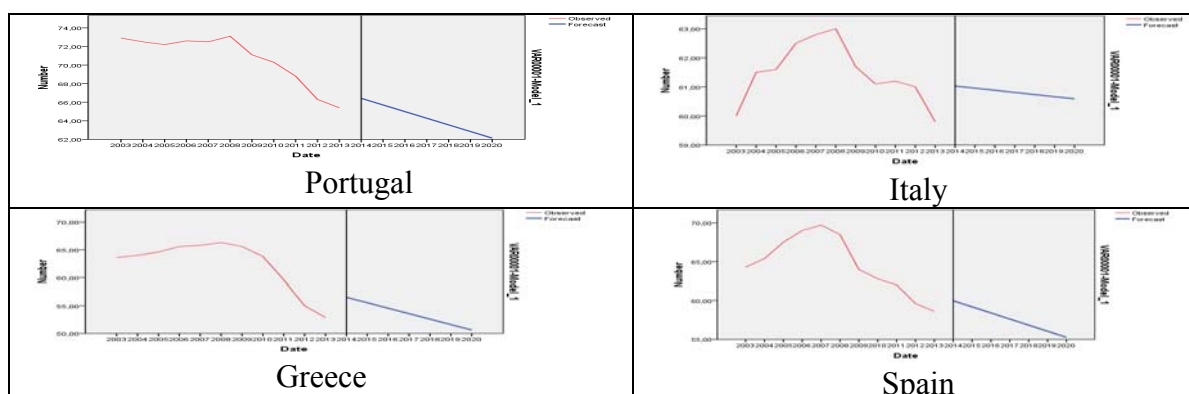


Figure 14: Employment rate forecasting (%)

Source: personal contribution using IBM-SPSS software

Unfortunately, no PIGS economy will be able to achieve the Strategy's target in 2020. Moreover, the individual PIGS states have their own targets for 2020, which can be other than the Euro area average of 75% (Italy 67%, Greece 70% and Spain 74%). On the other hand, Euro area as a whole will not be able to achieve the Strategy's goals in 2020.

A distinct target of the Strategy is that 3% of the GDP should be invested in R&D. All PIGS states have individual targets less than the Strategy's goal. The gross domestic expenditure on R&D forecasting leads to the following results:

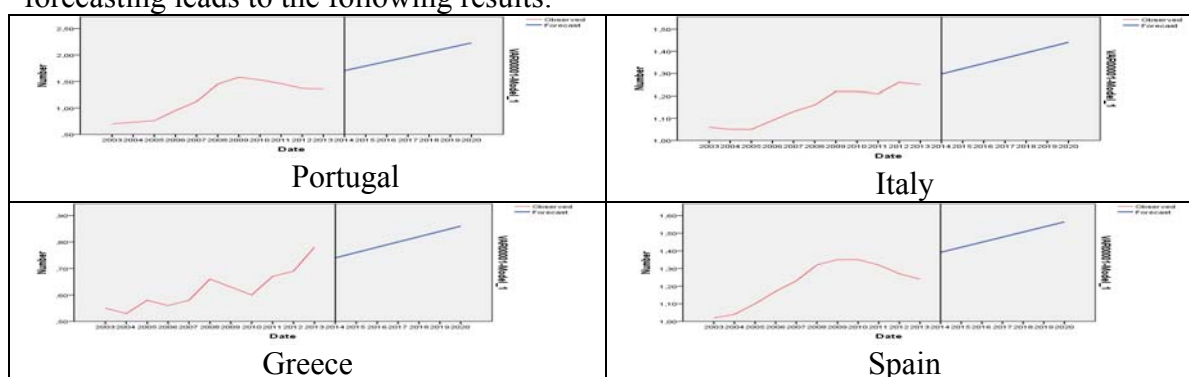


Figure 15: Expenditure on R&D forecasting (%)

Source: personal contribution using IBM-SPSS software

All PIGS countries will have a positive trend related to expenditure on R&D during 2015-2020. Unfortunately, they will not be able to achieve their individual targets or the Euro area average in 2020.

The same Europe 2020 Strategy stipulates that the greenhouse gas emissions should be reduced by 20% compared to 1990. Italy seems to be the only PIGS country able to achieve this target in 2020 (see Figure 16).

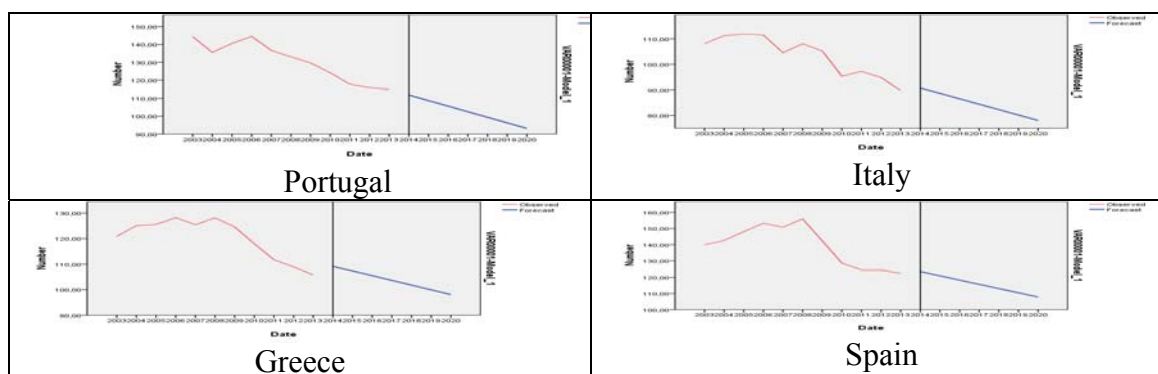


Figure 16: Gas emissions forecasting (%)

Source: personal contribution using IBM-SPSS software

At least 40% of 30-34 years old should have completed a tertiary or equivalent education in 2020 is probably the easiest target for PIGS countries' individual targets. In order to demonstrate this, the analysis focused on tertiary educational attainment rate forecasting (see Figure 17).

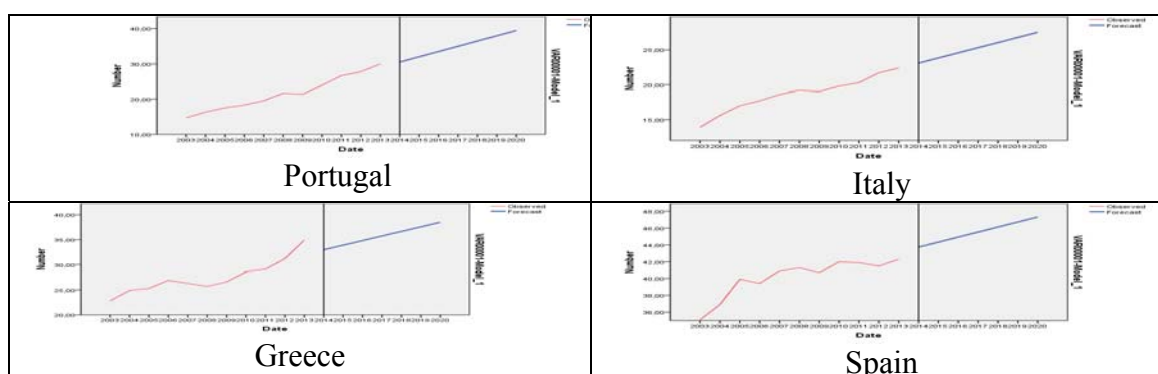


Figure 17: Tertiary education attainment forecasting (%)

Source: personal contribution using IBM-SPSS software

According to Figure 17, Italy and Greece will achieve higher values than their individual targets, while Portugal will fall in achieving its target. On the other hand, Spain will achieve higher values than the Euro area average in 2020.

The last target of Europe 2020 Strategy is that poverty should be reduced by lifting at least 20 million people out of the risk of poverty or social exclusion. The people at risk of poverty (% of total population) forecasting leads to the following situation:

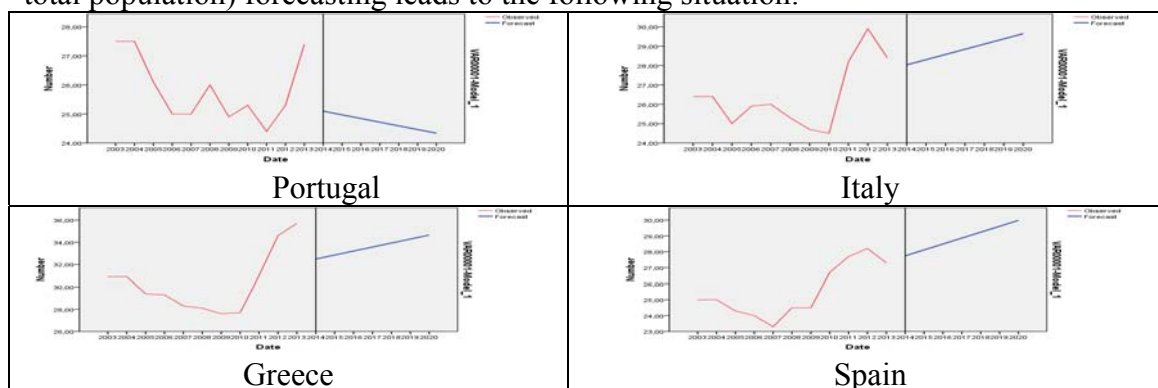


Figure 18: Risk of poverty forecasting (%)

Source: personal contribution using IBM-SPSS software

Only Portugal will have a positive trend in Figure 18, while the other three PIGS states will face to an increase of the risk of poverty rate.

5 CONCLUSIONS

Europe 2020 Strategy represents a project with too high targets for PIGS economies. Even that PIGS economies will achieve positive trends in expenditure on R&D, greenhouse gas emissions and tertiary education attainment, the employment and the economic growth rates will not be able to support the complete economic recovery in these four countries until 2020.

Unfortunately, the individual solutions and more painful economic corrections are the best solutions for these economies, which imply high social and political costs.

6 ACKNOWLEDGEMENT

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