

Study on the Health Systems' Efficiency in Five South-East European Countries

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Summary: The goal of the research is comparative study on the indicators for resources, health effectiveness (health results) and efficiency of the health care in five South East European countries (Bulgaria, Greece, Macedonia, Rumania and Turkey), which are not only territorial neighbors, but have common traditions and historical origins. Additional limitation for the choice of these countries is available information from the Data Base of WHO "Health For All". The studying period is 2000-2004/2005 years. Through using the formula of the Global competitiveness index, is calculated the rate of the resources and health effectiveness, as their proportion - the efficiency coefficient.

The conclusions show, that the healthcare system in Greece works better with higher efficiency – 1,517 (2000) and 1,459 (2005), followed by Macedonia – 1,329 (2000), 1,459 (2005) and Bulgaria – 1,119 (2000) and 1,201 (2005). Rumania is with efficiency close to 1, but Turkey is on the last place with health care inefficiency. The study holds out opportunities for future economic and scientific cooperation between South-East Europe countries in the social and health area.

Key words: resources, health effectiveness, efficiency, health care.

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Preface

The health care system is a system of medical and non-medical, scientific and applicative activities, organized in the society for optimizing the quantitative and qualitative aspects of the human reproduction (2). Or this is the sphere that produces health services and results mainly in the shape improvements of the health, satisfies the fundamental needs of the people for their quantitative and qualitative reproduction and by that has influence over the other two spheres – of the material and the intellectual production, assuring the main productive agent – the human. Due to the heterogeneous structure of the factors conditioning the health and the uncertainty for the positive result of the intervention of the health professionals, not all results of the health services represent health improvements, but these are the preferred and dominating types of results. The economic criteria (for instance profit, production of GDP or economic return) are in subordinate position towards the main objectives of the system. The non-economic factors for the development of the society (like healthcare, culture and education)

are considered as substantial for the civilization process (1, 3, 4). This is confirmed also by the expansion of health and education indicators in the global indexes of human development and of national competitiveness (5, 6, 7, 10).

It does not come from here that the healthcare is an alien element to the economy. The correlation between them is bilateral. The health sector exerts influence on the economy predominantly *through the main results of its functioning – the health improvements*. The health sector in EC-15 produces 7 % of the GDP on the average, which is bigger than the part of the financial sector. The employment level in the sector (together with the social activities) attains 8.8 % in EC-15 and 9.3 % in EC-25 at the end of 2003 (8). The health care and the activities linked with it (as the health insurance) exert influence on the labor market – for example the mandatory health insurances of the employees increase the production cost and reduce the competitiveness of the companies; the stable health insurance is a factor for competition between the companies for attracting qualified workers, as well as factor for mobility of the labor resources in the frames of a global market. Particularly strong is the link between health expenditures and the common public expenditures (usually positive). For example for each unit of expenditures made in public health programs for the restriction of tobacco smoking are saved 2 units of prevented future expenses of the state (8), which could be invested in more productive way. In many developed countries the deficits in the healthcare worsen the macroeconomic stability. The healthcare exercises substantial influence on the investments in high technologies and health related construction. In countries like France, Germany and Netherlands the rates of investments in medical equipment vary between 3 and 9 % yearly (5). Important effect of the healthcare is its action as an accelerator of bound sectors like pharmaceutical industry, medical technologies,

health insurance etc. For example the pharmaceutical production is a structure defining high tech branch for Germany, France, USA, and Switzerland as well as one of the speedy developing sectors in the countries of South-East and Central Europe.

The complicated interrelations between healthcare and economy *increase the interest to the efficiency of the branch*. The thesis that we are to defend is that the more effective healthcare influences positively the national economy and the human development, as a result of which *the examination on its comparative efficiency is of primary importance* to identify the place which occupies the health sector in Bulgaria by its efficiency in the EC or among neighbor by their situation and close by historic roots countries.

The objective of the study is to analyze in comparative aspect main indicators for resources and health results and their correlation, expressing the efficiency of the health systems in three EC member-countries – Bulgaria, Greece and Rumania, and two candidates for membership – Turkey and Macedonia, which are close not only geographically but by their national traditions and historic roots. The five countries are characterized by mixed systems of health sector financing – combination of health insurance funds and budget subsidies. In Greece is noted a long process of transition from the Bismarck system to the Beverage system, that is creation of National Health Service with approachable and free of payment healthcare, based on budget proceeds. The health insurance funds however continue to be important source of revenues especially for the outpatient services. In Bulgaria, Rumania and Macedonia are organized national health insurance systems (Bismarck type systems) with mandatory insurance and monopolistic organization, but in the three countries the budget financing keeps certain stake (biggest in Bulgaria). Turkey is also a

country with mixed financing system – budget financing and health insurance funds.

Additional restriction of the choice of these countries of South-East Europe is the available information for the health resources and results in the European data base "Health for all" of the WHO (11). The period of the study is 2000-2004/2005 (the last year with available data), only for Turkey missing information for two health indicators relevant to results.

Resources' and health results' Indicators

In Table 1 are given 5 selected indicators of resources and 5 indicators for health results. Their selection is an expert private assessment based on their presence in most comparative studies for the health sector development. Two of the resources related indicators are in natural values (number of doctors and number of medical nurses per population of 100.000), the other three reflecting the financial assurance of the sector with common and public resources (measured through the expenditures).

The centre of gravity in the combination of indicators falls on the health results. Their selection contains big responsibility due to the fact that a big part of the modifications in the health are determined by external, objective (from the point of view of the healthcare system) factors like heredity and biology, ethogenic changes (unsanitary conduct of the individuals), socio-economic environment, ecological factors. The objective in our case was to select such indicators that indicate the ability of the health system to produce qualitative and effective result. One indisputable indicator for health like "life expectancy" is present in all methodologies for assessment of the health status, the health system, the human development and the competitiveness of the national economy. In spite

that it is influenced by many external factors, we use it because of its synthetic informativeness for one of the aspects of the human capital development – the life expectancy. Other dominating indicators are those the children's and mother's mortality as well as the DALE indicator (disability adjusted life expectancy) and the number of years lost in result of premature exitus (before age of 65). Most of these indicators are included as objectives in the European Health for All Strategy (9).

Efficiency

To measure the efficiency of the health systems in the five countries and on the average for the EC and EC-10 we apply a methodic approach of general indexation for the resources (a general average index for resources is received) and of the health results (average index for results). Through the use of the Jeffrey Sacks & al. formula (7) for computing the global national competitiveness index are calculated indexes for the level of the resource provision and the health results on a resource unit. The ranging is effected on a scale from 1 to 7 where 1 is the lowest and 7 – the highest grade of assessment of the resource provision or the results, as well as of their correlation (results by resource unit) – the efficiency.

Conclusions:

1. The approach applied for determining the efficiency of the health systems in the five South-East European countries permits data integration for more than one type of resources and health results that is distinguishing it as more complex and informative for the assessment of the effectiveness.
2. The countries with growing efficiency of the health systems are: Greece with highest

grow of 49% for the period 2000-2004, followed by Romania – with 11.7 %, Macedonia - with 4 % and Bulgaria - with 3 %. Similar trend – with 18.7 % grow is noted as well in

Table 1. Types of indicators for assessment of the efficiency

Groups of indicators	Indicators
Resources	<p>– Human resources:</p> <ol style="list-style-type: none"> 1. Availability of doctors on 100.000 citizens – the bigger availability is a guarantee for stronger health sector and healthier population (labor force respectively) 2. Availability of nurses on 100.000 citizens – the nursing care is substantial aspect of the healthcare; the bigger availability presumes more economic and qualitative health care <p>– Financial resources:</p> <ol style="list-style-type: none"> 1. Total health expenditures in % of GDP – the healthcare is one of the most expensive systems, which optimally consumes not less than 8 % of the GDP; the smaller share (less than 7 %) means low quality and the high share (over 12-13 %) signifies huge expenditures of the society (lost benefits) 2. Public health expenditures in % of the total expenditures – reflect the public sources of financing (by the state and local budgets and the social health insurance), which guarantee the accessibility of the health services; it is necessary to dominate in the total structure of sources and to exceed 70 % 3. Total health expenditures per capita of the population on PPP (Intern. Dollars) – characterize the real purchasing power of the total health expenditures
Results	<p>– Mortality:</p> <ol style="list-style-type: none"> 1. Children’s mortality on 1.000 born alive – indicator accepted for assessment of the healthcare effectiveness; the lower mortality is better 2. Mother’s mortality on 100.000 born alive – characterizes the quality of the healthcare in birth; the lower mortality is better <p>– Life expectancy:</p> <ol style="list-style-type: none"> 1. Life expectancy at birth (in years) – characterizes the quantitative aspect of the health as aggregated indicator of the health effectiveness 2. Disability adjusted life expectancy – in years (DALE) – characterizes the quantitative and qualitative aspects of the health 3. Reduction of the life expectancy due to premature death (before 65) – reflects the losses of the society and the economy by premature exitus in number of years of life

the group of the 10 countries of the preceding joining of EC, which is explicable with a view to the more intensive processes of reform of their health systems and overtaking development to the level of the old European member-countries.

3. Turkey is distinguishing not only with non-effective health system (with twice lower results per resource unit), but also with negative trend of decrease – with 33 % for the same period. It should be taken into account here that the data base fro Turkey was incomplete with two of the health indicators (the mother's mortality and the reduction of the life expectancy due to death before age of 65) and our conclusions are based only on three health indicators.

4. With lower results of the implemented resources (efficiency coefficient below 1) are Turkey and Romania, which imposes the necessity to reconsider the functioning of their health systems and to look for reserves for increasing the effectiveness.

5. Another negative trend of decrease of the efficiency (with 5 % but with effectiveness coefficient between 1.31 and 1.25), is seen in the group of 25 EC member-countries. This is due to the growing health expenditures related

to the aging of the population, the implementation of new technologies and the increased requirements of the clients of the system. And probably this is an empirical proof of the decreasing marginal utility of the invested resources.

6. The efficiency of the healthcare in Bulgaria (1,6-1,65) is improving after 2000, when were made the first steps of the health reform, but the country is still moving very slowly ahead, to increasing the qualitative and quantitative aspects of the health. The level of efficiency of the health system in the country has a positive coefficient (the results exceed the resources in relative measures), the country been rated on the third place after Greece – with coefficient 2.56 and Macedonia – with coefficient 1.79 at the end of the period.

7. In the most aspects of the summarised assessment of resources and health results in the new EC members – Bulgaria and Romania is noted a rather big lagging behind from EC-10 (particularly for Romania) and even more from the EC which means that it is needed to launch urgent measures and to realise strategic vision provisioned with the necessary resources for diminishing the differences and improving the health results.

Table 2. Indexes of resources, results and coefficients of the health systems' efficiency in the five South-East European countries and the average for EC and EC-10

Years	2000		2004/2005		2000	2004/2005
Countries	Resources Index	Results Index	Resources Index	Results Index	Efficiency Coefficient	Efficiency Coefficient
Greece	3.55	6.13	2.29	5.87	1.7267606	2.5633188
Romania	1.61	1.37	2.19	2.18	0.8509317	0.9954338
Macedonia	2.29	3.95	2.29	4.10	1.7248908	1.7903930
Turkey	1.46	1.00	1.94	1.00	0.6849315	0.5154639
Bulgaria	2.10	3.37	2.13	3.52	1.6047619	1.6525822
EC	4.22	5.57	4.10	5.13	1.3199052	1.2512195
EC-10	3.13	3.69	3.03	4.25	1.1789137	1.4026403

8. Of the countries candidates for future EC joining Macedonia is distinguished with far better indicators especially for health results as well as for the efficiency of the system. Consequently in the sphere of healthcare the prompt integration with EC is reachable. The same could not be said for Turkey which needs many investments in human and financial resources in the health sector and policies of improving the health efficiency.

9. The implemented study brings to our minds possibilities for future economic cooperation and new scientific researches between the countries of South-East Europe in the sphere of the economy and the policies in the health sector.

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