ECONOMICS & Sociology

Balcerzak, A. P. (2015), Europe 2020 Strategy and Structural Diversity Between Old and New Member States. Application of Zero Unitarization Method for Dynamic Analysis in the Years 2004-2013, *Economics and Sociology*, Vol. 8, No 2, pp. 190-210. **DOI: 10.14254/2071-789X.2015/8-2/14**

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EUROPE 2020 STRATEGY AND STRUCTURAL DIVERSITY BETWEEN OLD AND NEW MEMBER STATES. APPLICATION OF ZERO UNITARIZATION METHOD FOR DYNAMIC ANALYSIS IN THE YEARS 2004-2013

Received: March, 2015
1st Revision: May, 2015
Accepted: June, 2015

DOI: 10.14254/2071-789X.2015/8-2/14

ABSTRACT. In the year 2015 the European Union has reached the halfway of implementation of Europe 2020 strategy, which is aimed at forming the conditions for sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. In this context the aim of the paper is to analyze the level of fulfillment its aims with special concentration on diversity between New Member States that joined European Union in 2004 and 2007 (EU-10) and Old European Union Members (EU-15). The empirical part of the paper is based on the taxonomic research with application of zero-unitarization method. In order to make the dynamic analysis for the years 2004-2013 the constant reference point for the whole period was used. The evaluation was based on the Eurostat Europe 2020 indicators. The analysis showed significant diversity between New and Old Member States. However, in the years 2004-2013 EU-10 had made an important progress in the implementation of Europe 2020 strategy.

JEL Classification: C00, E61, 052

Keywords: Europe 2020 strategy, multivariate analysis, zero-unitarization method.

Introduction

In the year 2015 the European Union has reached the halfway of implementation of Europe 2020 strategy. The plan constitutes the second in this century ten-year strategy, which is aimed at building the conditions for sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. As the foundation for the Europe 2020 strategy three mutually reinforcing priorities were formed: a) Smart growth: developing an economy based on knowledge and innovation; b) Sustainable growth: promoting a more resource efficient, greener and more competitive economy. c) inclusive growth: fostering a high-employment economy delivering social and territorial cohesion (European Commission 2010, p. 3).

Europe 2020 document is a continuation of the Lisbon Strategy announced at the beginning of this century, which was aimed at improving conditions for sustainable economic development described with the formula "to become the most competitive and dynamic economy in the world; based on knowledge, capable of sustainable economic growth with more and better jobs and greater social cohesion" (see Royuela-Mora *et al.*, 2005, pp. 54-58; Lenain, 2005, pp. 9-31). The Lisbon Strategy was adopted during the significant economic changes associated with development of the global knowledge-based economy, which was accompanied by very high rate of economic growth achieved by the United States (see Balcerzak, 2009, pp. 3-22). It was an ambition of political and economic elites of the European Union to create the conditions, which would allow Europe to "catch up" of the United States in terms of the development of conditions for using the potential of knowledge-based economy. Unfortunately, already in the halfway of the Lisbon strategy, it was clear that the achievement of its objectives is impossible (Mogensen, 2005, pp. 46-49). In this time many representatives of European political elites were in favor of the view that the failure of Lisbon strategy implementation should be mainly treated as a consequence of European Union enlargement and the structural diversity between "New and Old Europe" (see Wanilin, 2006). In this context the main aim of the paper is to analyze the fulfillment of the goals of Europe 2020 strategy from the perspective of the years 2004-2013 with special consideration to the progress obtained by ten countries that joined EU in the years 2004 and 2007. In the analysis a special attention was given to the results of the Visegrad Group as the biggest economies of the EU-10 in relation to the achievements of the most important Eurozone economies. The first year of the analysis is the year of the biggest European Union enlargement, which can be considered as the most significant institutional change in Central and Eastern Europe. In the same time it is the first year of the availability of the data for all the specific diagnostic variables for reaching targets of Europe 2020. The year 2013 is the last year when the data is available.

This article should be treated as a continuation of the research on the realization of Lisbon strategy made in the year 2008 (Balcerzak *et al.*, 2008, pp. 77-88). It also refers to the research made in 2011, which was aimed at evaluation of "starting position" of Poland in the context of Europe 2020 (Balcerzak, 2011a, pp. 31-41) and its progress during the difficult years of financial crisis in Europe (Balcerzak, 2015a, pp. 343-352, 2015b).

The article is organized as follow. In the first part the previous research on the fulfillment of Lisbon and Europe 2020 strategies is discussed. The second part of the article has strictly empirical nature with taxonomic dynamic analysis for the years 2004-2013 with application of zero-unitarizatin method. The article is ended with conclusions and potential suggestions for economic and institutional policy.

The article completes and improves existing studies by:

1. Most of the empirical works implementing tools of multivariate analysis for the evaluation of Lisbon or Europe 2020 strategies take static perspective. They are usually based on the changeable reference point which is estimated separately for every year. However, in case of the taxonomic analysis provided in this paper the normalization of variables is based on the constant reference point for the whole period of the analysis, which gives the possibility of dynamic analysis and enables comparing the values of synthetic index for all the years. As a result, this dynamic analysis can be also considered as a potential input data for future econometric research (see also Balcerzak, 2011b, pp. 456-467).
2. Most of the multivariate researches on the subject are done at the general level with one synthetic measure for all five aims of Europe 2020 strategy. In this paper the fulfillment of aims of Europe 2020 is evaluated at two analytic levels. First, the overall evaluation with one synthetic measure for all the five aims of Europe 2020 strategy was estimated. Then,

the countries were evaluated in terms of the separate aims of the strategy (see also Balcerzak & Pietrzak, 2014a, 2014b).

1. Literature review on previous research concerning Lisbon and Europe 2020 strategy

The literature on the results of implementation of both Lisbon and Europe 2020 strategies can be divided in two main categories. The bigger part of the empirical efforts has been given to qualitative and benchmark review of results obtained by selected countries or international comparisons of results in a given sphere of the strategy. The smaller part of the literature concentrate on the complex quantitative multivariate analyses based on the indicators proposed by European Commission for evaluation of progress in case of both plans. Due to the significant amount of publications especially in the first group, only some representative results will be discussed here.

In the first group among one of the mostly cited works one can point the analysis of Denis *et al.* (2005) that was concentrated on the problem of productivity slowdown in the context of the Lisbon strategy proposals. Their research confirmed the structural nature of the EU's productivity downturn, which was to a high extent the result of an outdated and inflexible industrial structure in Europe. The European industrial structure had been to slow to adapt to the process of technological changes and intensifying pressures of globalization. As a result in the context of Lisbon strategy goals, the authors concluded that the whole EU's innovation system must be fundamentally reformed with special attention not only to the commonly assumed increase in the amount of financial resources devoted to knowledge production, but especially by improving the linkages in the innovation system and making fundamental changes in many areas of the European regulatory environment.

De Bruijn and Lagendijk (2005, pp. 1153-1172) made an interesting contribution to the discussion on the role of national and regional innovation systems in the context of the Liston strategy. Analogous to the previous research they show that that European innovation policies should not focus solely on technological innovation and R&D. They argue that the gap between European countries and other leaders of the global economy is especially wide in terms of human knowledge capital. Thus, education and training should be the prime target of development policy. In the context of growing political attention and increasing amount of recourses allocated to implementation of regional innovation systems, these authors argue that there is no significant relationship between different types of regional innovation systems and the data on competitive strength and welfare. On the other hand, there is a strong influence of innovation systems at the national level. These results prove that at first instance economic development is determined within a national context.

In case of research on Europe 2020 strategy one can start with the simulations and scenario analysis made by Hobza and Mourre (2010) who were using macroeconomic model QUEST III in order to explore the possible extent of potential gains attributed to the strategy implementation. In the simulation process they constructed some stylised scenarios combining fiscal consolidation efforts with differentiated progress in implementing structural reforms necessary to fulfill the targets of Europe 2020. What was the strong side of this simulation was the fact that it demonstrated the effects of fiscal consolidations alone and in combination with structural reforms. It is obvious that due to affiliation of the authors, political context of the Europe 2020 strategy, and the objective methodological characteristics of the research, these results should be treated with great caution. However, the simulation and scenario analysis still show the significant gains in terms of output and improvement of labour market conditions that can be reached as a result of reforms, which could increase annual growth between 2010 and 2020 from 1.7%in the limited reform scenario up to 2.2% in the ambitious reform scenario, to be compared with 1.5% in the baseline. In case of the labour

market the structural changes can lead to gains between around 1% and 4½%, which is equal to additional 1.5 to almost 11 million jobs.

Moving to the quantitative multivariate research one can point Balcerzak *et al.* (2008, pp. 77-88) who were evaluating the first five years of Lisbon strategy implementation with application of two classical methods of organizing and sharing objects with Ward's cluster analysis and Hellwig's synthetic variable method. As a result of application of these taxonomic methods it was possible to obtain the ranking of the countries for the year 2000, 2003 and 2005 and to group the countries into homogenous subsets from the perspective of Lisbon strategy realisation. The main aim of the research was to evaluate the results of the biggest EU economies which determine to the highest extend the results of the whole European Union. During the first five years of Lisbon strategy implementation the best results were obtained by relatively small UE countries such as Netherlands and Scandinavian economies. In case of four most important economies of the UE German, Great Britain, France and Italy only the results obtained by the first one were adequate to the leading role of the country in the common market. The results of France and Great Britain could not be satisfying as they were rated in the end of the first ten countries, whereas the 17 and 19 position of Italy was highly disappointing. As a result in the first stage of Lisbon strategy implementation it could be concluded that the failure of the plan could not be considered only as a "statistical" consequence of EU enlargement on the Central and Eastern Europe. Relatively low results of leading EU economies showed serious structural problem of the whole EU, which was later confirmed during the global financial crisis.

Based on the same methodological approach as the previous research Magdalena Olczyk (2014, pp. 21-43) was analysing the achievements of old and New Member States (NMS) in reaching the goals of Lisbon strategy in the year 2000 as the starting point of Lisbon strategy and the year 2010 as the last year of the plan. The results of the research confirmed significant gap between the EU-15 and the NMS. In the year 2010 only Czech Republic, Slovenia and Cyprus were qualified to the group of countries' with the average level of Lisbon strategy indicators.

On the other hand, Baležentis *et al.* (2011, pp. 6-21) were concentrating on the Europe 2020 strategy. In order to conduct the international comparisons, they used the multi-objective method Multimoora for analyzing the structural indicators that cover headline targets of the strategy. The research covered two years: the year 2005 and 2008. As a result it enabled to identify the progress of the European counties before adoption of the strategy and showed significant heterogeneity between European countries.

In the context of Europe 2020 Balcerzak (2011, pp. 31-41) was assessing the position of Poland in relation to other EU member states at the start of the plan. To do so two methods of linear ordering were used (Hellwig's method and zero unitarisation method) with the data for 2008. The study showed unsatisfactory position of Poland, which occupied positions 22 and 21 of the 27 EU member states in the case of the two prepared rankings and was outwitted by the Baltic States, the Czech Republic and Slovakia. This evaluation was repeated based on the updated Eurostat data with the same methodology for the years 2008 and 2012. The research showed that the four years between 2008 and 2012 were used quite effectively by Poland. In case of both methods of measurements the country was significantly much better rated in the year 2012 than in the year 2008. Whereas in the year 2008 Poland was grouped among the countries with average results in the implementation of Europe 2020 strategy, in the year 2012 it was rated among the countries with high effects (Blacerzak, 2015a, pp. 343-352). This progress was also confirmed with the application of natural breaks method for grouping the EU countries from the perspective of fulfillment aims of Europe 2020 strategy in the years 2004, 2008 and 2013. It is woth to remember that this good outcome was obtained during difficult years of financial crisis in Europe (Balcerzak, 2015b).

In the context of the discussed research the empirical effort presented in this paper should be placed in the second stream of the literature, which concerns quantitative multivariate analysis.

2. Method of dynamic taxonomic research

With aims of building fundaments for smart, sustainable and inclusive growth European Commission has proposed the following headline targets (Europe 2020…, 2010, p. 3; Balcerzak, 2011a, pp. 31-41):

a) 75% of the population aged 20-64 should be employed.
b) 3% of the EU's GDP should be invested in R&D.
c) The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right).
d) The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree.
e) 20 million less people should be at risk of poverty.

This means that the problem of fulfillment the aims of Europe 2020 strategy should be considered as a complex phenomenon. Thus, some tools of multivariate analysis are needed to assess the performance of individual countries. As a result, in order to evaluate the progress of European Union member states a classic approach for organizing and sharing of objects was applied based on normalization of variables with zero unitarisation method. The method was chosen because it is characterized by relatively high efficiency in organizing and sharing objects. The additional advantage of the method is its simplicity and the lack of methodological controversies for its application (see Kukuła, 2000, pp. 7-16; Kukuła, Bogocz, 2014, pp. 5-13).

In comparison to the previous research of the author (Balcerzak *et al.*, 2008, pp. 77-88, 2011, pp. 31-41; 2015, pp. 343-352) and many other articles in the field (see Olczyk, 2014, pp. 21-43; Baležentis *et al.*, 2011, pp. 6-21) a dynamic approach with two analytical level was used here. The analysis is based on the normalizastion with a constant reference point for the whole period of the analysis – the years 2004-2013. The constant reference point gives the range of normalized variable described with equation 1 (Kukuła, Bogocz, 2014, p. 5).

$$R(X_{jt}) = \max_{it} x_{ijt} - \min_{it} x_{ijt} \qquad (1)$$

First, the overall evaluation of the countries with one synthetic measure for all the five aims of Europe 2020 strategy is presented. Then the countries are evaluated in terms of the separate aims of the strategy.

The applied method allows to create rankings of countries with the best and the worst levels of implementation of Europe 2020 targets. In addition, the method gives the possibility of grouping the countries into four classes: a) countries with very high level of synthetic measure of fulfillment aims of the strategy; b) countries with a high position; c) the countries with an average position; d) countries with low position in the sphere of reaching the targets of Europe 2020 strategy.

In the research the data form Eurostat for the period of 2004-2013 was used (Eurostat, Europe 2020 indicators, http://ec.europa.eu/eurostat/data/database, 15.03.2015).

The fulfillment of headline targets is currently monitored with the following specific diagnostic criteria:

Target 1. 75% of the population aged 20-64 should be employed.

x_{1t} – Employment rate of females – age group 20-64 (% of the population);
x_{2t} – Employment rate of males – age group 20-64 (% of the population).

Target 2. 3% of the EU's GDP should be invested in R&D.

x_{3t} – *Gross domestic expenditure on R&D (% of GDP).*

Target 3. The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right).

x_{4t} – Greenhouse gas emissions, base year 1990;
x_{5t} – Share of renewable energy in gross final energy consumption;
x_{6t} – Intensity of energy consumption estimated final energy consumption in millions tons of oil equivalent in relations to GDP.

Target 4. The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree.

x_{7t} – Early leavers from education and training – females – % of the population aged 18-24 with at most lower secondary education and not in further education or training;
x_{8t} – Early leavers from education and training – males – % of the population aged 18-24 with at most lower secondary education and not in further education or training;
x_{9t} – Tertiary educational attainment – females – age group 30-34;
x_{10t} – Tertiary educational attainment – females – age group 30-34.

Target 5. 20 million less people should be at risk of poverty.

x_{11t} – People at risk of poverty or social exclusion – percentage of total population;
x_{12t} – People living in households with very low work intensity – percentage of total population;
x_{13t} – People at risk of poverty after social transfers – percentage of total population;
x_{14t} – Severely materially deprived people – percentage of total population.

In case of standard multivariate research the diagnostic variables are assessed with regard to the criteria of information importance. In that case the diagnostic variables should be characterized by high space variation, information importance and relatively low correlation.

High space variation means that diagnostic variables should not bear a strong resemblance to themselves in the sense of information about objects. In order to assess space variation very often a variation coefficient is used. When a variable has a lower value than accepted V= ε (usually V = 10%), it is eliminated from the set of diagnostic variables.

Formal criteria of information importance also often include criterion of information significance. The variable fulfills this criterion, when for benefit variables[1] it obtains low values of variable. In order to assess the importance skewness coefficient is usually used. In case of benefit variable for an important variable it has positive values. When the distribution of a variable characterizes with left asymmetry it means that the variable weakly differentiates the analyzed objects as most of them obtain high values of a given feature.

The last formal criterion of information importance is based on the need for low correlation between diagnostic variables. High correlation between the variables can lead to duplication of information. In case of high correlation between the variables some representative variables are selected with an accepted frontier value of correlation coefficient r = r* (usually r* = 0,8) (see Zeliaś, 2000, pp. 40-45).

However, in this research the diagnostic variables proposed by European Commission as a benchmark for reaching targets of Europe 2020 strategy were used. Thus, the above mentioned typical formal criteria were not implemented.

[1] In case of benefit variables (stimulants) X_j^S for every two values $x_{i,j}^s, x_{k,j}^s$ that refer to objects O_i, O_k , the relation $x_{i,j}^s > x_{k,j}^s \rightarrow O_i \succ O_k$ is fulfilled, where $\succ$ means that object O_i is preferred to O_k. In that case a maximum value of variable is preferred. In case of negative variable (destimulants) X_j^S for every two values $x_{i,j}^s, x_{k,j}^s$ that refer to objects O_i, O_k the relation $x_{i,j}^s > x_{k,j}^s \rightarrow O_i \prec O_k$ is fulfilled, where $\prec$ means that object O_k is preferred to object O_i. In that case minimum value of variable is preferred.

Among the diagnostic variable one can find both benefit (x_{1t}, x_{2t}, x_{3t}, x_{5t}, x_{9t}, x_{10t}), and negative variables (x_{4t}, x_{6t}, x_{7t}, x_{8t}, x_{11t}, x_{12t}, x_{13t}, x_{14t}). The stimulants were normalized with the formula 2 and the destimulants with the formula 3.

$$z_{ijt} = \frac{x_{ijt} - \min\limits_{it}\{x_{ijt}\}}{\max\limits_{it}\{x_{ijt}\} - \min\limits_{it}\{x_{ijt}\}} \qquad (i = 1, 2...n);\ (j = 1, 2...m);\ (t = 1, 2...l),\ z_{ij} \in [0, 1] \qquad (2)$$

$$z_{ijt} = \frac{\max\limits_{it}\{x_{ijt}\} - x_{ijt}}{\max\limits_{it}\{x_{ijt}\} - \min\limits_{it}\{x_{ijt}\}} \qquad (i = 1, 2...n);\ (j = 1, 2...m),\ (t = 1, 2...l),\ z_{ij} \in [0, 1] \qquad (3)$$

Assessment of the variable that characterizes the objects – a synthetic measure SM_{it} – was obtained with the formula 4.

$$SM_{it} = \frac{1}{m}\sum_{j=1}^{m} z_{ijt} \qquad (4)$$

$$(i = 1, 2...n);\ (j = 1, 2...m);\ (t = 1, 2...l);\ SMR_i \in [0, 1];\ z_{ij} \in [0, 1]$$

The synthetic measure enables to divide the set of countries into four groups:

1. The countries with very high level of synthetic measure of fulfillment aims of the strategy, where:

$$SM_{it} \geq \overline{SM_{it}} + S(SM_{it}) \qquad (i = 1, 2...n),\ (t = 1, 2...l) \qquad (5)$$

2. The countries with a high level of synthetic measure of fulfillment aims of the strategy, where:

$$\overline{SM}_{it} \leq SM_{it} < \overline{SM_{it}} + S(SM_{it}) \qquad (i = 1, 2...n),\ (t = 1, 2...l) \qquad (6)$$

3. The countries with an average level of synthetic measure of fulfillment aims of the strategy, where:

$$\overline{SM_{it}} - S(SM_{it}) \leq SM_{it} < \overline{SM_{it}} \qquad (i = 1, 2...n),\ (t = 1, 2...l) \qquad (7)$$

4. The countries with low position in the sphere of reaching the targets of Europe 2020 strategy, where:

$$SM_{it} < \overline{SM_{it}} - S(SM_{it}) \qquad (i = 1, 2...n),\ (t = 1, 2...l) \qquad (8)$$

Where:

$$\overline{SM_{it}} = \frac{1}{n}\sum_{i=1}^{n} SM_{it} \qquad S(SM_{it}) = \sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(SM_{it} - \overline{SM_{it}}\right)^2} \quad (i = 1, 2...n), (t = 1, 2...l)$$

In the first stage of the research the synthetic measure for fulfillment all the five targets of the Europe 2020 strategy was evaluated. Based on this synthetic measure of development the countries were grouped into the four categories. The result of the empirical effort is presented in *Table 1* (in *Annex*) and in *Figures 1* and *2*.

In the second stage of the research the synthetic measures for reaching the separate four targets were estimated. In case of second target as it is evaluated with only one variable there was not need to use any tools of multivariate analysis. The results are presented in appendix in *Table 2* to *5* (in *Annex*) and in *Figures 3* to *12*.

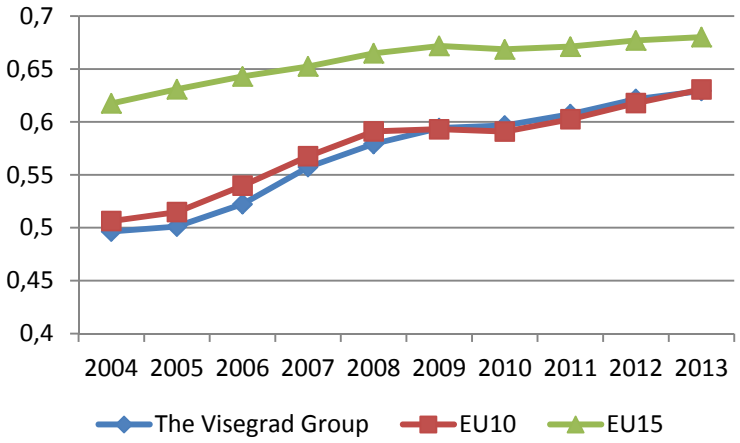

Figure 1. The average level of fulfilment targets of Euro 2020 strategy in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

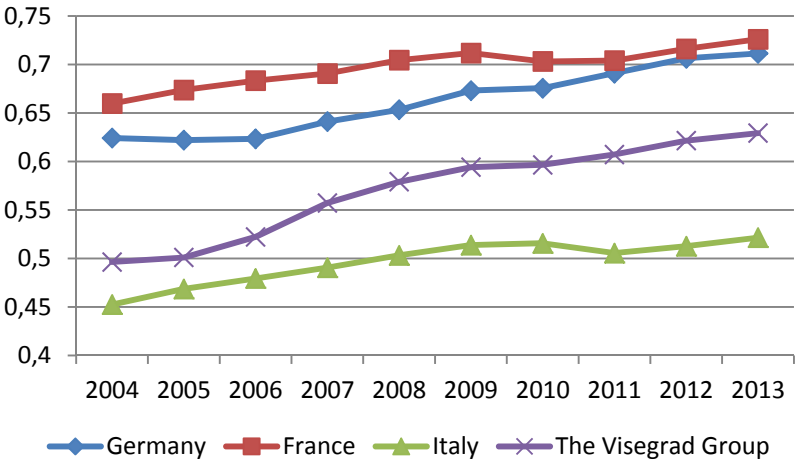

Figure 2. The average level of fulfilment targets of Euro 2020 strategy in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Figure 1 and *2* show the gap between New and Old Member States in the first year of the analysis. In spite of the fact that after the decade since the biggest European Union enlargement this diversity is still significant, it can be seen that the NMS had reached an

important progress as during that period the gap was reduced by half. In 2004 the average value of synthetic measure for fulfillment for all five targets of Europe 2020 in case of EU-10 and the Visegrad Group was respectively equal to almost 82% and 80% of the average value reached by EU-15. In the year 2013 this relation in both cases reached 92%. It is also worth to stress that in the last year of the analysis all the Baltic countries, Czech Republic and Slovenia were classified in the second group of countries that fulfill the targets of the strategy to high extent. What is also important when we compare the result of the Visegrad countries as the biggest economies in the group of NMS and the achievements of the biggest economies of the Eurozone Germany, France and Italy (*Figure 2*) this picture is still valid. The Visegrad countries not only reduced their distance to Germany and France but increased their advantage over Italy.

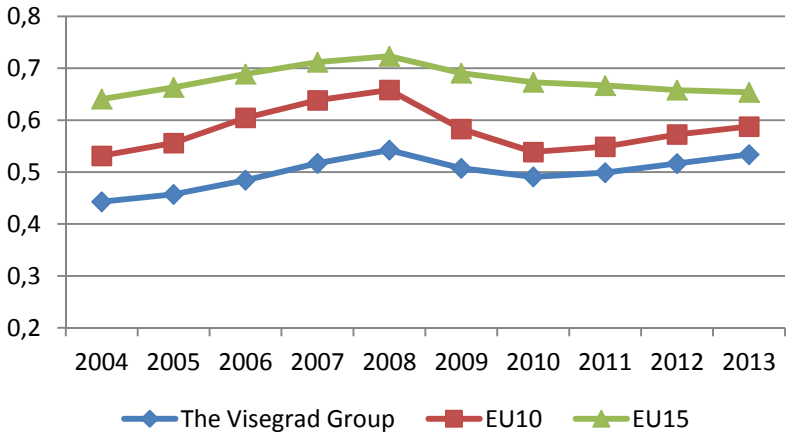

Figure 3. The average level of fulfilment of targets 1 of Euro 2020 strategy (75% of the population aged 20-64 should be employed)in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

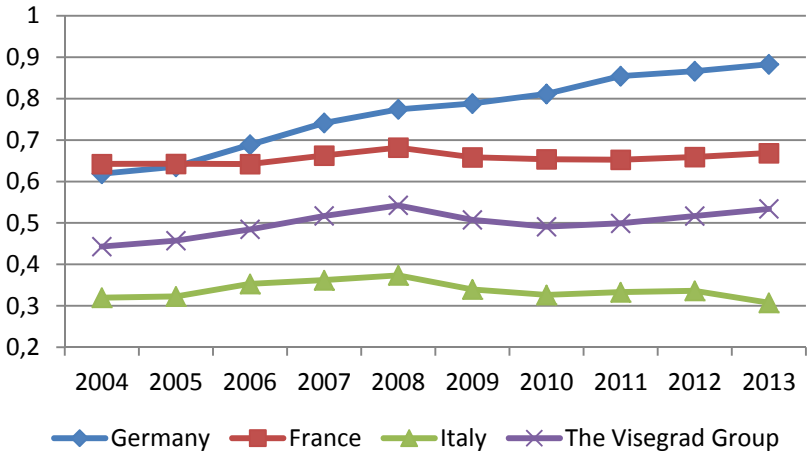

Figure 4. The average level of fulfilment of targets 1 of Euro 2020 strategy (75% of the population aged 20-64 should be employed) in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Figures 3 and *4* present the results in case of the first target of Europe 2020. First of all, figure 3 confirms the strong negative influence of global financial crisis in the year 2008 on the labour market in Europe. The decrease in employment level in the years 2008-2010 could be seen in both EU10 and EU15. However, after the year 2010 the situation started improving in case of NMS. When one compares the average results of the Visegrad countries with the biggest economies of the Eurozone good results in that sphere can be only seen in case of Germany. What is even more significant, the positive trend in that economy was not even disturbed by the crisis, which on one hand can be treated as a positive results of serious institutional changes in labour market in Germany after Hartz reforms, but on the other hand can be the results of great benefits of that economy after Eurozone creation. From the perspective of NMS it is important that these economies were able to overcome the negative consequence of the crises of the year 2008-2010.

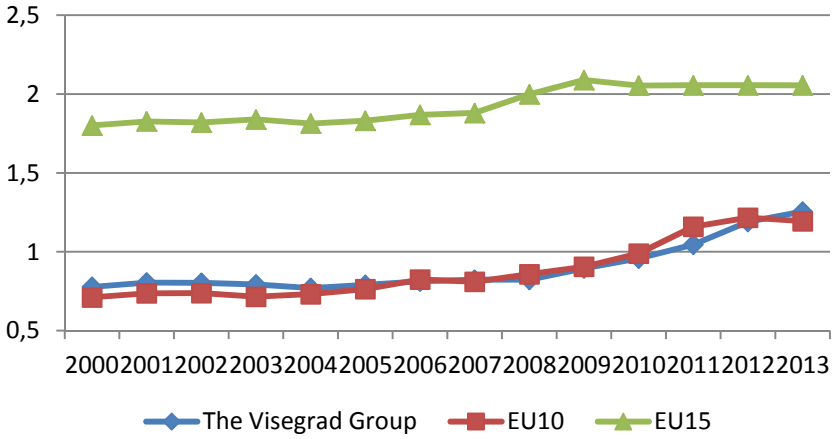

Figure 5. The average level of fulfilment of targets 2 of Euro 2020 strategy (3% of the EU's GDP should be invested in R&D) in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013
Source: based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

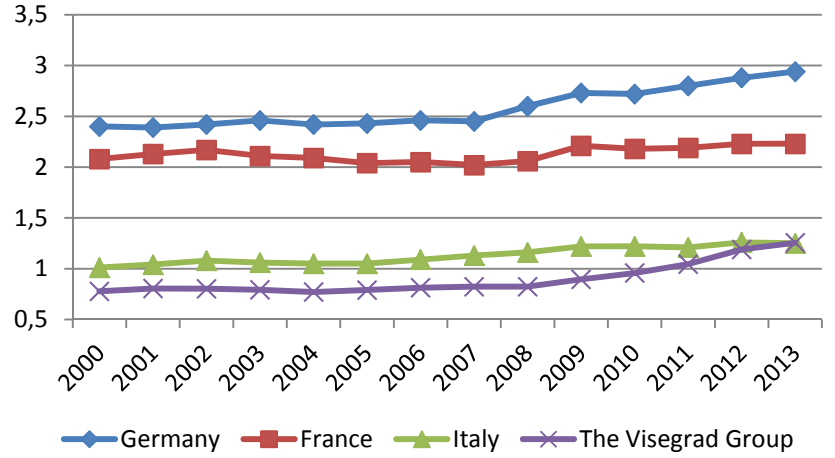

Figure 6. The average level of fulfilment of targets 2 of Euro 2020 strategy (3% of the EU's GDP should be invested in R&D) in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

In case of the second target of Europe 2020 – 3% of the EU's GDP should be invested in R&D – the progress in case of both EU-15 and NMS can be considered as very moderate (*Figures 5* and *6*). From the perspective of the structure of expenditures in case of almost all European countries, and general belief in the role of R&D investments, the lack of significant progress in that sphere should be considered as serious failure of the strategy. Even when we take into consideration the research results cited in the previous part of the article, which show that the expenditure on R&D cannot be treated mechanically as a guaranty of building effective knowledge based-economy, the nominal target of 3% GDP invested in R&D was only reached by Scandinavian countries. In case of the biggest European economies only Germany was close to the target with 2,94% of GDP on R&D expenditures in the year 2013. From the perspective of Visegrad Group the moderate improvements in that field can be treated as an important growth obstacle for these economies. It is important as all of them are facing the problem of "middle income trap", when the countries use up all the typical easy to launch growth factors such as cheap labor force and other resources. That problem is especially urgent in case of Poland that allocates 0,87% of GDP in that sphere, which is less than half of the level reached by Czech Republic.

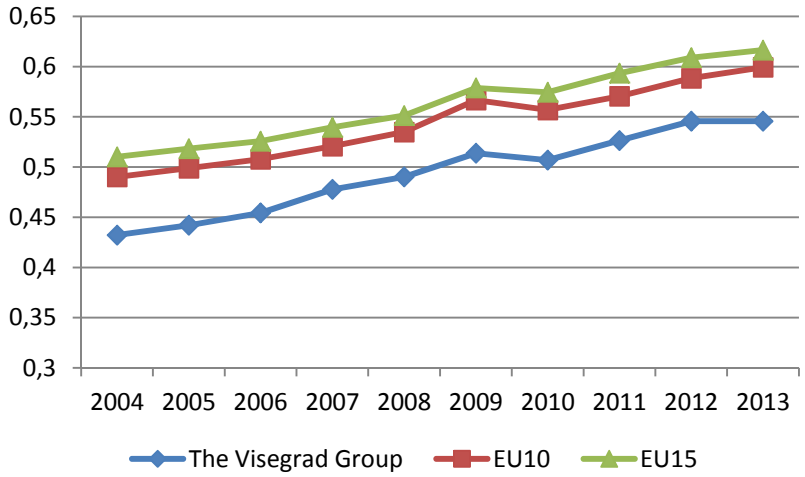

Figure 7. The average level of fulfilment of targets 3 of Euro 2020 strategy (The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right)) in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

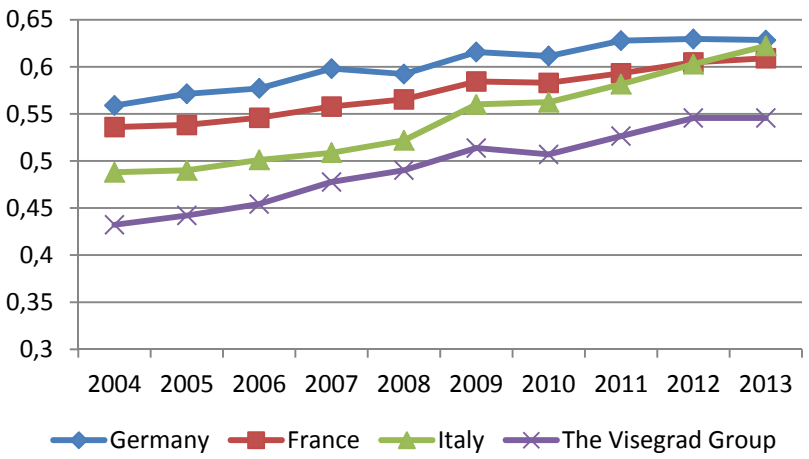

Figure 8. The average level of fulfilment of targets 3 of Euro 2020 strategy (The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right)) in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Figures 7 and *8* present the results of fulfilment of targets 3 – the "20/20/20" climate/energy targets should be met. In that case both EU10 and EU15 obtain significant progress. What is also important, on average the NMS are generally closing the development gap in that sphere. In case of EU-10 especially good results can be seen in case of Baltic countries and Romania (*Annex Table 3*).

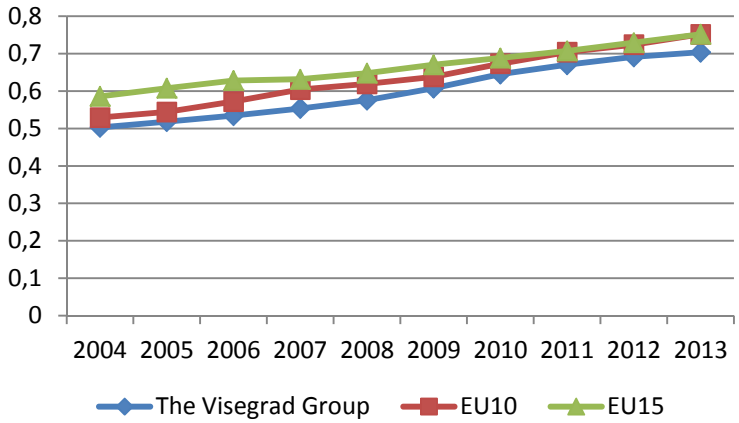

Figure 9. The average level of fulfilment of targets 4 of Euro 2020 strategy (The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree) in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

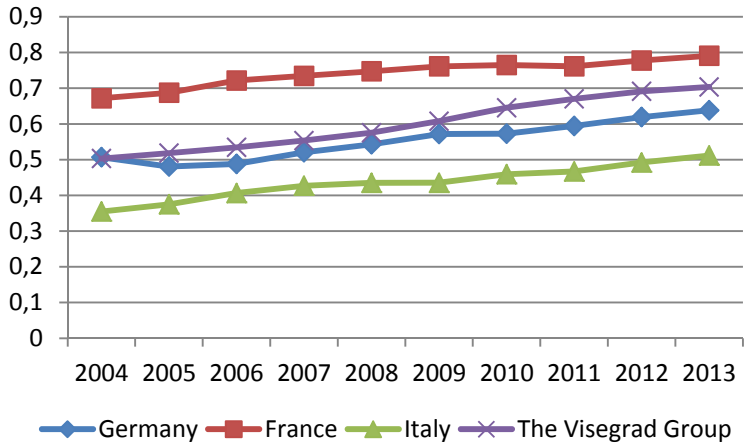

Figure 10. The average level of fulfilment of targets 4 of Euro 2020 strategy (The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree) in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

In case of the fourth target concerning the level of education the average level obtained by EU-10 is very close to the average for EU-15 (*Figures 9* and *10*). What is interesting the comparison of results obtained by the Visegrad Group with the leaders of Eurozone shows significant advantage of the first one. Only in case of France the synthetic measure of development for that target is higher than the average for the Visegrad Group with relation 0,79 to 0,70 (*Annex Table 4*). Taking into consideration the role of quality of human capital in the reality of knowledge-based economy, this can be considered as the strongest competitive advantage of central European countries. On the other hand, it must be remembered that effective utilising this potential in the reality of common market with the phenomena of brain drain, especially strong during last crisis, is not automatic. It demands effective macroeconomic and social policies.

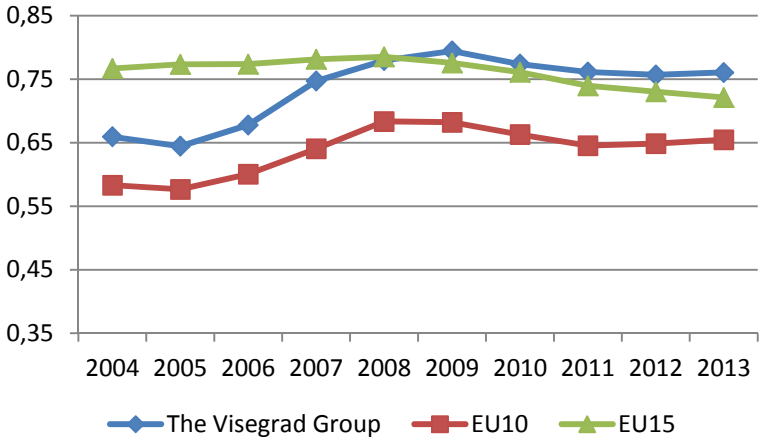

Figure 11. The average level of fulfilment of targets 5 of Euro 2020 strategy (20 million less people should be at risk of poverty) in case of the Visegrad Group, EU10 and EU15 in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

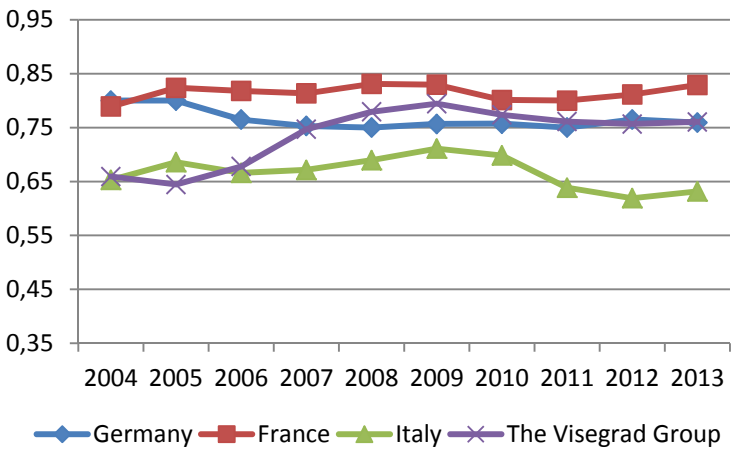

Figure 12. The average level of fulfilment of targets 5 of Euro 2020 strategy (20 million less people should be at risk of poverty)in case of the Visegrad Group, Germany, France and Italy in the years 2004-2013
Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

In case of the last target that concerns the problem of poverty and social exclusion, though lover level of development, the situation in case of NMS is relatively good (*Figures 11* and *12*). In spite of the diversity between the average level for EU10 and EU15, which is mostly the consequence of situation in Romania and Bulgaria (*Annex Table 5*) and important progress of standard of living in case of most vulnerable parts of societies can be seen. The NMS has also managed to go quite well through the crisis time of the years 2008-2010. What is interesting, if one compares the results obtained by the Visegrad group with France, Germany and Italy, only that first economy can be rated higher. The biggest economies of Central Europe have the results close to Germany and significantly higher than Italy.

Conclusions

The multivariate research presented in this paper confirms significant diversity between "Old" European countries and NMS in the sphere of reaching all the targets of Europe 2020 strategy. However, the dynamic research also points that since 2004 till 2013 the NMS (both groups the smaller economies and the Visegrad countries) had achieved an impressive progress and managed to reduce the gap to EU15 by half. Thus, it can be concluded that in the context of level of development of EU countries that progress can be considered as more than proportional in comparison to Old Member States.

Taking into consideration all the five specific targets of Europe 2020, in spite of the lower level of development on average NMS reach especially good results in case of climate/energy target, and very strong position in case of education and quality of human capital. The last one can be considered as especially important in case of building the fundaments for developing the knowledge-based economy in the region. However, in the same context the weakest achievements of EU10 can be seen in the sphere of investments in R&D. In the future it can make it difficult to utilize the potential of high quality of human capital. Thus, it can become the significant obstacle for growth in case of NMS.

When one concentrates on the results of most important economies of Eurozone the research also shows that the progress made by Germany and France is rather moderate, whereas the results of Italy as third biggest economy of Europe are highly disappointing. This

situation is analogues to the results obtained by these economies at the halfway of implementation of Lisbon strategy in the period 2000-2005 (Balcerzak *et al.*, 2008, pp. 77-88). When one analyses that outcome, one should take into consideration the leading political and economic role of these economies, which are responsible for almost 50% of GDP of EU. In that context the lack of significant progress of these countries for almost last ten years shows the scale of structural problems of the EU. These results cannot be only explained by the global financial crisis in the years 2008-2010, but should be rather threated as an indicator showing the insufficient efforts of most important European economies in building fundaments for inclusive European growth delivering high levels of employment, productivity and social cohesion.

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Annex

Table 1. The result of multivariate analysis of fulfilment targets of Euro 2020 strategy in the years 2004-2013

2004			2005			2006			2007			2008			2009			2010			2011			2012			2013		
No.	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**
Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High		
1	SU	0,8012	1	SU	0,8248	1	SU	0,8405	1	SU	0,8660	1	SU	0,8715	1	SU	0,8694	1	SU	0,8665	1	SU	0,8775	1	SU	0,8857	1	SU	0,8814
2	FI	0,7768	2	FI	0,7853	2	FI	0,7922	2	FI	0,7997	2	FI	0,8209	2	FI	0,8110	2	FI	0,7960	2	FI	0,8034	2	FI	0,8143	2	FI	0,8117
3	DK	0,7643	3	DK	0,7736	3	DK	0,7742	3	DK	0,7560	3	DK	0,7746	3	DK	0,7907	3	DK	0,7740	3	DK	0,7841	3	DK	0,8021	3	DK	0,8047
High			High			High			High			High			High			4	NL	0,7335	4	NL	0,7419	High			High		
4	SI	0,6716	4	FR	0,6737	4	NL	0,6904	4	SI	0,7126	4	NL	0,7308	4	NL	0,7349	High			High			4	NL	0,7505	4	NL	0,7444
5	NL	0,6631	5	NL	0,6723	5	SI	0,6897	5	NL	0,7054	5	FR	0,7045	5	SI	0,7255	5	SI	0,7246	5	SI	0,7291	5	SI	0,7413	5	EE	0,7440
6	FR	0,6598	6	SI	0,6610	6	EE	0,6866	6	EE	0,6975	6	SI	0,7026	6	FR	0,7118	6	FR	0,7032	6	EE	0,7179	6	EE	0,7319	6	SI	0,7290
7	AU	0,6434	7	AU	0,6550	7	FR	0,6834	7	FR	0,6907	7	EE	0,6969	7	AU	0,6941	7	LU	0,6968	7	FR	0,7040	7	AU	0,7168	7	FR	0,7261
8	DE	0,6242	8	LU	0,6399	8	AU	0,6597	8	AU	0,6729	8	LT	0,6904	8	LU	0,6871	8	AU	0,6945	8	LU	0,7013	8	FR	0,7161	8	AU	0,7208
9	EE	0,6136	9	UK	0,6231	9	LU	0,6472	9	LU	0,6651	9	AU	0,6693	9	EE	0,6824	9	EE	0,6936	9	AU	0,6966	9	DE	0,7064	9	LU	0,7178
10	UK	0,6133	10	EE	0,6221	10	UK	0,6381	10	LT	0,6618	10	LU	0,6690	10	DE	0,6731	10	DE	0,6755	10	DE	0,6910	10	LU	0,7036	10	DE	0,7114
11	BE	0,6105	11	DE	0,6220	11	BE	0,6286	11	IE	0,6417	11	IE	0,6602	11	BE	0,6645	11	BE	0,6653	11	UK	0,6796	11	CZ	0,6863	11	LT	0,7041
12	LU	0,6018	12	BE	0,6100	12	IE	0,6275	12	DE	0,6412	12	BE	0,6560	12	LT	0,6608	12	UK	0,6541	12	CZ	0,6687	12	LT	0,6823	12	CZ	0,6972
13	IE	0,5880	13	IE	0,5965	13	CY	0,6258	13	CY	0,6404	13	DE	0,6534	13	UK	0,6520	13	CZ	0,6514	13	BE	0,6601	13	UK	0,6798	13	UK	0,6861
14	CZ	0,5731	14	CY	0,5960	14	LT	0,6253	14	BE	0,6384	14	CY	0,6474	14	CZ	0,6447	14	CY	0,6359	14	LT	0,6560	14	BE	0,6713	14	BE	0,6776
15	CY	0,5730	15	LT	0,5922	15	DE	0,6233	15	UK	0,6375	15	UK	0,6414	15	CY	0,6439	15	LT	0,6334	15	CY	0,6495	15	CY	0,6429	15	LV	0,6651
Average			Average			Average			16	CZ	0,6130	16	CZ	0,6285	16	IE	0,6367	Average			Average			Average			Average		
16	LT	0,5599	16	CZ	0,5742	16	CZ	0,5911	Average			Average			Average			16	IE	0,6137	16	PL	0,6122	16	PL	0,6311	16	PL	0,6404
17	LV	0,5091	17	ES	0,5315	17	ES	0,5502	17	LV	0,5983	17	LV	0,6018	17	SK	0,5967	17	PL	0,5959	17	IE	0,6108	17	LV	0,6298	17	CY	0,6293
18	ES	0,5066	18	LV	0,5213	18	LV	0,5410	18	SK	0,5669	18	SK	0,5892	18	PL	0,5950	18	SK	0,5925	18	SK	0,6029	18	IE	0,6177	18	IE	0,6279
19	HU	0,4967	19	GR	0,5054	19	SK	0,5341	19	ES	0,5578	19	PL	0,5683	19	LV	0,5632	19	PT	0,5618	19	LV	0,5956	19	SK	0,6138	19	SK	0,6181
20	HR	0,4946	20	SK	0,5002	20	GR	0,5081	20	HU	0,5251	20	ES	0,5592	20	ES	0,5581	20	LV	0,5541	20	PT	0,5879	20	PT	0,5852	20	PT	0,5764
21	SK	0,4907	21	HR	0,4999	21	PT	0,5013	21	PL	0,5241	21	PT	0,5382	21	PT	0,5470	21	HU	0,5462	21	HU	0,5451	21	HU	0,5548	21	HU	0,5613
22	GR	0,4896	22	HU	0,4959	22	HR	0,4981	22	PT	0,5127	22	HU	0,5305	22	HU	0,5401	22	ES	0,5460	22	ES	0,5312	Low			Low		
23	PT	0,4674	23	PT	0,4815	23	HU	0,4890	23	HR	0,5104	23	GR	0,5194	23	GR	0,5320	23	GR	0,5311	Low			22	ES	0,5237	22	HR	0,5286
24	IT	0,4525	24	IT	0,4686	24	IT	0,4795	24	GR	0,5102	24	HR	0,5184	Low			Low			23	IT	0,5056	23	IT	0,5127	23	ES	0,5271
Low			Low			Low			Low			Low			24	HR	0,5217	24	HR	0,5159	24	HR	0,5025	24	HR	0,4972	24	IT	0,5215
25	PL	0,4250	25	PL	0,4340	25	PL	0,4749	25	IT	0,4906	25	IT	0,5033	25	IT	0,5138	25	IT	0,5156	25	GR	0,4917	25	MT	0,4836	25	MT	0,4903
26	RO	0,3815	26	RO	0,3933	26	MT	0,4043	26	MT	0,4142	26	BG	0,4712	26	BG	0,4799	26	BG	0,4648	26	MT	0,4668	26	GR	0,4684	26	RO	0,4815
27	BG	0,3417	27	MT	0,3826	27	RO	0,3976	27	RO	0,3986	27	RO	0,4305	27	RO	0,4418	27	MT	0,4543	27	RO	0,4582	27	RO	0,4641	27	BG	0,4665
28	MT	0,3345	28	BG	0,3533	28	BG	0,3681	28	BG	0,3779	28	MT	0,4217	28	MT	0,4336	28	RO	0,4522	28	BG	0,4395	28	BG	0,4423	28	GR	0,4661

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Table 2. The result of multivariate analysis of fulfilment of targets 1 of Euro 2020 strategy (75% of the population aged 20-64 should be employed)in the years 2004-2013

2004			2005			2006			2007			2008			2009			2010			2011			2012			2013		
No.	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**
Very High				Very High		Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High		
1	SU	0,9233	1	SU	0,9384	1	SU	0,9546	1	SU	0,9934	1	SU	1,0000	1	SU	0,9443	1	SU	0,9325	1	SU	0,9737	1	SU	0,9772	1	BE	0,9891
2	DK	0,9001	2	DK	0,9156	2	DK	0,9538	2	DK	0,9454	2	DK	0,9675	2	NL	0,9185	2	DK	0,8674	2	NL	0,8706	2	NL	0,8800	2	BG	0,8829
3	UK	0,7946	3	UK	0,8041	3	EE	0,8634	3	EE	0,8828	3	NL	0,9145	3	DK	0,9158	3	NL	0,8600	3	DK	0,8586	3	DE	0,8663	3	CZ	0,8638
4	NL	0,7800	High			4	NL	0,8299	4	NL	0,8770	4	EE	0,8899	4	FI	0,8186	4	DE	0,8114	4	DE	0,8544	4	DK	0,8508	4	DK	0,8568
High			4	NL	0,7917	High			High			High			High			5	AU	0,8114	5	FI	0,8182	5	AU	0,8323	5	DE	0,8363
5	FI	0,7635	5	FI	0,7909	5	FI	0,8154	5	FI	0,8434	5	FI	0,8686	5	AU	0,8055	6	CY	0,8039	6	AU	0,8169	6	FI	0,8289	High		
6	CY	0,7473	6	EE	0,7599	6	UK	0,8052	6	LV	0,8250	6	LV	0,8473	6	CY	0,8035	7	FI	0,7990	High			High			6	EE	0,8091
7	PT	0,7247	7	CY	0,7347	7	CY	0,7847	7	CY	0,8238	7	CY	0,8242	7	DE	0,7882	High			7	UK	0,7680	7	UK	0,7847	7	IE	0,8091
8	EE	0,7010	8	PT	0,7204	8	LV	0,7801	8	UK	0,8029	8	UK	0,8076	8	UK	0,7769	8	UK	0,7680	8	CY	0,7620	8	EE	0,7600	8	GR	0,7882
9	SI	0,6807	9	SI	0,7027	9	AU	0,7432	9	AU	0,7744	9	AU	0,8034	9	SI	0,7371	9	SI	0,6917	9	EE	0,7123	9	LU	0,6837	9	ES	0,7089
10	AU	0,6681	10	LT	0,7001	10	PT	0,7311	10	LT	0,7656	10	DE	0,7741	10	EE	0,7153	10	PT	0,6812	10	FR	0,6525	10	LT	0,6752	10	FR	0,7002
11	LT	0,6595	11	AU	0,6985	11	LT	0,7273	11	DE	0,7413	11	SI	0,7641	11	PT	0,7015	11	FR	0,6537	11	CZ	0,6466	11	CY	0,6700	11	HR	0,6947
12	LV	0,6560	12	IE	0,6857	12	SI	0,7135	12	SI	0,7368	12	PT	0,7496	12	FR	0,6585	12	LU	0,6465	12	PT	0,6422	12	CZ	0,6669	12	IT	0,6759
13	IE	0,6470	13	LV	0,6823	13	IE	0,7107	13	IE	0,7308	13	LT	0,7482	13	CZ	0,6431	13	CZ	0,6282	13	SI	0,6373	13	FR	0,6590	13	CY	0,6684
14	FR	0,6421	14	FR	0,6427	14	DE	0,6887	14	PT	0,7293	14	IE	0,7000	14	LT	0,6398	14	EE	0,6210	14	LU	0,6344	14	LV	0,6505	Average		
15	CZ	0,6251	15	CZ	0,6383	15	CZ	0,6532	15	CZ	0,6748	15	BG	0,6861	15	BG	0,6352	Average			15	LT	0,6310	15	SI	0,6331	14	LV	0,5945
16	DE	0,6189	16	DE	0,6357	16	FR	0,6420	16	FR	0,6628	16	CZ	0,6832	16	LU	0,6352	15	BE	0,5855	16	LV	0,6049	Average			15	LT	0,5852
Average			Average			Average			Average			17	FR	0,6818	Average			16	LT	0,5651	Average			16	BE	0,5793	16	LU	0,5840
17	LU	0,5243	17	LU	0,5736	17	LU	0,5871	17	BG	0,6221	Average			17	LV	0,6244	17	LV	0,5593	17	BE	0,5788	17	PT	0,5781	17	HU	0,5536
18	BE	0,4978	18	BE	0,5305	18	ES	0,5585	18	LU	0,6148	18	SK	0,5921	18	IE	0,5751	18	BG	0,5466	18	IE	0,4907	18	SK	0,4899	18	MT	0,5321
19	RO	0,4620	19	ES	0,5079	19	BE	0,5328	19	ES	0,5887	19	LU	0,5898	19	BE	0,5694	19	IE	0,5146	19	SK	0,4892	19	IE	0,4889	19	NL	0,5004
20	SK	0,4574	20	SK	0,4720	20	BG	0,5260	20	BE	0,5721	20	BE	0,5892	20	SK	0,5240	20	SK	0,4820	20	BG	0,4790	20	BG	0,4855	20	AU	0,4939
21	ES	0,4347	21	RO	0,4579	21	SK	0,5086	21	SK	0,5444	21	ES	0,5703	21	PL	0,4897	21	PL	0,4753	21	PL	0,4778	21	PL	0,4849	21	PL	0,4897
22	HU	0,4120	22	BG	0,4294	22	RO	0,4984	22	RO	0,4841	22	PL	0,4881	22	ES	0,4641	22	RO	0,4408	22	RO	0,4294	22	RO	0,4546	22	PT	0,4552
23	BG	0,3838	23	HU	0,4173	Low			Low			23	RO	0,4772	23	RO	0,4491	23	ES	0,4364	23	ES	0,4195	23	HU	0,4248	23	RO	0,4518
Low			Low			23	GR	0,4290	23	GR	0,4373	Low			24	GR	0,4477	Low			Low			Low			Low		
24	GR	0,3708	24	GR	0,3910	24	HU	0,4258	24	PL	0,4253	24	GR	0,4569	Low			24	GR	0,4021	24	HU	0,3819	24	ES	0,3584	24	SI	0,3970
25	HR	0,3269	25	HR	0,3447	25	HR	0,3661	25	HU	0,4234	25	HR	0,4254	25	HR	0,4059	25	HU	0,3776	25	IT	0,3327	25	IT	0,3361	25	SK	0,3309
26	IT	0,3195	26	IT	0,3225	26	IT	0,3529	26	HR	0,4063	26	HU	0,4061	26	HU	0,3724	26	IT	0,3262	26	GR	0,2897	26	MT	0,3288	26	FI	0,3073
27	PL	0,2770	27	PL	0,3010	27	PL	0,3500	27	IT	0,3618	27	IT	0,3736	27	IT	0,3395	27	HR	0,3234	27	MT	0,2689	27	HR	0,2308	27	SU	0,2938
28	MT	0,0909	28	MT	0,0876	28	MT	0,1072	28	MT	0,1433	28	MT	0,1740	28	MT	0,1773	28	MT	0,2160	28	HR	0,2680	28	GR	0,1652	28	UK	0,1049

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Table 3. The result of multivariate analysis offulfilment of targets 3 of Euro 2020 strategy (The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right)in the years 2004-2013

2004			2005			2006			2007			2008			2009			2010			2011			2012			2013		
No.	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**	**No.**	**Co.**	**SM**
Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High		
1	SU	0,7191	1	SU	0,7440	1	SU	0,7632	1	SU	0,7804	1	SU	0,7963	1	SU	0,8289	1	SU	0,7995	1	SU	0,8316	1	SU	0,8580	1	SU	0,8685
2	LV	0,6361	2	LV	0,6505	2	LV	0,6526	2	LV	0,6503	2	LV	0,6603	2	AU	0,6592	2	DK	0,6694	2	DK	0,6999	2	DK	0,7323	2	DK	0,7398
3	LT	0,6187	3	LT	0,6174	3	LT	0,6176	3	DK	0,6175	3	DK	0,6352	3	LT	0,6592	3	LT	0,6490	3	LV	0,6664	3	LV	0,6893	3	LV	0,7138
4	DK	0,5891	4	FI	0,6143	4	EE	0,6075	4	AU	0,6153	4	FI	0,6330	4	DK	0,6590	High			High			4	FI	0,6830	4	FI	0,7010
5	EE	0,5813	5	DK	0,6128	High			High			5	LT	0,6321	5	LV	0,6577	4	AU	0,6411	4	LT	0,6631	High			High		
High			High			5	AU	0,5903	5	LT	0,6125	High			High			5	RO	0,6337	5	EE	0,6571	5	LT	0,6755	5	LT	0,6930
6	AU	0,5640	6	EE	0,5913	6	DK	0,5869	6	DE	0,5981	6	AU	0,6214	6	FI	0,6461	6	EE	0,6292	6	FI	0,6533	6	AU	0,6720	6	AU	0,6733
7	FI	0,5626	7	DE	0,5713	7	FI	0,5787	7	EE	0,5943	7	EE	0,6064	7	EE	0,6433	7	FI	0,6148	7	AU	0,6530	7	EE	0,6685	7	EE	0,6715
8	DE	0,5589	8	AU	0,5662	8	DE	0,5771	8	FI	0,5902	8	DE	0,5923	8	RO	0,6310	8	DE	0,6115	8	DE	0,6278	8	RO	0,6340	8	RO	0,6559
9	FR	0,5360	9	FR	0,5382	9	FR	0,5459	9	RO	0,5604	9	RO	0,5867	9	DE	0,6157	9	LV	0,6096	9	RO	0,6180	9	DE	0,6296	9	DE	0,6284
10	UK	0,5233	10	UK	0,5281	10	UK	0,5331	10	FR	0,5578	10	FR	0,5654	10	FR	0,5844	10	FR	0,5830	10	UK	0,5932	10	FR	0,6048	10	IT	0,6222
11	HR	0,5054	11	RO	0,5179	11	RO	0,5288	11	UK	0,5409	11	UK	0,5520	11	UK	0,5752	11	PT	0,5735	11	FR	0,5932	11	IT	0,6028	11	FR	0,6091
12	RO	0,4981	12	HR	0,5041	Average			Average			12	PT	0,5335	12	IT	0,5600	12	UK	0,5709	12	PT	0,5838	12	PT	0,5898	12	PT	0,5979
13	SI	0,4935	Average			12	HR	0,5021	12	PT	0,5148	Average			13	PT	0,5562	13	IT	0,5624	13	IT	0,5815	13	UK	0,5890	13	UK	0,5946
Average			13	SI	0,4909	13	IT	0,5011	13	IT	0,5088	13	IT	0,5219	Average			Average			Average			Average			Average		
14	IT	0,4879	14	IT	0,4900	14	NL	0,4962	14	BE	0,5036	14	HU	0,5096	14	SI	0,5390	14	SI	0,5365	14	HU	0,5467	14	HR	0,5737	14	HR	0,5825
15	PT	0,4729	15	NL	0,4846	15	PT	0,4957	15	NL	0,5019	15	NL	0,5044	15	BE	0,5311	15	HU	0,5327	15	HR	0,5435	15	HU	0,5735	15	HU	0,5735
16	NL	0,4723	16	BE	0,4734	16	SI	0,4934	16	SI	0,5003	16	HR	0,5041	16	HU	0,5309	16	HR	0,5317	16	SK	0,5417	16	SK	0,5614	16	BE	0,5674
17	HU	0,4603	17	PT	0,4647	17	BE	0,4865	17	HU	0,4993	17	CZ	0,4998	17	SK	0,5247	17	CZ	0,5152	17	SI	0,5353	17	BE	0,5553	17	GR	0,5624
18	BE	0,4579	18	HU	0,4635	18	HU	0,4784	18	HR	0,4928	18	BE	0,4935	18	HR	0,5211	18	BE	0,5143	18	BE	0,5348	18	GR	0,5526	18	SI	0,5572
19	GR	0,4466	19	CZ	0,4506	19	CZ	0,4629	19	SK	0,4861	19	SK	0,4913	19	NL	0,5187	19	SK	0,5125	19	IE	0,5326	19	SI	0,5475	19	CZ	0,5534
20	IE	0,4460	20	IE	0,4408	20	GR	0,4511	20	CZ	0,4839	20	SI	0,4827	20	CZ	0,5166	20	GR	0,5106	20	CZ	0,5274	20	CZ	0,5458	20	SK	0,5490
21	PL	0,4311	21	GR	0,4401	21	IE	0,4437	21	LU	0,4627	21	LU	0,4631	21	IE	0,4962	21	ES	0,5068	21	NL	0,5247	21	IE	0,5360	21	IE	0,5397
22	CZ	0,4300	22	PL	0,4375	22	SK	0,4437	22	IE	0,4525	22	GR	0,4622	22	ES	0,4922	22	IE	0,4997	22	GR	0,5188	22	NL	0,5288	22	NL	0,5280
23	LU	0,4190	23	LU	0,4210	23	LU	0,4352	23	GR	0,4516	23	PL	0,4602	23	GR	0,4831	23	NL	0,4980	23	ES	0,5052	23	ES	0,5193	23	ES	0,5274
24	SK	0,4077	24	SK	0,4167	24	PL	0,4322	24	PL	0,4417	24	IE	0,4563	24	PL	0,4830	24	BG	0,4827	24	PL	0,4902	24	PL	0,5017	24	BG	0,5199
Low			Low			Low			Low			25	ES	0,4391	25	BG	0,4815	25	PL	0,4673	25	LU	0,4686	25	BG	0,4872	25	PL	0,5068
25	ES	0,3974	25	ES	0,3848	25	ES	0,4022	25	ES	0,3979	Low			26	LU	0,4763	26	LU	0,4627	Low			Low			Low		
26	MT	0,3800	26	MT	0,3703	26	MT	0,3718	26	BG	0,3789	26	BG	0,4202	Low			Low			26	BG	0,4595	26	LU	0,4800	26	LU	0,4881
27	BG	0,3454	27	BG	0,3524	27	BG	0,3609	27	MT	0,3593	27	MT	0,3494	27	MT	0,3731	27	MT	0,3557	27	MT	0,3534	27	CY	0,3782	27	CY	0,3929
28	CY	0,3148	28	CY	0,3163	28	CY	0,3082	28	CY	0,3078	28	CY	0,3065	28	CY	0,3257	28	CY	0,3409	28	CY	0,3501	28	MT	0,3712	28	MT	0,3650

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Table 4. The result of multivariate analysis of fulfilment of targets 4 of Euro 2020 strategy (The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree)in the years 2004-2013

2004			2005			2006			2007			2008			2009			2010			2011			2012			2013		
No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM
Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High		
1	FI	0,8427	1	FI	0,8334	1	FI	0,8706	1	FI	0,8796	1	FI	0,8849	1	IE	0,8570	1	SU	0,8593	1	LT	0,8892	1	LT	0,9272	1	LT	0,9668
2	DK	0,7672	2	DK	0,8028	2	DK	0,7931	2	CY	0,8111	2	LT	0,8420	2	FI	0,8567	2	LT	0,8497	2	SU	0,8846	2	IE	0,8913	2	LU	0,9282
3	BE	0,7190	3	LT	0,7578	3	CY	0,7805	3,0000	SU	0,8041	3	IE	0,8400	3	SU	0,8417	3	IE	0,8487	3	IE	0,8643	3	CY	0,8833	3	IE	0,9165
High			High			4	SU	0,7762	4	SI	0,8034	4	CY	0,8241	4	LT	0,8244	4	FI	0,8417	4	SI	0,8613	4	SI	0,8749	4	CY	0,8996
4	SI	0,7136	4	IE	0,7243	5	LT	0,7758	5	IE	0,7978	5	SU	0,8081	High			High			5	FI	0,8597	5	SU	0,8746	5	EE	0,8932
5	SU	0,7110	5	BE	0,7160	6	IE	0,7699	6	LT	0,7755	High			5	CY	0,7988	5	SI	0,8177	High			6	FI	0,8677	6	SU	0,8909
6	IE	0,7037	6	SU	0,7146	High			High			6	SI	0,7711	6	LU	0,7828	6	LU	0,8157	6	CY	0,8337	High			High		
7	FR	0,6717	7	CY	0,7083	7	BE	0,7506	7	EE	0,7549	7	BE	0,7665	7	DK	0,7788	7	EE	0,8064	7	LU	0,8317	7	DK	0,8490	7	SI	0,8829
8	EE	0,6707	8	FR	0,6874	8	SI	0,7286	8	BE	0,7486	8	FR	0,7472	8	BE	0,7748	8	BE	0,7885	8	EE	0,8138	8	PL	0,8400	8	LV	0,8753
9	LT	0,6574	9	SI	0,6803	9	FR	0,7216	9	FR	0,7346	9	NL	0,7226	9	SI	0,7721	9	CY	0,7802	9	DK	0,8084	9	EE	0,8374	9	PL	0,8629
10	CY	0,6106	10	LU	0,6790	10	EE	0,7149	10	DK	0,7113	10	PL	0,7199	10	FR	0,7612	10	PL	0,7791	10	PL	0,8044	10	LU	0,8374	10	DK	0,8570
11	NL	0,6062	11	EE	0,6408	11	LU	0,6724	11	LU	0,6910	11	EE	0,7123	11	PL	0,7538	11	DK	0,7782	11	LV	0,7888	11	LV	0,8187	11	FI	0,8400
12	UK	0,6059	12	PL	0,6367	12	PL	0,6600	12	PL	0,6843	12	DK	0,7067	12	NL	0,7333	12	FR	0,7649	12	NL	0,7738	12	BE	0,8021	12	BE	0,7988
13	PL	0,6021	13	UK	0,6298	13	UK	0,6561	13	NL	0,6711	13	LU	0,7037	13	EE	0,7326	13	NL	0,7619	13	BE	0,7735	13	FR	0,7775	13	FR	0,7908
14	HR	0,5559	14	NL	0,6212	14	NL	0,6534	Average			Average			14	LV	0,6754	14	LV	0,7170	14	FR	0,7612	14	NL	0,7705	14	NL	0,7861
15	LU	0,5490	15	HR	0,5792	Average			14	UK	0,6152	14	UK	0,6242	15	UK	0,6518	15	UK	0,6864	15	UK	0,7240	15	UK	0,7586	15	UK	0,7775
Average			Average			15	GR	0,5629	15	LV	0,6022	15	LV	0,6232	Average			Average			Average			Average			Average		
16	GR	0,5377	16	GR	0,5679	16	HR	0,5586	16	HR	0,5985	16	HR	0,5922	16	HR	0,6121	16	HR	0,6653	16	HR	0,6767	16	HR	0,6620	16	GR	0,7120
17	LV	0,5247	17	ES	0,5391	17	ES	0,5557	17	BG	0,5583	17	BG	0,5607	17	GR	0,5723	17	SK	0,6188	17	SK	0,6338	17	CZ	0,6477	17	HR	0,6737
18	DE	0,5067	18	LV	0,5337	18	LV	0,5267	18	GR	0,5570	18	GR	0,5590	18	DE	0,5716	18	HU	0,6025	18	CZ	0,6244	18	GR	0,6454	18	SK	0,6587
19	AU	0,5050	19	AU	0,5104	19	BG	0,5238	19	ES	0,5561	19	ES	0,5528	19	HU	0,5716	19	ES	0,5960	19	HU	0,6188	19	SK	0,6427	19	HU	0,6481
20	ES	0,4952	20	SK	0,4897	20	AU	0,5001	20	HU	0,5267	20	DE	0,5430	20	BG	0,5677	20	GR	0,5919	20	GR	0,6039	20	HU	0,6345	20	CZ	0,6447
21	HU	0,4841	21	DE	0,4808	21	HU	0,4984	21	DE	0,5207	21	HU	0,5400	21	ES	0,5661	21	BG	0,5839	21	ES	0,6026	21	ES	0,6199	21	DE	0,6381
22	SK	0,4704	22	HU	0,4788	22	SK	0,4980	22	SK	0,5060	22	SK	0,5330	22	SK	0,5656	22	CZ	0,5812	22	BG	0,5962	22	DE	0,6192	22	ES	0,6332
23	BG	0,4659	23	CZ	0,4684	23	DE	0,4878	23	CZ	0,4967	23	AU	0,5157	23	AU	0,5436	23	DE	0,5726	23	DE	0,5942	23	AU	0,5909	23	BG	0,6288
24	CZ	0,4555	24	BG	0,4669	24	CZ	0,4811	24	AU	0,4928	24	CZ	0,5093	24	CZ	0,5399	24	AU	0,5579	24	AU	0,5633	24	BG	0,5849	24	AU	0,6078
Low			Low			Low			Low			Low			Low			Low			Low			Low			Low		
25	IT	0,3548	25	IT	0,3751	25	IT	0,4067	25	IT	0,4269	25	IT	0,4349	25	IT	0,4353	25	IT	0,4592	25	PT	0,4995	25	PT	0,5457	25	PT	0,5886
26	RO	0,2487	26	RO	0,2892	26	RO	0,3138	26	RO	0,3338	26	RO	0,3804	26	RO	0,3784	26	MT	0,4286	26	IT	0,4668	26	IT	0,4921	26	IT	0,5117
27	PT	0,2132	27	PT	0,2334	27	MT	0,2684	27	MT	0,3106	27	MT	0,3225	27	MT	0,3521	27	PT	0,4017	27	MT	0,4472	27	MT	0,4645	27	MT	0,4722
28	MT	0,0539	28	MT	0,2188	28	PT	0,2478	28	PT	0,2660	28	PT	0,3079	28	PT	0,3279	28	RO	0,3761	28	RO	0,4113	28	RO	0,4319	28	RO	0,4552

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).

Table 5. The result of multivariate analysis offulfilment of targets 4 of Euro 2020 strategy (20 million less people should be at risk of poverty) in the years 2004-2013

2004			2005			2006			2007			2008			2009			2010			2011			2012			2013		
No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM	No.	Co.	SM
Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High			Very High		
1	LU	0,8927	1	SU	0,9216	1	SU	0,8841	1	SU	0,9306	1	SU	0,9118	1	CZ	0,9388	1	CZ	0,9259	1	CZ	0,9083	1	CZ	0,9059	1	CZ	0,9225
2	DK	0,8681	2	LU	0,8745	2	LU	0,8825	2	LU	0,8976	2	CZ	0,9088	2	SI	0,8906	2	NL	0,8977	2	LU	0,8799	2	NL	0,8944	2	NL	0,8786
3	SU	0,8674	3	NL	0,8654	3	SI	0,8751	High			3	LU	0,9051	3	NL	0,8891	3	SU	0,8961	3	NL	0,8776	3	SU	0,8803	3	FI	0,8639
4	NL	0,8613	4	AU	0,8620	4	NL	0,8702	3	NL	0,8822	4	NL	0,9015	4	SU	0,8797	4	LU	0,8729	4	SU	0,8648	4	LU	0,8470	4	SU	0,8490
5	AU	0,8587	High			High			4	CZ	0,8783	5	DK	0,8706	High			High			High			High			High		
6	CZ	0,8571	5	DK	0,8411	5	DK	0,8516	5	SI	0,8716	High			5	SK	0,8597	5	SI	0,8491	5	SI	0,8234	5	FI	0,8332	5	FR	0,8291
7	FI	0,8567	6	FI	0,8411	6	AU	0,8497	6	AU	0,8638	6	SK	0,8576	6	LU	0,8514	6	FI	0,8365	6	FI	0,8128	6	AU	0,8247	6	LU	0,8247
8	SI	0,8551	7	SI	0,8388	7	CZ	0,8494	7	DK	0,8441	7	SI	0,8536	7	DK	0,8411	7	AU	0,8160	7	AU	0,8087	7	SI	0,8222	7	AU	0,8210
High			8	CZ	0,8245	8	FI	0,8425	8	FI	0,8379	8	FI	0,8460	8	FI	0,8380	8	SK	0,8115	8	SK	0,8038	8	FR	0,8114	8	SK	0,8137
9	DE	0,8001	9	FR	0,8237	9	FR	0,8180	9	SK	0,8350	9	FR	0,8310	9	FR	0,8296	9	DK	0,8110	9	FR	0,7999	9	SK	0,8081	9	SI	0,7979
10	FR	0,7892	10	DE	0,8001	10	MT	0,7982	10	FR	0,8135	10	AU	0,7981	10	AU	0,8249	10	FR	0,8013	10	DK	0,7990	10	DK	0,8011	10	DK	0,7886
11	CY	0,7851	11	MT	0,7862	11	CY	0,7820	11	MT	0,7839	11	CY	0,7957	11	CY	0,8004	11	CY	0,7789	11	CY	0,7876	11	DE	0,7650	11	DE	0,7592
12	MT	0,7767	12	CY	0,7701	12	SK	0,7757	12	CY	0,7826	12	MT	0,7918	12	MT	0,7858	12	MT	0,7663	12	MT	0,7634	12	MT	0,7524	12	MT	0,7381
13	BE	0,7213	13	ES	0,7260	13	DE	0,7648	13	DE	0,7529	13	EE	0,7633	13	DE	0,7567	13	DE	0,7572	13	DE	0,7499	13	CY	0,7418	13	BE	0,7214
14	ES	0,7144	14	PT	0,7143	14	EE	0,7475	14	EE	0,7496	14	BE	0,7527	14	BE	0,7517	14	EE	0,7511	14	UK	0,7269	14	EE	0,7161	14	PL	0,7184
15	SK	0,7028	15	SK	0,7028	15	ES	0,7309	15	ES	0,7405	15	DE	0,7501	15	EE	0,7428	15	BE	0,7406	15	PT	0,7186	15	PL	0,7130	15	EE	0,7170
Average			Average			16	PT	0,7258	Average			Average			Average			Average			16	BE	0,7175	16	BE	0,7105	16	CY	0,7081
16	PT	0,6797	16	BE	0,6965	17	BE	0,7138	16	PT	0,7218	16	PT	0,7216	16	PT	0,7296	16	PT	0,7085	17	EE	0,7097	Average			Average		
17	HU	0,6674	17	IT	0,6859	Average			17	BE	0,7157	17	ES	0,7213	17	ES	0,7146	17	IT	0,6983	18	PL	0,7044	17	UK	0,6922	17	UK	0,6852
18	UK	0,6599	18	EE	0,6740	18	UK	0,6802	18	UK	0,7122	18	UK	0,7064	18	IT	0,7111	18	UK	0,6927	Average			18	PT	0,6919	18	PT	0,6343
19	EE	0,6568	19	HU	0,6606	19	IE	0,6768	19	HU	0,6824	19	IE	0,7026	19	UK	0,7089	19	PL	0,6925	19	IT	0,6385	19	IT	0,6190	19	IT	0,6317
20	IT	0,6528	20	UK	0,6599	20	IT	0,6659	20	IE	0,6797	20	LT	0,6961	20	PL	0,7006	20	GR	0,6667	20	HU	0,6286	20	HU	0,5998	20	ES	0,5896
21	GR	0,6429	21	GR	0,6593	21	GR	0,6472	21	IT	0,6715	21	IT	0,6895	21	GR	0,6875	21	HU	0,6650	21	ES	0,5985	21	LT	0,5796	21	HU	0,5875
22	IE	0,6362	22	IE	0,6282	22	HR	0,5985	22	LT	0,6678	22	HU	0,6875	22	HU	0,6782	22	ES	0,6446	22	GR	0,5623	22	ES	0,5792	22	LT	0,5829
23	HR	0,5850	23	HR	0,5850	23	HU	0,5966	23	GR	0,6552	23	GR	0,6676	23	LT	0,6414	Low			Low			Low			23	HR	0,5619
Low			Low			24	LT	0,5564	24	PL	0,5922	24	PL	0,6639	24	IE	0,6194	23	IE	0,5746	23	LT	0,5559	23	IE	0,5296	24	LV	0,5538
24	LT	0,4818	24	LT	0,4750	Low			25	HR	0,5850	Low			Low			24	LT	0,5686	24	IE	0,5385	24	LV	0,5229	Low		
25	RO	0,4807	25	RO	0,4671	25	PL	0,4896	26	LV	0,5756	25	HR	0,5945	25	HR	0,5863	25	HR	0,5534	25	HR	0,5131	25	HR	0,5058	25	IE	0,5255
26	LV	0,4485	26	LV	0,4485	26	LV	0,4641	Low			26	LV	0,5468	26	LV	0,4839	26	RO	0,5046	26	RO	0,5049	26	RO	0,4814	26	RO	0,5093
27	PL	0,4101	27	PL	0,3897	27	RO	0,4263	27	RO	0,3883	27	RO	0,4332	27	RO	0,4630	27	LV	0,4696	27	LV	0,4705	27	GR	0,4746	27	GR	0,4165
28	BG	0,2707	28	BG	0,2843	28	BG	0,2245	28	BG	0,1634	28	BG	0,4234	28	BG	0,4222	28	BG	0,3913	28	BG	0,3440	28	BG	0,3361	28	BG	0,3444

Source: own estimation based on Eurostat data: http://ec.europa.eu/eurostat/data/database (15.03.2015).