BUDGETARY SPENDING AND GROWTH IN THE EU

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Abstract

In line with studies on the trend of budgetary spending and its correlation with the economic growth, firstly we analysed the convergence process in EU, both in matter of GDP per capita and in mater of few categories of expenditures. Secondly, based on available data we identified a number of correlations among the intensity in GDP of health expenditure, education expenditure, R&D expenditure and GDP per capita level as a measure of economic development. Moreover, by estimating some behavioural regimes characterising dynamics after 2000 in different groups of countries in EU we highlight potential future trends for main budgetary expenditures.

Keywords: budgetary spending European Union, real convergence, GDP, economic growth, behavioural regimes

JEL classification: C8, E7, H5, H6, O52, O47, R12

1. Introduction

In this study, based on a detailed analysis of the national economies in the EU, we consider, aside of two intensively used groups in literature (eastern group, EU11, and old members' group, EU15 or EU14 after Brexit), the following three groups of states: 1) the Eastern states, EU11E (Bulgaria, Czechia, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia); 2) the North-Western states, EU10NV (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands and Sweden); and 3) the Southern countries, EU6S (Cyprus, Greece, Italy, Malta, Portugal and Spain). In our opinion, this typology reflects more correctly the differences between the EU's component economies. Such classification we use for analysing the real convergence in EU.

According to the standard literature, we highlight that, as basic variable for the analysis of the real convergence process (at macroeconomic or regional level), the Gross Domestic Product per capita expressed by purchasing power parity (PPP) must be used. In order to test the existence of a convergence or divergence trend, authors are using various indicators, among most commonly used is the coefficient of variation. Moreover, to study the convergence process in matter of main budgetary spending (education, health, and research) we are estimating a number of behavioural regimes varying with their share in GDP.

2. Real Convergence in EU and Perspectives

In order to measure the speed and the meaning of the convergence process, in specialised literature various indicators are used, among which the most commonly is the coefficient of variation, it expressing the reduction of the level of dispersion between states in the case of income per capita (the so-called σ-convergence) or in case of testing the hypothesis of some higher rhythms of per capita income in less developed countries (the so-called β-convergence). In the present study we will use the coefficient of variation, the magnitude of which expresses the degree of concentration at EU27 level or within the group of countries. Its downward dynamics signifies a convergence process, and when it is ascending indicates a process of divergence.

As can be seen from the graphical representation in Figure 1, the trend of GDP per capita (expressed as a percentage, g%) over the period 2000-2016 (on the horizontal axis the years are recorded from 0 to 16) demonstrate a convergence process of the eastern group, EU11E, to the EU27 average, noted as 100 percent (the ascending trajectory represented by the solid bottom line). In contrast, the trajectory in case of the southern group, EU6S, shows a divergence process (the downward trajectory represented by the dashed median line). In case of north-western group,

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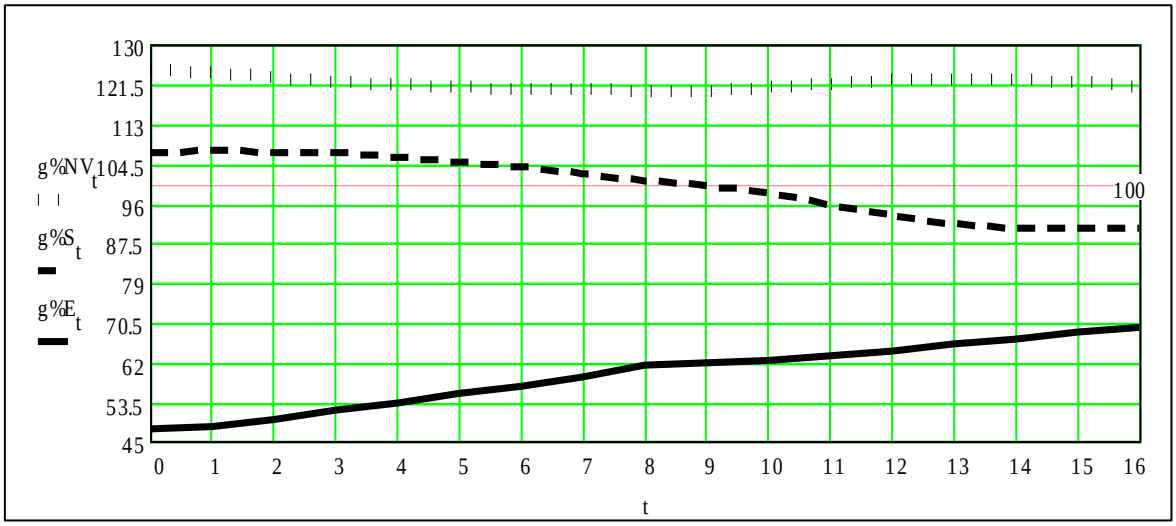
EU10NV, there was a slow convergence to the EU27 average (the slightly downward trajectory represented by the dotted top line).

Figure 1 - GDP per capita (%) over the period 2000-2016



Source: World Bank data and own computations (see also, Albu, 2016)

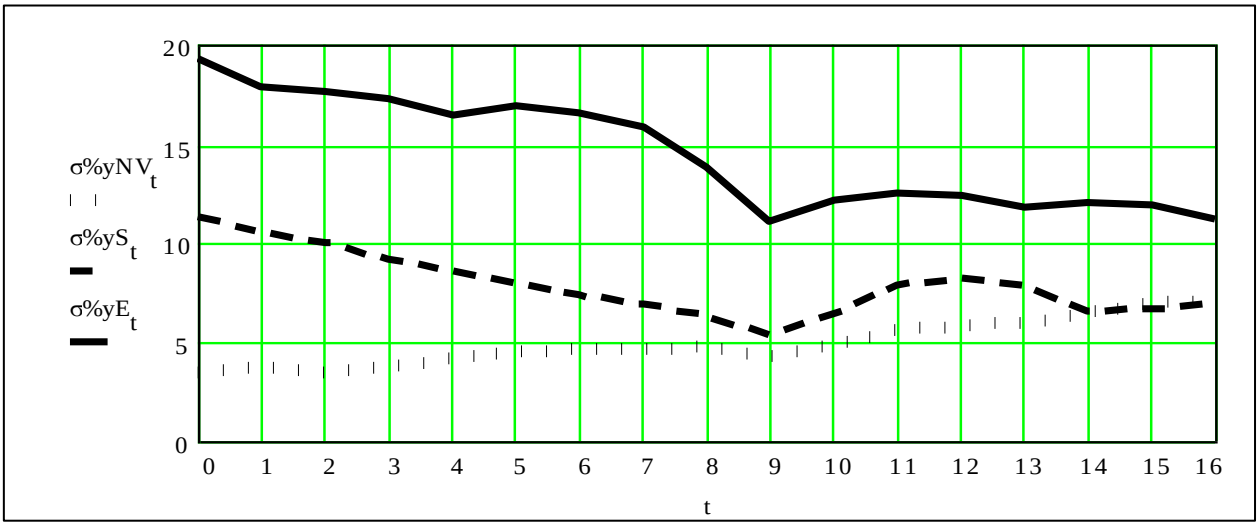
Compared to the EU27 average, per capita GDP in Romania has increased from only 33.5% in 2000 to 51.9% in 2008, after which it has fallen to 50% in the 2010 and 2011 crisis years. Only from 2012, the convergence towards the EU average was resumed, with Romania's position continuously improving to 57.5% in 2016. Related to the average of the eastern group, EU11E, GDP per capita in Romania has increased from 70.6% in 2000 to a maximum of 84.9% in 2008, after which it fell to 79.0% in 2011. However, starting in 2012, its convergence to the EU11E average resumed, up to 83.2% in 2016.

Based on data estimated by the IMF in the latest Annual Global Growth Forecast (IMF, 2017, April), we can expand the study on the EU convergence process to the 2022 horizon. According to estimations, trends from the previous period will continue, the convergence to the EU27 average of the Eastern group, EU11E, will advance, with average GDP per capita rising from 69.1% in 2016 to 75.4% in 2022. Correspondingly, for North-Western Europe, EU10NV, it is projected a fall from 120.9% of the EU27 average in 2016 to 117.8% in 2022, and in Southern group, EU6S, a slow decrease from 90.6% to 89.6%. For Romania, the projected growth is from 57.5% in 2016 to 66.3% in 2022. Also, related to the average of the group to which it belongs, EU11E, GDP per capita in Romania will continue to increase until 88.0% in 2022.

At the EU27 level, a convergence process was registered in the period 2000-2016, demonstrated by the drop in the value of the variation coefficient in the PPP per capita GDP series, from 28.3% to 19.8% (a value high means a low degree of concentration between countries and, conversely, a low one shows a high degree of concentration). However, the general trend of EU convergence is the result of different trends within the three groups of countries.

For the entire post-2000 period, there was a significant convergence trend within the Eastern group, EU11E, respectively within the Southern one, EU6S. In the same period, within the group of North-Western countries, EU10NV, it was registered a divergence, as can be seen from the graph shown in Figure 1 (where the dynamics of the coefficient of variation value for the three groups of countries are noted on the vertical axis with σ%yNV, σ%yS and σ%yE respectively). During the considered period, the value of variation coefficient decreased from 19.2% to 11.2% for the Eastern group, EU11E, and from 11.3% to 6.9% for the Southern group, UE6S. Contrary, in case of the group of North-Western countries, EU10NV, the value of variation coefficient increased from 3.4% to 7.0%.

Figure 2 – Dymanics of the coefficient of variation value for the three groups of countries (EU11E, EU6S, EU10NV) over the period 2000-2016

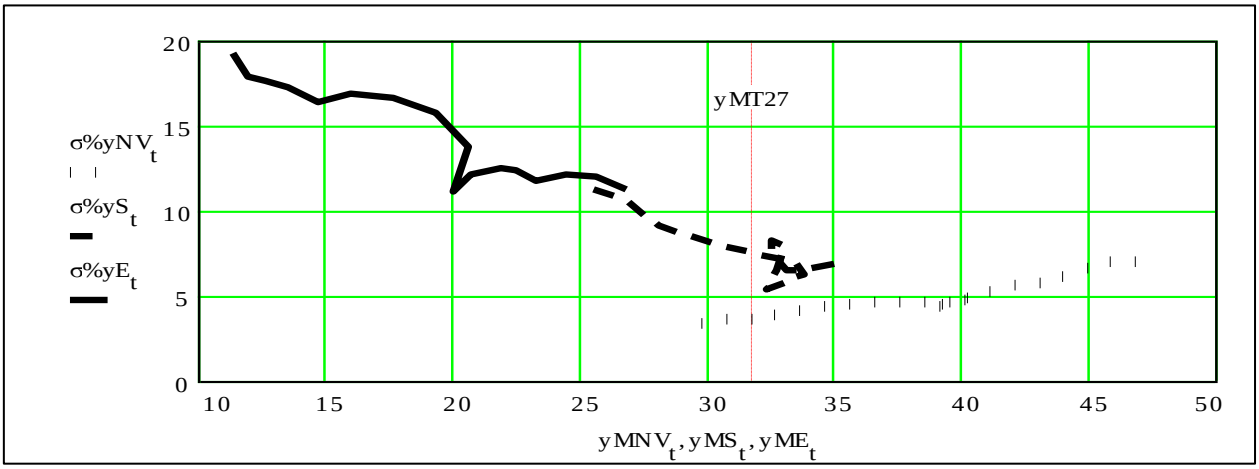


Source: World Bank data and own computations (see also, Albu, 2016)

Replacing the time axis (t) by the average GDP per inhabitant (y) recorded during the analysed period could highlight, as it is shown in Figure 3, at least three behavioural regimes within EU, corresponding to the three groups of countries:

- First behavioural regime, characteristic to the Eastern group, EU11E, is placed on the left side (the downward trajectory represented by the solid line), corresponding to a GDP per capita below the average value for EU27 (on the graphic, yMT27 means the EU27 average for the entire 2000-2016 period, respectively 31.8 thousand dollar PPP).
- Second behavioural regime, characteristic the Southern group, EU6S, is represented by the downward trajectory from the median part of figure (the dashed line), corresponding to a value of GDP per capita located in the vicinity of the EU27 average (respectively between 26-35 thousand dollar PPP).
- Third regime is represented by the dotted line located in the right side of the figure, corresponding to values higher than EU27 average.

Figure 3 - The correlation between the coefficient of variation value for the three groups of countries and the GDP per inhabitant



Source: World Bank data and own computations (see also, Albu, 2016)

3. Trends in Budgetary Spending and Correlations with Growth in EU

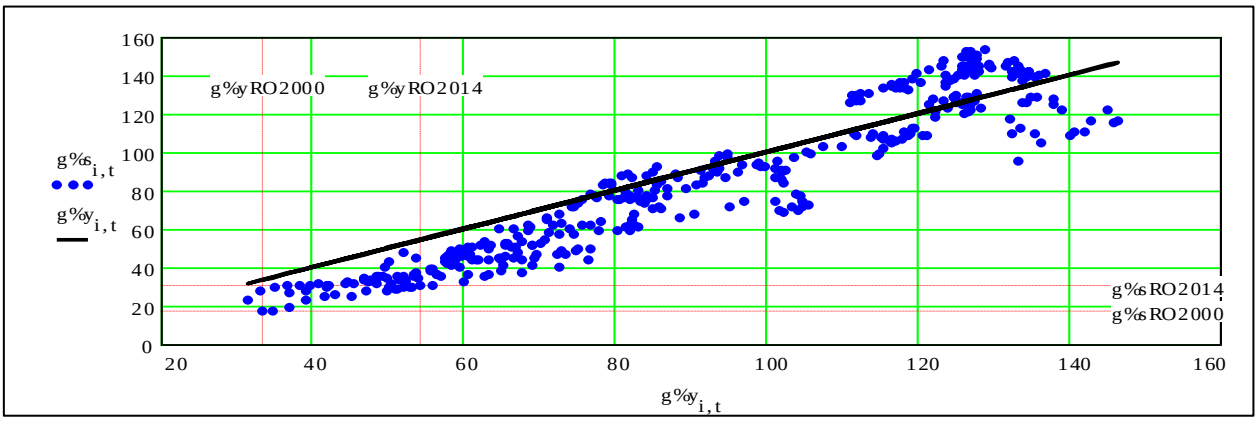
In case of less developed countries of EU, as Romania today is, in order to achieve a favorable dynamics over the next period, a massive investment effort is needed. Under the current conditions of a tightening of competition and external conditions, a decisive source of this effort will have to be

the internal accumulation and the development of an efficient domestic capital. Apart from the economic investment effort itself, investment in education, health and research promoted by the state will be major directions for economic development but also for modern socio-human development.

In terms of health, Romania is in the group of less developed European states. There is also a direct relationship between the health system and the general level of economic development, in Romania in the last years it is even relatively lower related to its general level of economic development. Thus, currently allocating only 5-6% of GDP for health, Romania is ranked the last in the EU. However, according to the correlation at the level of EU, according to our estimates, this weight, corresponding to the future dynamics of GDP, should, in the first part of the next decade, exceed 10% in Romania.

The graphical illustration of the discrepancies between the EU26 states (Luxembourg was considered together with Belgium) in terms of health expenditure during the period 2000-2014 is shown in Figure 4 (on the horizontal axis g%y is the ratio between GDP per capita, expressed in PPP, in a country and GDP per capita EU average; on the vertical axis g%s is the same ratio in case of health expenditures; i - countries, and t - years). On the graph is also presented (as the continuous straight line) the trajectory which can be considered as the equilibrium line of health expenditure.

Figure 4 - The discrepancies between the EU26 states (Luxembourg was considered together with Belgium) in terms of health expenditure during the period 2000-2014



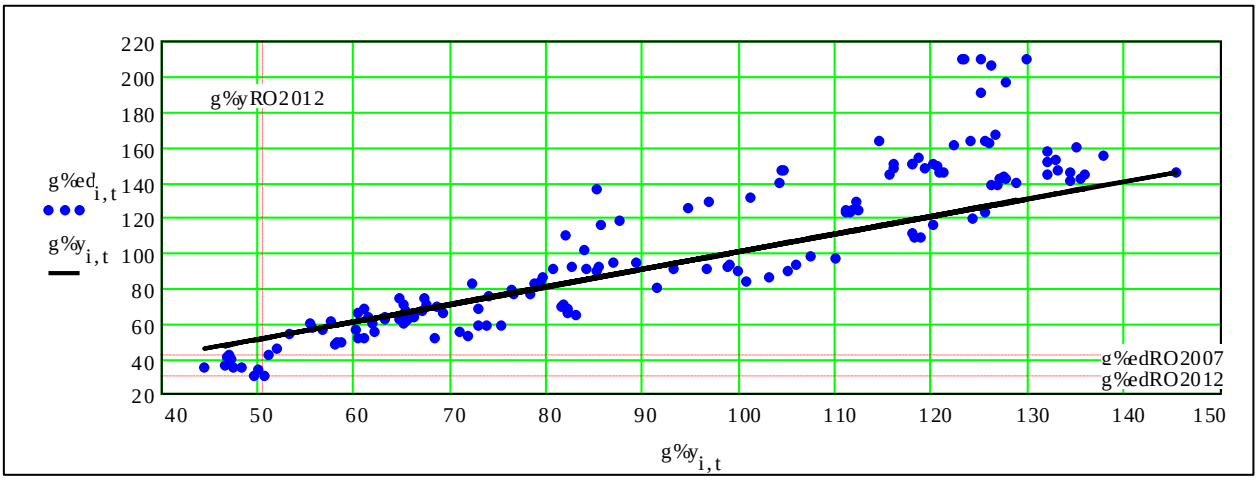
Source: World Bank data and own computations (see also, Albu, 2016)

As can be seen from the cloud of points, only a few states are placed above this line, for which the significance is that in those countries, in those years, health amounts were allocated higher than would have been appropriate to their position in EU through the prism of GDP per capita (it is the case of countries such as Sweden, France, Germany, Austria, the Netherlands, Denmark and Belgium, where more than 10% of GDP is allocated for health). On this graph, for Romania, the two indicators are marked in 2000 and 2014 respectively. Although in the analyzed period, the share of GDP for health expenditure increased in Romania from 4.3% to almost 5.6%, according to data from the latest World Health report (August 2016), the graph shows even an increase of the distance from the equilibrium line.

Similarly, Figures 5 and 6 show the situation in the EU in case of education expenditure and respectively R&D expenditure, the available data being for EU25 (EU27 less Greece and Luxembourg) over the period 2007-2012 and respectively for EU27 over the period 2003-2014. Interpretation is the same as for health expenditure. It is noticeable, especially in the case of research and development, the existence of huge discrepancies between countries, spending, as a percentage of GDP, ranging from only 0.3-0.5% in Romania to over 3% in the northern countries of Europe.

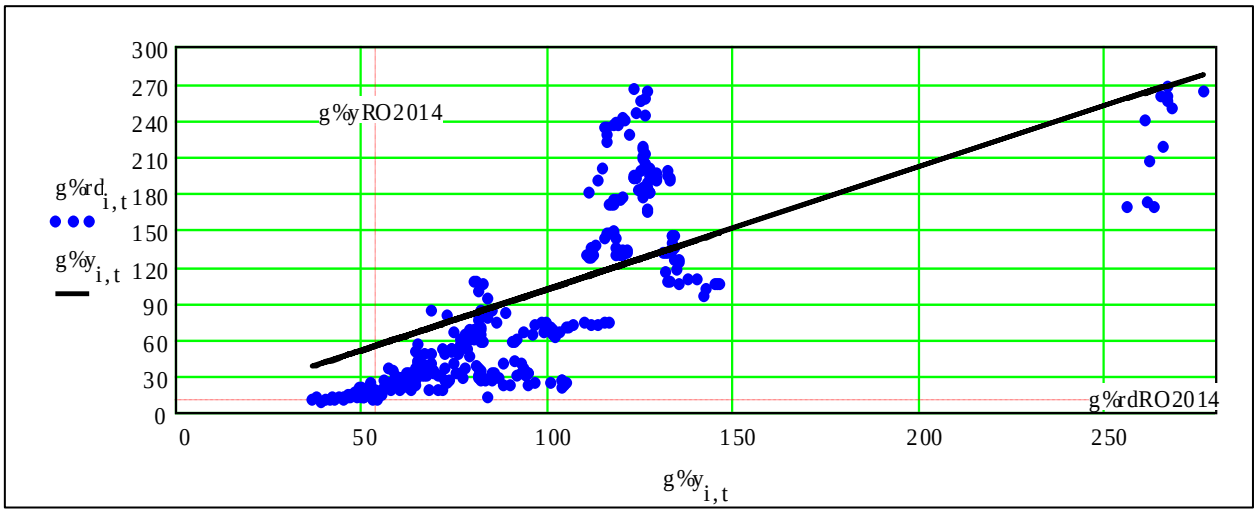
Next, we will analyze in detail the correlation between the share of health expenditure in GDP and the level of GDP per capita.

Figure 5 - The situation in the EU in case of education expenditure over the period 2003 – 2014



Source: World Bank data and own computations (see also, Albu, 2016)

Figure 6 - The situation in the EU in case of R&D expenditure over the period 2003 – 2014



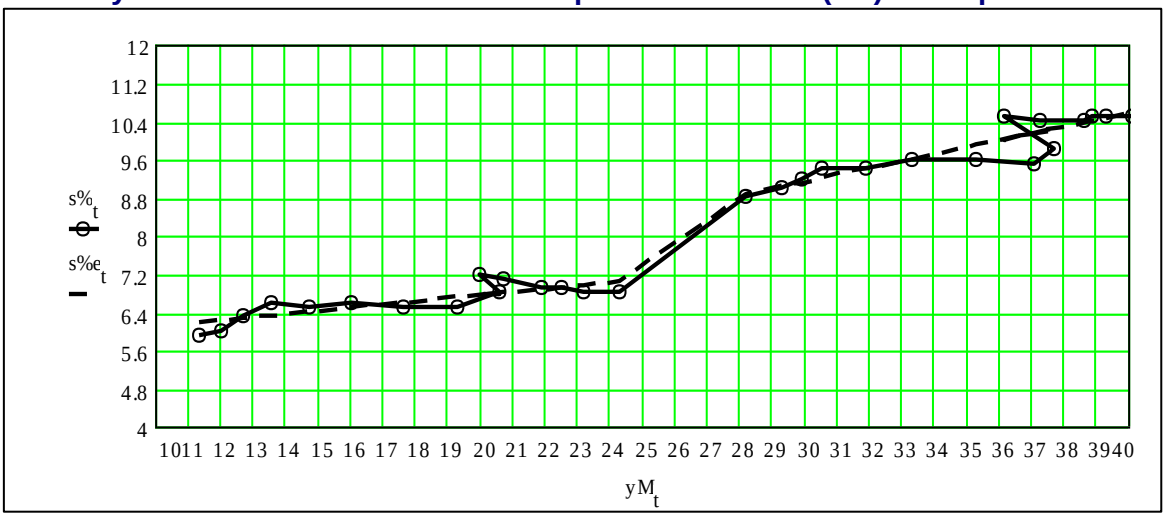
Source: World Bank data and own computations (see also, Albu, 2016)

4. Behavioural Regimes in Health Expenditure in EU

In case of a longer time horizon, it is interesting to reflect the trends of convergence / divergence in establishing benchmarks on the future dynamics of health systems, also expressed in terms of increasing the importance of health spending within national economies. In Figure 7, we present dynamics of the share of health expenditure in GDP (s%) in the period 2000-2014, in EU, divided this time in two groups of countries, depending on the average GDP per capita (yM).

It can be identified and estimated two basic regimes, the first straight segment of the trajectory represented by dashed line on the left side of the graph, characteristic to EU11 group, and the third straight segment of the trajectory represented by dashed line on the right side of the graph, characteristic to EU14 group. The EU11 is the group of eastern countries and EU14 includes old EU member states (less UK, Cyprus and Malta). The transitional regime is represented by the central segment, ensuring the transition between the two basic regimes. We notice the jump of about two percentage points in the value of s% through the transition from one base regime to the other.

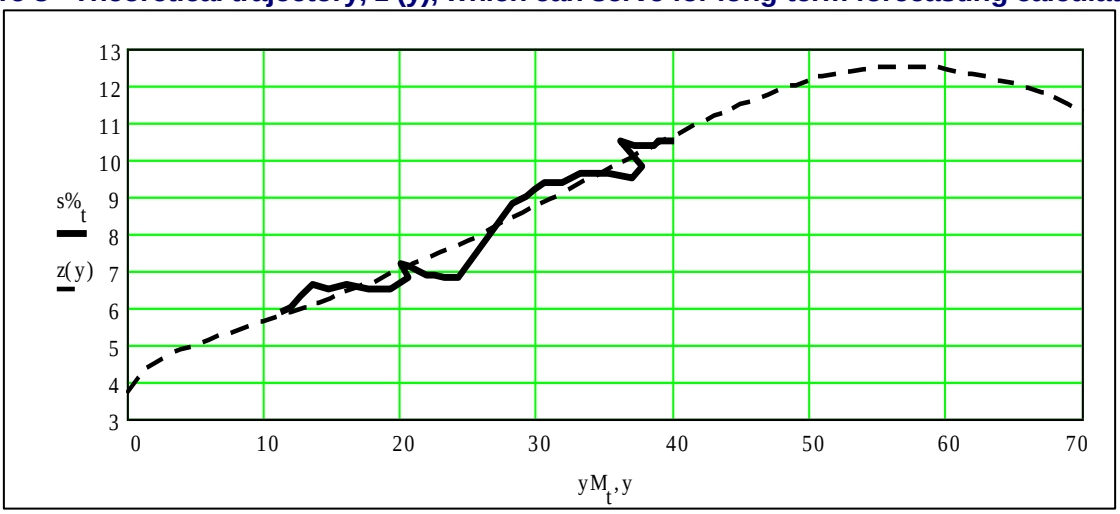
Figure 7 - Dynamics of the share of health expenditure in GDP (s%) in the period 2000-2014



Source: World Bank data and own computations (see also, Voicu, 2016)

Moreover, based on the available data and using a continuous non-linear model, we constructed a theoretical trajectory, z (y), which can serve for long-term forecasting calculations. Its graph is shown in Figure 8.

Figure 8 - Theoretical trajectory, z (y), which can serve for long-term forecasting calculations



Source: World Bank data and own computations (see also, Voicu, 2016)

It is noted that in the European space, the maximum of 12-13% for s% is reached for levels of income in the vicinity of the value of 60 thousand USD, beyond which may occur a flattening or even a decrease in the share of health expenditures in GDP.

Currently, a number of European countries, such as Sweden, France, Germany, Austria, the Netherlands and Denmark, have already exceeded 10% of health expenditure in GDP. At the same time, the per capita GDP in these states is already over 40 thousand USD today, and at the beginning of the next decade, it is likely to be over 50 thousand (according to the IMF's latest forecasts). For Romania, in the early years after 2020, values of income per capita over 30 thousand USD will probably be reached, which would naturally correspond, in the EU space, to 9-10% allocated to heath expenditure in GDP. Compared to the current rate below 6%, there is a need for significant effort to be considered for the upcoming period. Over a 20-year horizon, given its own growth forecasting scenarios and taking into account the EU convergence program, an average of around 12% for health spending is expected in Romania.

The data we use to estimate the models presented are those of the latest World Health report (August 2016), which in terms of health expenditure as a share of GDP differs to some extent from those used according to the European Commission methodology (which aggregates public spending with private health spending). For instance, last mentioned data refer to a share of GDP of 7.9% (4.0% public and 3.9% private) for 2015.

5. Conclusion

A general real convergence was demonstrated after 2000 at the level of EU27. Within eastern group it was a strong convergence, comparing to a slight convergence in southern group and a divergence within north-western group. This dynamics could be interpreted as three behavioural regimes along with income per capita increasing. Moreover, in mater of expenditure for health, education, and research-development it seems to be a number of transitions among regimes function of the level of income per capita. Estimating the parameters of such regimes could be useful to highlight potential future trends for main classes of expenditures and to offer significant elements for orientation of budgetary policies.

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