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FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

SUMMARY OF THE PHD THESIS

THE SOCIAL HEALTH INSURANCES IN ROMANIA – REALITIES AND PERSPECTIVES

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Key words: social health insurances, healthcare system, the national unique social health insurance fund, private health insurances, public healthcare expenditure.

INTRODUCTION

The paper starts from the basic idea that *the biggest asset one may have in life is health*[1]. **Health** has been defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1946).

Because health is an important priority for Europeans, many of today's European healthcare policies include not only cures but also prevention and detection. The **health financing policy goals** of the EU healthcare systems are:

- ✓ financial protection aims to ensure that people do not become poor as a result of using health care;
- ✓ equity in finance requires richer people to pay more for health care, as a proportion of their income, than poorer people;
- ✓ equity of access to healthcare based on need rather than ability to pay;
- ✓ improving the transparency and accountability of the system, addressing the issue of informal payments where relevant,
- ✓ rewarding good quality care and providing incentives for efficiency in service organization and delivery;
- ✓ promoting administrative efficiency by minimizing duplication of responsibility for administering the health financing system and minimizing costs that do not contribute to achieving the goals.

In the developed countries, the health expenses represent approximately 7-15% of GDP, as compared to the developing countries, whose values are of 1-3% of GDP. There is a noticeable difference between these country categories, furthermore considering the fact that the developed countries even have larger GDP dimension, as compared with the developing countries. The public health expenses seem to reveal even more the development level of a country, because the well developed countries also have private health care systems, a lot of these being really evolved.

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[1] The greatest wealth is health. ~Virgil, classical Roman poet (October 15, 70 –September 21, 19 BCE)

The weight of the current healthcare expenditure within the GDP of a country has been growing rapidly in almost all developed countries. Although these represent a major public concern, little aspects are known about the factors that determine the rapid growth of these expenditures.

Thus, in 1994, Hoffmeyer and McCarthy (Hoffmeyer UK, McCarthy TR, 1994: 67) concluded their research by affirming that "there was only one clear and well-defined statistical factor that influenced the healthcare costs, namely their correlation with the GDP. Other robust and stable correlations had not been found yet". These statements were confirmed by Roberts (Roberts, 1999). After examining the origins of healthcare expenditure and its determinants by Newhouse in 1977 and the worldwide research that had followed in the field, Roberts concluded that "In the past twenty year period, there had been little progress in that research field, apart from the fact that changes in the national income per capita were closely correlated with changes in the healthcare spending per capita"(Roberts, 1999: 459).

In fact, researchers consider there are two periods in the evolution of the literature devoted to this field. At first, during the 1970 – 1990 period, Kleiman (1974), Newhouse (1977, 1978), Cullins and West (1979), Leu (1986), Parkin, McGuire and Yule (1987), Culyer (1990), Milne and Molan (1991), Getzen and Poullier (1991), Gerdtham and Jönsson (1991) and Hitiris and Posnett (1992) have shown evidence of a positive correlation between the volume of public healthcare spending and the GDP of most OECD countries. This connection has proved to be robust over the years and even when studied by using conversion factors (such as deflators, exchange rates etc.). On the other hand, other intuitive exogenous variables could not be confirmed as being statistically significant.

The recent trend in research, which was originally established by Murthy and Ukpolo (1994) and Hansen and King (1996), has focused on the time series analysis of these

variables[2]. The results have been somehow inconclusive and relatively less robust to the testing methodology.

After reviewing the literature written on the field, it may be concluded that, despite the intensive research efforts, little is known about the potential exogenous variables that would explicit the healthcare expenses of a nation as an endogenous variable. Moreover, because the available time series data are relatively short, thus reducing the strength of the tests, and the fact that the number of tests is huge and it's growing, a certain degree of uncertainty remains on the properties of the time series analysed in this research area.

Over the past thirty years research on the determinants of healthcare expenditure has focused on evaluating the strength of the relationship between the volume of public healthcare spending and the GDP. Attempts to determine other suitable exogenous variables have failed, as shown above, despite the fact that the correlation between public healthcare spending and GDP doesn't explain very much in terms of causal relationship. Even the apparent obvious weight of population aged 65 and above in the total population hasn't been proved to contribute and to explain the public healthcare spending in a certain extent, except for a very limited number of studies, such as Hitiris and Posnett (1992) and Di Matteo (1998, 2005).

Wilson (1999: 160) concluded that "economists haven't developed a formal theory that would explicit the health costs of a nation and that would predict the healthcare expenses per capita yet" and "without a strong theory, empirical research in this area have been based on ad-hoc thinking and they have depended on the availability of data". He further strengthened the importance of analysing all these data and variables related to the population, i.e. per capita data. Indeed, both Roberts (1999) and Gerdtham and Jönsson (2000) militate for improving the theoretical foundations of healthcare expenditure macroeconomic analysis. According to Roberts (1999: 470), this should be "*the main goal of future research*".

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[2] The great majority of the studies published by that time were mainly cross-sectional analysis. Gerdtham (1992) was the first one to analyze time series data and panel data models.

CHAPTER 1. THEORETICAL AND HISTORICAL REASONS REGARDING THE SOCIAL HEALTH INSURANCES

At first, the thesis defines the main concepts from the social protection sphere and the social protection's domains. Among these notions, **healthcare** sums up the prevention, treatment and management of illness and the preservation of mental and physical well being through the services offered by the medical, nursing and allied health professions.

As defined in the Romanian language dictionary, *health assistance* is a set of state measures for preventing illnesses, for strengthening and reconstruction of health, prolongation of life and work ability of people. Moreover, article no. 33 from the Romanian Constitution guarantees *the right to health assistance*, the state being obliged to take measures in order to ensure hygiene and public health: the organization of medical assistance and the system of social insurances for diseases, accidents, maternity and recovery, the control of medical and paramedical practice and nevertheless, other measures for protecting the physical and mental health of the person, established through law.

This constitutional right agrees to some international orders regarding health. So, article no. 25, alin. 1 from *The Universal Declaration of Human Rights*, adopted by the General Meeting of the United Nations Organization at December 10th 1948, says that every person has the right to an according life standard for assuring his/her health, medical care and the necessary social services. Then, *The international treaty regarding the economical, social and cultural rights*, adopted by the General Meeting of the United Nations Organization at December 19th 1966, states through article 9 the right of every person to social security, including social insurances. Article no 12 from this treaty regulates the right of every person for enjoying the best of one's physical and mental health, through the following measures:

> ➢ the decrease of newly born mortality and infantile mortality, as well as the healthy evolving of children;
>
> ➢ embettering all the aspects of environmental hygiene and industrial hygiene;

> ➢ the prophylaxis and the treatment of epidemical, endemical and professional diseases, and the fight against some diseases;
>
> ➢ the terms for providing everyone with medical services and medical help in case of sicknesses.

The health care activity has a major influence upon the development of the national economy and GDP increase. It assures the basic need of the man to be healthy and of the society to have a healthy population. At a macro economical level, it contributes to the work force reproduction and general welfare specifically.

Considering the importance of these expenses, it's compulsory to study their usage and their **effects**. The health care activity is materialized in various effect categories, like: medical effects, social effects and economical effects. These effects, considered on the whole, are tightly related to the efficiency of spending the allocated financial resources, especially public resources.

The medical effects aim the definite results of the medical actions (analysis, treatments, etc) and refer to cures or improvements, i.e. the renewal and maintenance of individual's health, benefiting from medical assistance.

The social effects reflect the results of health care actions for the whole society and they affect the health status of the whole population, being reflected through a series of statistical indicators like: birth rates, infantile mortality, etc.

The economical effects represent the economical benefits probable to realize.

The systematic study of the population's health, based on a scientific methodology, helps not only to the knowledge and interpretation of its level modifications, but, to a certain extent, it allows even the appreciation of the efficiency and quality of the medical institutions' activity. Furthermore, **the main determinants** to be considered by authorities for improving *the population's health* may be synthesized as follows:

Figure no 1 Factors determining the health status
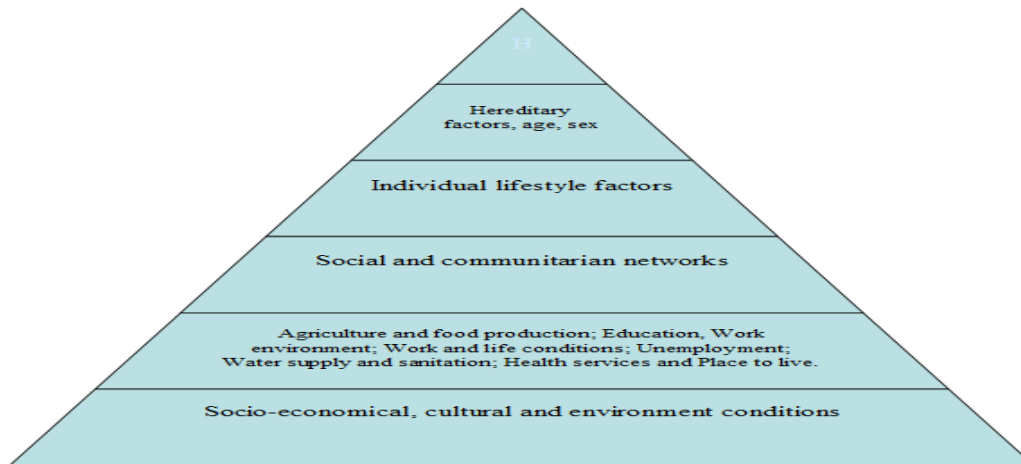
Source: Author's processing

So, the full health potential doesn't depend only on the healthcare providing system, but on many other factors, so individuals, groups, public and private institutions have to play their role in the general effort of increasing the health status of a nation.

The social health insurances represent the main system for the Romanian population's health assistance. Considering the actual legal orders, we may define the social health insurances as an ensemble of judicial norms that regulate medical care for wage earners and other categories through medical services, medicines, sanitary materials and medical devices, regarding the quality fulfilment of these, by the social health insurance houses that function through the funds especially constituted for this purpose.

CHAPTER 2.   COMPARED HEALTHCARE SYSTEMS

The health services market differ from one country to another, according to the chosen health system, the development degree of the country, the frequency of certain diseases, the dominant mentality, etc.

Nevertheless, **the healthcare systems typology** according to the contribution mechanisms/ methods of financing healthcare is as follows:

1. National Health Systems (Beveridge type), financed through global taxes;

2. Social Health Insurance Systems (Bismarck type), based on compulsory social contributions related to the income;

3. Private Health Insurance System, based on voluntary insurance premiums.

Still, the classic or modern methods of financing healthcare don't necessarily exist in the presented pure forms; they're generally adjusted to the specific conditions of each member state and combined through the healthcare system, in order to attain its goals. A close-up tendency of these system types may be noticed, trying to combine their advantages and to reduce the disadvantages (e.g. NHS – introducing competition mechanisms: internal competition for attracting potential clients; Insurance based systems – fiscal regulating mechanisms on behalf of the government authorities.)

In the context of the development of a coverage plan, an evaluation should be undertaken, that identifies mechanisms suiting best with regard to raising sufficient and sustainable revenues in an equitable manner for the provision of adequate benefit packages and financial protection of the whole population.

After having studied the main characteristics and advantages/disadvantages of these healthcare systems and their associated methods, the thesis focuses on a comparative detailed study of the healthcare systems of the EU-27 member states. Summing up, the Member States of the EU-27 fall into three distinct groups, as follows:

1. The largest group is made up of those that finance healthcare mainly through *social health insurance contributions (*Austria, Belgium, the Czech Republic, Estonia,

France, Germany, Hungary, Lithuania, Luxembourg, the Netherlands, Poland, Romania, Slovakia and Slovenia).

2. The second group consists of those that finance healthcare mainly through *taxation* (Denmark, Finland, Ireland, Italy, Malta, Portugal, Spain, Sweden and the United Kingdom).

3. The third group consists of those that still rely most heavily on out *of pocket payments* (Bulgaria, Cyprus, Greece and Latvia). Out of pocket payments take three broad forms: direct payments for services not covered by the statutory benefits package; cost sharing (user charges, co-payments) for services covered by the benefits package; and informal payments.

A major change since 1996 has been *the shift from tax to social insurance as the dominant contribution mechanism* in Bulgaria, Lithuania, Poland and Romania.

For Romania, the events that took place at the end of 1989 and during the following successive political changes imposed a new strategy for acting upon the socio-economical life, and even upon Romania's healthcare sector.

Regarding the financing of the healthcare sector, from the early '90s and up to the 1998 reform[3], the figures show that Romania was situated at the end of the top as percentage of GDP given to heath assistance. Basically, there did not exist a social health insurance system, so the sums needed by the healthcare system were paid from the state budget that allotted just a few percentages of its GDP for healthcare, which also led to a decrease of the health status of the Romanian population, as compared to its neighbouring countries. Furthermore, the decision factors considered that the expenses on healthcare were insufficient to cover the population's needs, so the 1998 healthcare reform introduced the social health insurance system to change that situation.

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[3] Law No. 145/1997 the Law of Social Health Insurance and Emergency Ordinance No.150/2002 on organization and functioning of the social health insurance system and Law no. 95 from April 14th 2006 on health care reform, published within M.O. no. 372 from April 28th 2006

After 1998, the percentage of healthcare expenses in the GDP increased, so the contributions paid by both the employers and employees have become the main financing source of the system. Nevertheless, the increase hasn't been significant (of appreciatively only 1% of GDP) and unfortunately this increase hasn't influenced the qualitative evolution of the healthcare system.

Romania's adhesion to the EU imposed the adoption of the **European Health Insurance Card** (EHIC). The EHIC, issued and recognized all over the European Economic Area and Switzerland, completes the social security policies applied. Having well-grounded legal roots, the card or its provisional replacement certificate will not exceed in coverage treatments that have become medically necessary during one's stay in the territory of another member state, without having to shorten one's visit to the member state. Returns to the country of residency for getting medical treatment are not necessary. The financial implications of the card's bearer are minimal, according to the legislation of the host state. Reimbursements are guaranteed by the sickness insurance institution that issued the card, i.e. the regional Health Insurance House. So, the EHIC represents a step forward towards total convergence of European social security policies.

CHAPTER 3. CHARACTERISTICS OF THE SOCIAL HEALTH INSURANCES IN ROMANIA

In Romania, the providing of medical services is realized through different financing schemes, maintaining a balance between the public and the private systems that are trying to coordinate their services as well as possible.

The social health insurances are compulsory, they actually protect the whole population of the country, i.e. the wage earners, the pensioners, the unemployed but even if the persons without salaries, but that have the obligation to assure their health according to the law.

For becoming eligible to receive medical services, every person needs to be insured.

Up to 1998, the Romanian sanitary system was mainly financed from the state budget, as well as from local budget allocations, the special health fund and external credits. The Health Ministry itself established the health policy, financed the medical assistance, ruled, controlled and guaranteed the quality of the medical services. Then, the approval of the social health insurances law modified the financing and organizing health care system fundamentally. Besides the public sanitary institutions, there appeared private health units and the sanitary system de-centralized through the transfer of tasks regarding the quality of medical services and their financing from the Health Ministry to the social health insurance houses and the Romanian Doctors' Association.

Presently, the sanitary system includes public and private sanitary units, managing, supervising and control institutions, financing institutions. The supervising authorities of the sanitary system are:

- ➢ *The Health Ministry* (HM) that has the obligation to assure the supervising and the control of laws' application by the units that have responsibilities in the public health domain, including the social insurances system and the sanitary units of the private medical assistance sector, co-operating with the

Romanian Doctors' Association (RDA), the Romanian Pharmacists Association (RFA), the local authorities and other institutions.

> *The Public Health Departments* (PHD) have the role to locally supervise the application of health insurance laws, including the supervision of social protection fulfilment.

> *The Health Insurance Houses* (NHIH, RHIH respectively) that monitor and control the delivery of medical services, medicines, sanitary materials and medical devices, according to the signed contracts, as well as the accomplishment of the national health programs.

After having presented the architecture of the social health insurance system in Romania, *the beneficiaries* of the system and their rights and duties, plus the main *products and services* covered by the system, the thesis focused on the financing aspects of the social health insurances.

Presently, the health financing sources are covered through the budget of the social health insurance fund, formed by health social insurance contributions paid by each insured person, state budget allocations for the national health programs, investments (buildings and high performance medical devices), local budgets, external credits, external funds and resources of nongovernmental organizations.

So, **the financing of social health insurance system** is mainly assured by the **National Unique Social Health Insurance Fund**. As from 1998, the Initial Social Health Insurance Fund was constituted, whose main sources were the contributions of employers and employees. Regarding the usage of this fund, from the collected sums, The Public Finance General directions and the Regional Financial State Control, through the Treasury Department, swerved 80% in the 'Available Assets from the Initial Health Insurance Fund' account, opened by the Health Ministry and 20% in the 'Available Assets from the Reserve Fund' account, opened by the Health Ministry as well, that used to carry out the attributions of The National Health Insurance House.

Starting with 1999, the NHIH Fund and the funds of the regional insurance houses were formed through the following sources:

- ✓ contributions of the natural persons and legal persons, as well as optional contributions paid by the members of diplomatic missions in Romania or foreigners temporary staying in our country;
- ✓ state budget subsidies;
- ✓ other incomes: interests, donations, patronages, incomes obtained the exploitation of the patrimony of the National Health Insurance House and the regional health insurance houses, etc.

Starting with 2003, the health insurance fund was renamed as "the national unique social health insurance fund" (NUSHIF), regardless of their origins.

Figure no.2. Constituting the National Unique Social Health Insurance Fund
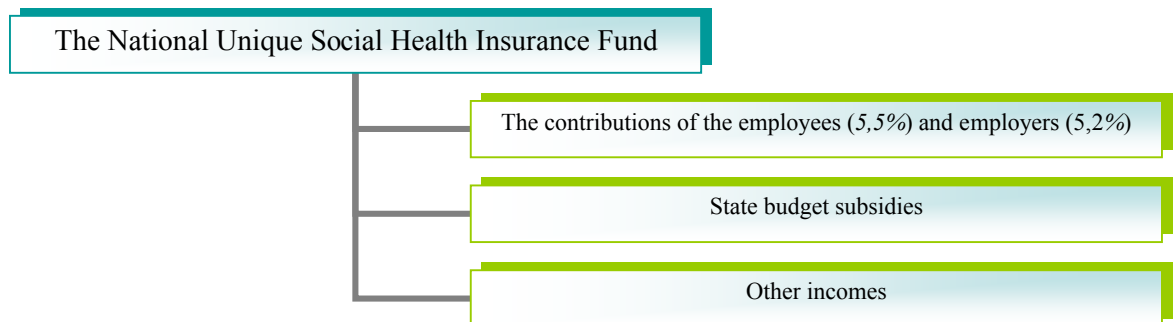
Source: Author's processing

Regarding the expenses, the NUSHIF's budget covers:
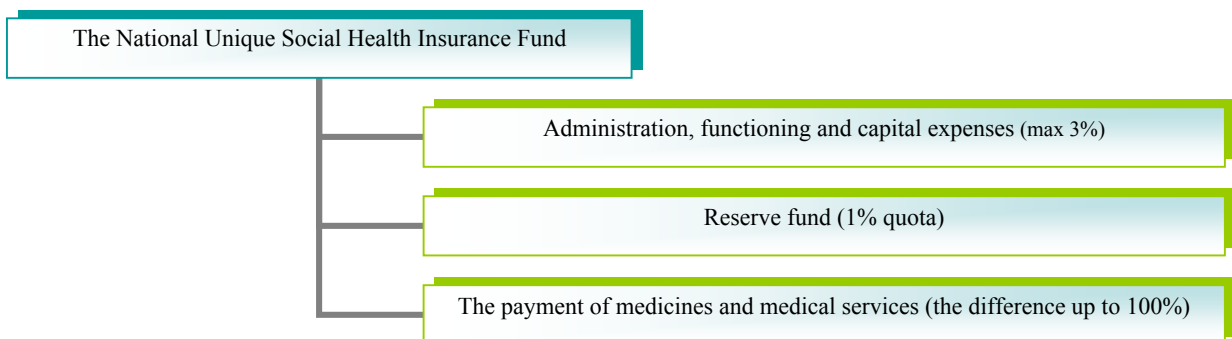
- ➢ material expenses and medical services;
- ➢ work staff expenses;
- ➢ fund administering expenses;
- ➢ capital expenses.

Analysing the information elaborated and provided by the NHIH for the previous years, we may easily notice that the increase rhythm of total expenses is lighter than the increase rhythm of total incomes, which is a positive fact. The evolution of the fund's

revenues and expenses, studied in the paper, suggests the fact that the Romanian authorities haven't had a coherent strategy for the health domain.

According to the present laws, each financing source must cover specific expense categories. The incomes of the fund, gathered by the Public Finance Ministry and transferred to the insurance houses are used for: the payment of medical services, medicines, sanitary materials and medical devices, according to the terms established through the framework contract and for administration, functioning and capital expenses, up to 3% of the collected sums, and for the reserve fund, the 1% quota from the sums gathered by the NHIH[4].

Figure no.3. The destinations of the N.U.S.H.I.F.

The National Unique Social Health Insurance Fund
Administration, functioning and capital expenses (max 3%)
Reserve fund (1% quota)
The payment of medicines and medical services (the difference up to 100%)

Source: Author's processing

So, the first and the most significant destination, as a percentage in the total of the sums, is set for medical services and medicines, sanitary materials and medical devices, in the terms of the *framework contract*. The thesis contains a detailed analysis on expenses categories. The main still present problem regarding the financial sustainability of the healthcare domain for the analysed period is the fact that most resources are used by the hospital sector. If in 1997 the hospitals used 67% of the total incomes of the fund, this tendency reducing itself gradually up to 46% in 2007.

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[4] Article 262, paragraph 1, letters a, b and c, from Law no. 95 / 2006

A second destination is set for the administration and functioning expenses and the capital expenses of the insurance houses. The set quota was of 5% of the total incomes up to 2002 inclusively. Starting with 2003, the quota was diminished to maximum 3% of the collected sums.

Another usage destination of the national health fund is for constituting the reserve fund, both for the territorial structures and for the central one of the insurance house. As of 2003, the reserve fund is formed by 1% of the sums gathered at the NHIH. At the end of the year, the balance of the "Available assets of the reserve fund" account are reported for the next year, having the following destinations:

      -the payment of the contracted but unsettled medicines and medical services;

      -administration and functioning expenses and capital expenses according to the incomes and expenditure budget of the insurance house.

The budget of the fund is approved by the Parliament, at the Government's proposal, and the incomes and expenditure budgets of the insurance houses are approved by the principal to whom they are subordinated.

This chapter also contains some points of view of the beneficiaries of the system, which are rather disappointed by the quality of medical services in Romania, blaming the under-financing for the system for this.

CHAPTER 4. BENCHMARKS FOR THE REFORM OF THE SOCIAL HEALTH INSURANCE SYSTEM IN ROMANIA

Almost all the countries of the world are confronted with a discrepancy between medical services' demand and the available resources. This led to the research of different methods for upbringing the efficiency of resource usage, starting from the care process technology, up to perfecting the sanitary organization and the financing of health services.

Dissatisfactions that generated the process of health care system reform, appeared among tax payers, doctors, institutions, politic and administrative authorities. Discontents aimed increased costs of health, in an intolerable rhythm, without substantial improvement of health status, insufficiency coverage of population with services, the absence of an efficient insurance quality mechanism, exaggerated volume of daily work, inefficient management.

The Romanian health care system is currently in the process of rapid transformation. Probably one of the main problems with the Romanian health care system is the lack of a clear vision of its future and the lack of a coherent project for its health system, which is shared and accepted by the main stakeholders. The increased turnover of decision-makers within the health system has resulted in a number of health projects and strategies, often developed with international support, that are then abandoned by a new political team from the Ministry of Health, which started the development of its own "health policy". Still, Romania has not yet produced a fully articulated, written **health policy,** although the different political regimes have always *aim*ed to:

-increase the hospital performance and accessibility to hospital services

-increase the access to high quality, effective and safe drugs

-improve the health financing and assure system sustainability

-improve the health status of mothers, children and family

The need for a coherent politic, harmonized with European and internationals health objectives, assumes to complete the desideratum "*health for everyone*" established by the World Health Organization, based on:

- ✓ Universality, i.e. all community members must have access to health care, at a reasonable cost;
- ✓ Quality, i.e. the medical services administrated must fulfil legally standards;
- ✓ Existence of a complementary powerful and viable private sector;
- ✓ Possibility to choose;
- ✓ Efficient medical services, based on needs;
- ✓ Respect of privacy and personal dignity;
- ✓ Existence of a gathering data system used in programming, decision and regulation;
- ✓ Facility of integration models and cooperation for the delivery of medical services;
- ✓ Initiatives of long term programs, to prevent sicknesses and to increase life quality.

Our recommendations are based on a proposed set of specific guiding principles for reform of social policies in economies undergoing post-socialist transition, further applied to the health sectors of Eastern Europe. The priorities in health care system reforms for Central and East Europe are:

- to decentralize the health care system;
- to modify the administration and planning methods;
- to maintain large accessibilities;
- the development of communitarian health services;
- the development of preventive services based on risks factors;
- Improvement of health staff's forming system.

The healthcare system reform in Romania depends on the economic system reform, on its transformation through property decentralization, the consolidation and the development of private property, as resource and spinning centre.

The health reform strategy in Romania focused on the following *domains* :

- structural organization and system management;
- system financing;
- assuring the necessary health services for population;
- reasonable usage of human and physical resources.

The *strategic objectives* regarding the configuration and functionality of health services on a long term are:

- the creation of a hued and performing system (ambulatory integrated caring, day-hospitalization, diagnostics and treatment services improvement;
- the extension of primary assistance services (home care assistance, within ambulatory medicines, creating multifunctional health centres);
- suitable, sustainable and stimulating performance financing ,
- shutting down the low performing medical units;
- perfecting operational management systems;
- realizing a compatible normative frame with institutional and functional reforms;
- facilitating private financed systems of medical services
- setting up and improving the insurance for pensioners within specialized units of daily care.

By achieving the up-mentioned objectives, we foresee the perfecting redefinition of the medical units, the improved local access of the community to primary assistance integrated services, financial support, quality assurance, the development of investments, the decentralization and faster supply of health services.

To conclude, the following aspects have to be *approached and solved*:

- the set up of databases and the improvement of information flow and distribution within a local, regional and national system;
- the standardization of coding and implementation of the national data register;

- the development of primary and ambulatory care, through the lease of medical cabinets towards doctors;

- the finalization of the extern financing programs;

- the extension of the integrated ambulatory services;

- the operation of multifunctional health centres, the standardization of the finance methods, the hiring and usage of the medical staff;

- the implementation and improvement of regional resource allocation;

- the founding of a national organism for monitoring the health services' quality, by using a minimal set of unitary indicators;

- the implementation of improved information management systems, based on performance parameters;

- the providing of health services through stimulated public-private partnerships.

# CHAPTER 5. ECONOMETRIC MODELLING IN THE SOCIAL HEALTH INSURANCE FIELD

The connections between mass economic phenomena are characterized by the fact that one phenomenon or another may vary under the influence of a complex range of factors, some of which have a crucial influence and others are of a secondary importance. We've tried to identify the exogenous variables that would explain to a certain extent the regional public healthcare expenses of our country.

For the period between 1990 and 2008 we've modelled the increase rate of real healthcare expenses, as compared to the previous year (RcS), at first as related to the increase rate of real GDP, as compared to the previous year (RcPIB)[5]. The simple linear regression obtained using the least squares method upon the database, in Matlab, is the following:

RcS = 11.164572 + 2.292749 *RcPIB

Figure no. 4 determines the correlation between the variation rate of real GDP from one year to another and the variation of healthcare expenses, a chain index as well. The correlation in rather medium, of approximatively 38%, GDP's increase by 1% determining an average increase of the healthcare expenses of 2.29%.

Figure no 4 GDP – Public Healthcare Expenses Correlation, Romania, 1990-2008
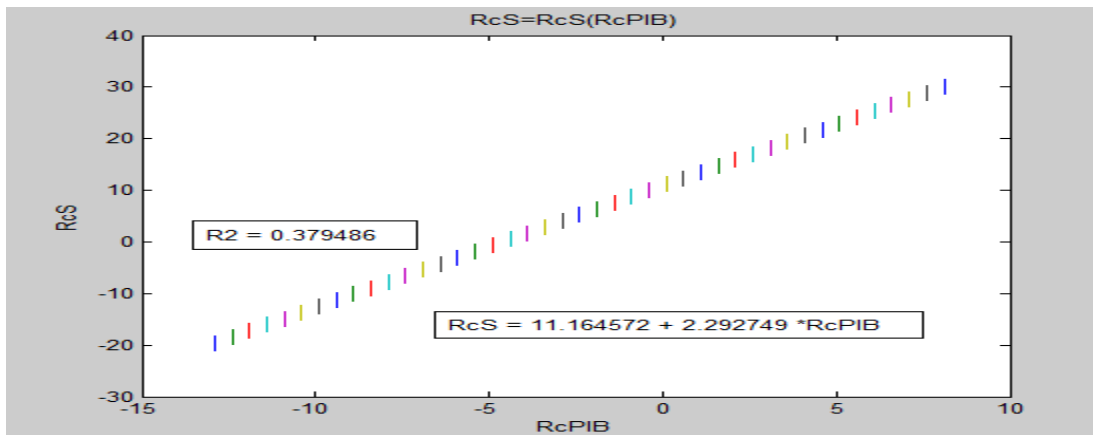
[5] Gruenewald I.B., Văidean V.L. (2010), *EU Healthcare System – Facts and Figures*, Buletinul Universității de Științe Agricole și Medicină Veterinară, Seria Horticultură, Volumul 67, Ediția 2/2010, Editura Academic Pres, pag 88-95

By introducing a new variable in the model, i.e. the variation rate of population aged 65 and above in the total population of Romania (Di Matteo, 1998 and 2005), the chain index computed for the same period, the following multifactor linear model is obtained:

RcS = 9.413874 + 2.364114*RcPIB + 0.797555*RcP

The equation defines a regression plane represented in Figure no. 6. Furthermore, the field lines of the variation rate of Romanian public healthcare expenses are marked by Figure no. 5, as percentages.

Figure no.5 Field lines of RcS [% of previous year] function of RcPIB and RcP
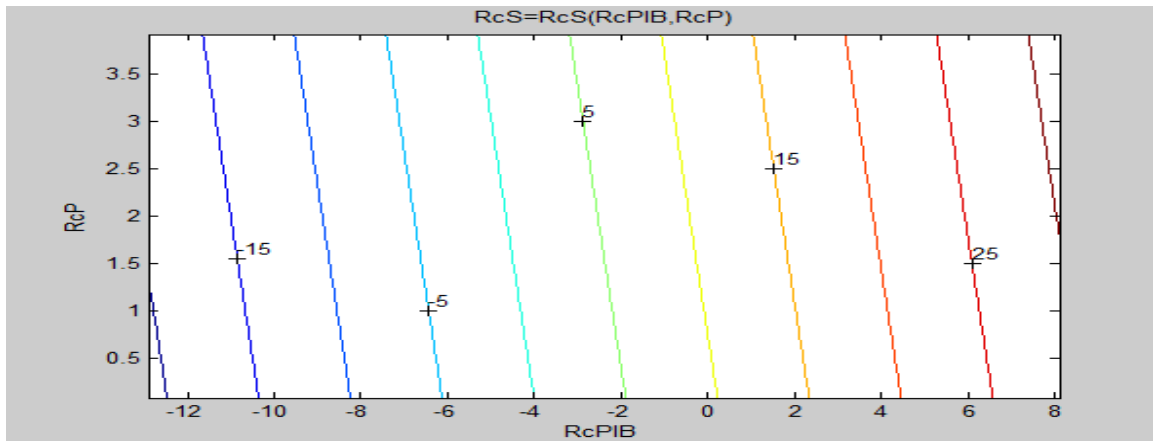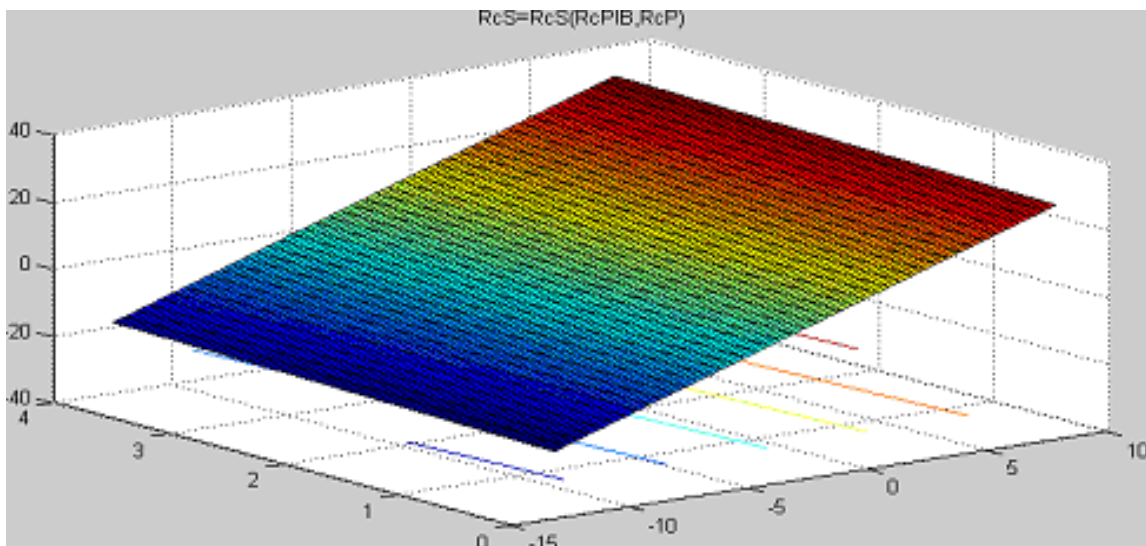

Figure no. 6 Regression plane of RcS function of RcPIB and RcP

Source : Authors' processing in Matlab

The thesis contains multiple simulations and correlations that would explicit the public health care expenditure of Romania, time series analysis, by Romania's GDP, the weight of the population aged 65 and above in the total population and the number of doctors and medical personnel for 1000 inhabitants, through simple linear regressions and multiple linear regressions. Then, complex correlations are studied in R^4.

The thesis contains panel studies as well. For the above presented indicators we would verify the following hypothesis: does or doesn't there exist a dependency (correlation) between the public healthcare expenditures per capita and the real gross domestic product per capita, respectively the weight of the female population in the total population, and nevertheless for both factors, through econometric models using panel data[6]? For this purpose a database was constructed containing data corresponding to Romania's 41 counties - NUTS III plus Bucharest, i.e. the public healthcare expenditure per capita, the real gross domestic product per capita and the weight of female population within the total population, for the 2006-2009 period (168 observations).

In order to verify the existence of a dependency relationship between the regional per capita healthcare expenditures (ChSanatate) and the regional real per capita gross domestic product (GDP), the ratio of the female population and the total county population (Pf), and then for the both factors, we've constructed the following linear econometric models:

Model I: ChSanatate = f (GDP) + u => ChSanatate = a0 + b0 *GDP + u

Model II: ChSanatate = f (Pf) + v => ChSanatate = a1 + b1 *Pf + v

Model III: ChSanatate = f (GDP, Pf) + z => ChSanatate = a2 + b2 *GDP + c2 *Pf + z

These models have been estimated using the least squares method for panel data (Pooled OLS) and the constant effects (factors) model (Fixed Effect Model-FEM). In order to

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[6] Panel data models consist of estimating regression equations that use data which are at the same time time series data and cross-sectional data. Panel data models allow a single coefficient to summarize the impact of a variable upon a group of time series dependent variables (a group of companies, countries, regions) and the estimation of specific coefficients (constant or coefficients of the independent variables) for each time series considered as a dependent variable - fixed effects.

estimate the parameters of the models we built, we used the Gretl[7] software package and the results are the following:

Table no. 1. The results of the econometric estimation, for the NUTS III counties, regarding the dependency between per capita healthcare expenditure and per capita GDP (1st model), female population/total population ratio (2nd model), and both factors respectively(3[rd]model)

Model	1st Model		2nd Model		3rd Model	
Estimation Method	OLS	FEM	OLS	FEM	OLS	FEM
Constant term	184.462***	63.4788**	-11099.4***	-19106.0**	-4910.27***	2105.17
	(0.0000)	(0.0106)	(0.0000)	(0.0267)	(0.0004)	(0.6458)
GDP	0.0197559***	0.0267745***			0.0138586***	0.0269422***
	(0.0000)	(0.0000)			(0.0000)	(0.0000)
Pf			22759.5***	38435.7**	10174.0***	-4003.10
			(0.0000)	(0.0229)	(0.0003)	(0.6558)
Adjusted R^2	0.488428	0.956998	0.412830	0.839361	0.525210	0.956721
F Statistic	160.4449	89.48976	118.4153	21.77614	93.36706	86.85356
F Statistic Probability	3.68e-26	2.01e-75	3.71e-21	1.83e-40	7.58e-28	1.74e-74
Number of observations	168	168	168	168	168	168

Source: Authors' processing in Gretl

The model that best explains the variation in per capita healthcare spending for the counties of Romania is the 1st model. Figure no. 7 represents the experimental values in red + and the ones adjusted by the optimum chosen model in blue ×:

Figure no. 7 Experimental values of the regional per capita healthcare expenses and the ones adjusted through the 1st model –FEM

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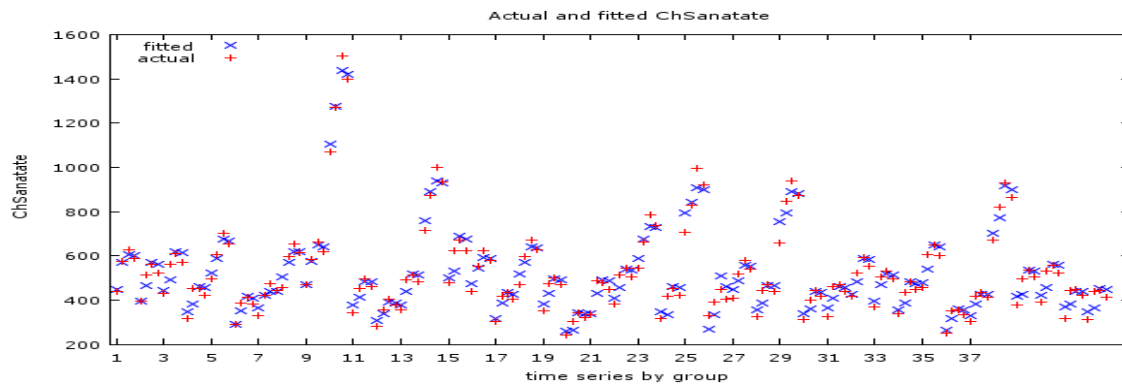
[7] Gnu Regression, Econometrics and Time-series Library is a free open-source cross-platform software package for econometric analysis, written in the C programming language.

The regional allocation of resources is mainly oriented towards the capital city of Romania (the highest peak) and the counties that have university healthcare units and hospitals, like Cluj, Timiş and Iaşi:

Figure no. 8 Experimental values of the regional per capita healthcare expenses and the ones foreseen by the 1st model -FEM
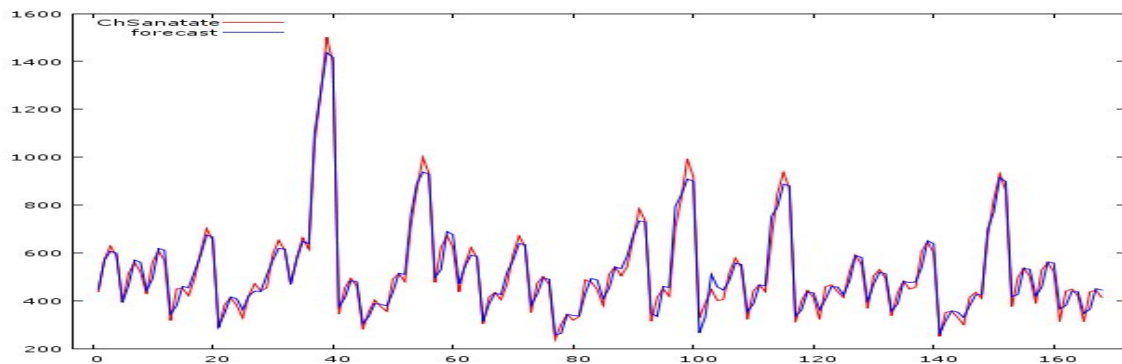
Source: Authors' processing in Gretl

Because of a certain heterogeneity in the countries' behaviour, panel data econometric methods are more and more often used for the empirical analysis of commercial flows. Furthermore, the thesis also contains a panel study on the healthcare expenses of the EU-27 member states, related to their GDP and/or the weight of the population aged 65 and above in the total population, for the 2003-2008 period (162 observations). From an economic point of view, for the cases we have studied, the individual effects seem appropriate.

The econometric modelling of the healthcare public expenditure has a major importance for identifying and quantifying the effects of the applied reform policies.

CONCLUSIONS

In conclusion, the evolution of the Romanian healthcare system in its classical shape of public per capita healthcare expenditure is closely related to the socio-economic changes taking place in Romania. For our country, the events that took place at the end of 1989 and during the following successive political changes imposed a new strategy for acting upon the socio-economical life, and even upon Romania's healthcare sector.

We may say that Romania's healthcare system has been characterized by centralism and limited options up to 1989 and a few years after. The declared goals of the reform process of 1998 wanted to improve the health status of the population, an increased efficiency of resource usage, a better doctor-patient relationship and more satisfaction on behalf of the patients and medical services suppliers. Twelve years after that process started, we think that the initial goals have just partially been attained. Regarding the fundamental principles of the new social health insurance system, i.e. equitable access to healthcare services, universal coverage of market segments with these services, national solidarity in financing medical activities, stimulating efficient services, they've been just relatively applied in practice up to the present day.

Nationally, a coherent strategy needs to be implemented for increasing the population's access to high quality services and promoting a healthy lifestyle at home, at work and within the community.

The main objectives for configuring a long-term functioning of health services are:

-to create a performance system (integrated health services, day hospital stay, better diagnosis and treatment services);

-the extension of primary health care services (home care, multifunctional health centres);

-closing down the non performance medical units;

-compatibility of the law system for institutional and functional reforms;

-perfecting the operational management systems;

-sustainable financing based on performances and stimuli;

-encouraging the private financing system of health care.

The thesis identified the main critical aspects of the social health insurances in Romania, focusing on the under-financing of the sector. We've proposed some valid reform directions as well. With all these, the existence necessity of medical services public system in Romania cannot be questioned, at least for the moment. And each active person's contribution – directly and through his/her employer – to the forming of the social health insurance fund is compulsory. The insured persons and the employers monthly pay a contribution to the social health insurances, as a 5,5% quota and 5,2% quota respectively, from their monthly income. Officially, the insured persons do not have to pay any other supplementary expenses for the medical services, except for the co-payments for ambulatory prescribed medicines. The sums collected by the insurance houses are used according to the money-follow-the-patient principle, for paying the medical services of the contracted providers. The medical services the insured persons are entitle to are preventive medical assistance and health promoting services; ambulatory medical services; hospital medical services; dental services, emergency medical services; complementary re-habilitation services, pre-, intra- and postnatal medical assistance; home medical assistance, medicines, sanitary materials and prostheses.

For multifactor correlations, the exogenous variables have different influences upon the resulting variable; some greatly influence the effect phenomenon, and therefore they should be taken into account, while others exert a less important action and may be neglected. The correlation methods applied in the last chapter simplify the calculations and conclusions, because it is very difficult to quantify the set of all causal factors acting upon a socio-economic phenomenon or process. Our studies explicated to ca certain extent the public health care expenditure of Romania by its GDP, the weight of the population aged 65 and above and/or the number of doctors and medical personnel. Then, our four year panel study on the regional public healthcare expenditure proved that they are explicated to a great extent by the regional GDP. Other strong correlation variables were not found statistically significant, this being the purpose of our future research in the field.

Although the social health insurances represent the main system of caring for population's health, for many of us, the package offered through this system covers only a small amount of the actual necessities for general medical controls, special controls and analysis. For being healthy, for preventing the apparition of diseases or for treating the existing ones, such medical investigations must be carried out periodically. This is why we must assure ourselves that we may whenever get to a high quality medical service provider. But the Romanian private health insurance system is almost inexistent. So far, only a couple of insurance companies dared to offer health insurance policies that would guarantee a human treatment in hospitals. Presently, the number of privately health insured persons is relatively low, of only a couple of thousands nationally. There is another larger category of people that have a health subscription. The un-explored potential of this market remains huge.

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