Reforming the Hospitals in Greece: An Integrated framework for improving the health care services in an Emergency Department

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Abstract

Hospitals across the globe face the challenge to respond to the public demand for more effective and transparent health services. In order to optimize the health care services many methodologies have been developed by the operational researchers. The scope of this paper is to present a new methodology for the improvement of the health care services in an emergency department (ED). MED-UTA combines simulation techniques and MCDA approaches where UTASTAR method is used in order to help the CEO of the hospital to improve the provided services. In order to illustrate the applicability of the model, a Greek hospital has been selected. The results revealed that the most important factor for the director of the emergency department (ED) is the total length of stay, while the evaluation of several alternative reforms showed that the implementation of a fast track unit may give significant improvements. Through this model the hospital managers can understand the system's reactions and, therefore, further improve various factors in order to minimize the total length of stay in the ED.

1. Introduction

In our days every health organization tries to provide valuable and efficient health services to the patients by taking into account some constraints like budget, number of staff, waiting times, work load, patient satisfaction etc. Many approaches, from the area of management and information technology, can be adopted by a health care organization in order to optimize its efficiency and effectiveness and to be competitive. Many researchers use the Business Process Reengineering (BPR) for optimizing the procedures of health care organizations. BPR is defined as the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed. It is obvious that the BPR is a crucial methodology in order to examine the current system via simulation. Through the simulation the management team will elucidate the weak points of the department and will implement what-if scenarios in order to examine the reaction of the system. Simulation analysis appears to be another valuable tool in order to improve a business process and identify its bottlenecks. Many researchers have used several simulation software tools in order to improve various processes [1-11]. Other researchers use mathematical techniques [12-18] in order to optimize the department of emergency medicine. Moreover, during the last years a new wave of researchers use data mining techniques in order to analyze in depth the work flows of the hospitals. Finally the last five years have been developed new integrated methodologies for the optimization of the services of EDs and more over for the services of the hospitals. Grigoroudis et al. [19] combined the Balanced Scorecard method with the UTASTAR algorithm in order to help the hospital to evaluate and revise its strategy and generally to adopt modern management approaches in everyday life. In addition, other researchers combine the simulation with other approaches like DEA, BSC, and AHP [20-23]. The common characteristic of these approaches is that the main goal is to help the management team of a hospital to take more easily decision and more over to optimize the procedures at the departments of the hospitals. This paper proposes an alternative methodology for the evaluation of the health services and moreover for the improvement of the services of an ED. MED-UTA is an integrated multicriteria framework which combines simulation and Multicriteria Analysis in order to help the director of an ED to understand how the ED operates, how to implement alternative scenarios, which is the effect of these scenarios to the processes of the ED, and how to decide taking into account several factors, like the working load of the ED staff, the waiting times etc. In order to test the applicability of the methodology in a real life scenario, we studied, analyzed the health services of the ED of the General Hospital of Chania.

2. MED-UTA Methodology

As noted above MED-UTA is an intergrated methodology which combines simulation techniques with UTASTAR algorithm in order to help the decision maker (DM), in our case the director of the ED, to take decisions taking into account many alternatives (hypothetical solutions for the ED) and criteria like working load of the staff, waiting times. MED-UTA (figure 1) methodology works in three main phases.

At the *first phase (problem design)* the operational researcher visits the ED department in order to have a visual representation of the ED and its processes.

Through the observation gathers notes about the procedures and the problems that revealed. At the next step the team of the operational researchers draws the work flow of the ED and collects data from the MIS of the department like kind of incidence, triage category, waiting times, the total length of stay of each process. In order to have a more clearly view and to study the view of the external customer about the processes of the hospital the team conducts a satisfaction survey taking into account many factors like satisfaction from the personnel of the hospital, from the wards, from the communication between the staff and the patient. Finally the team will arrange a meeting with the staff of the ED department (doctors, nurses, technicians, laboratory staff) in order to discuss the problems that they facing each day during the operation of the ED department.
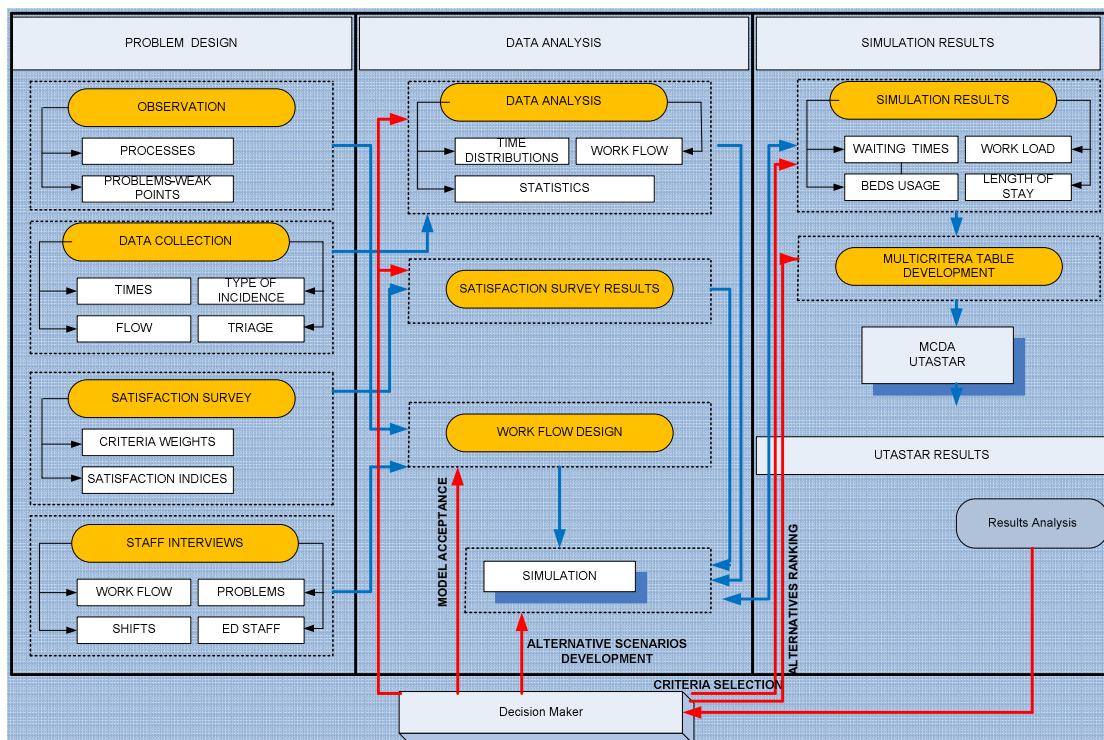

Figure 1: MED-UTA Methodology

At the *second phase* operational researches analyze the data that have been collected like time distributions, work flow design, statistics, and results of the satisfaction survey. At the next step with the collaboration of the DM (CEO of the hospital, Director of the ED) the work flow will be approved by the director of the ED. Furthermore the operational researcher will inform the director about the results of the data that have been collected. Through the discussion the DM by taking into account the reports will develop the alternatives scenarios in order to redesign the ED. For the representation of the processes of the ED, MED-UTA uses the simulation tool SIMUL8. The scope of this software is to simulate the current processes of the ED and to implement and measure the effect of the 'what if' scenarios.

At the *third phase* the operational researcher presents the output of the simulation like working load of the personnel, bed usage, waiting times, total length of time for each process. A multicriteria table (i.e. performance matrix) will be developed based on the alternatives scenarios of the DM and the results of the SIMUL8. Studying the results the DM analyzes the criteria that have been chosen and the alternative scenarios and ranks the best and the worst solution for the ED. Having the data of the

multicriteria table and the preferences of DM the team uses the UTASTAR algorithm in order to elucidate the preferences of the director of ED like the weight of each criterion and the utility of each alternative.

2.1 UTASTAR Algorithm

The UTASTAR method is a regression based approach adopting the aggregation-disaggregation principles. The main aim of the disaggregation approaches is to analyse the behaviour and the cognitive style of the DM (i.e. to improve the DM's knowledge about the decision situation and his/her preference that entails a consistent decision to be achieved).

The UTASTAR method proposed by Siskos and Yannacopoulos is a variation of the UTA method which aims at inferring a set of additive value functions from a given ranking on the aforementioned reference set of functions. In the context of the method, the additive value function u is assumed to have the following form:

$$u(\mathbf{g}) = \sum_{i=1}^{n} u_i(g_i) - \sigma^+ + \sigma^- \tag{1}$$

under the following normalisation constraints:

$$\begin{cases} \sum_{i=1}^{n} u_i(g_i^*) = 1 \\ u_i(g_{i*}) = 0 \end{cases} \quad \forall i = 1, 2, \ldots, n \tag{2}$$

where $\mathbf{g} = \{g_1, g_2, \ldots, g_n\}$ is the set of criteria, $[g_i^*, g_{i*}]$ is the criterion evaluation scale with g_{i*} and g_i^* the worst and the best level of the i-th criterion, u_i ($i = 1, 2, \ldots, n$) are the marginal value functions normalised between 0 and 1, σ^+ and σ^- are the overestimation and the underestimation error, respectively, and n is the number of criteria.

The UTASTAR algorithm uses special linear programming techniques in order to assess the additive and the marginal value functions, u and u_i, respectively, so that the ranking obtained through these functions is as consistent as possible with the one expressed by the DM.

It should be noted that utastar algorithm have been used in many decision problems [24-32] covering many sectors of the science like financial management, human resources management, environmental management, country risk assessment, marketing, customer satisfaction, public administration and e-government.

3. Application of the model

The General Hospital "St. George" is situated in the outskirts of the city of Chania, near Mournies village. It was established in 2000 and has a capacity of 465 beds. The fundamental aim of the hospital is the provision of high quality health services to all citizens, within a friendly and humane environment. Hospital operates from 1st

September 2000 in its new ultramodern installations in the area of Mournies-Chania, with capacity of 465 beds, while the number of operating beds at the moment is 442. The total operating departments are 36 that are developed in 50.000 square metres of covered space.The General Hospital of Chania has two ED departments (figure 2). The first one runs 16 hours per day and the second one 24 hours per day. Generally, patients that arrive between 08:00 and 23:00 have to pass through registration. Depending on the triage (red case-extremely important) patients can skip registration and examination at ED1 and are sent directly at ED2.
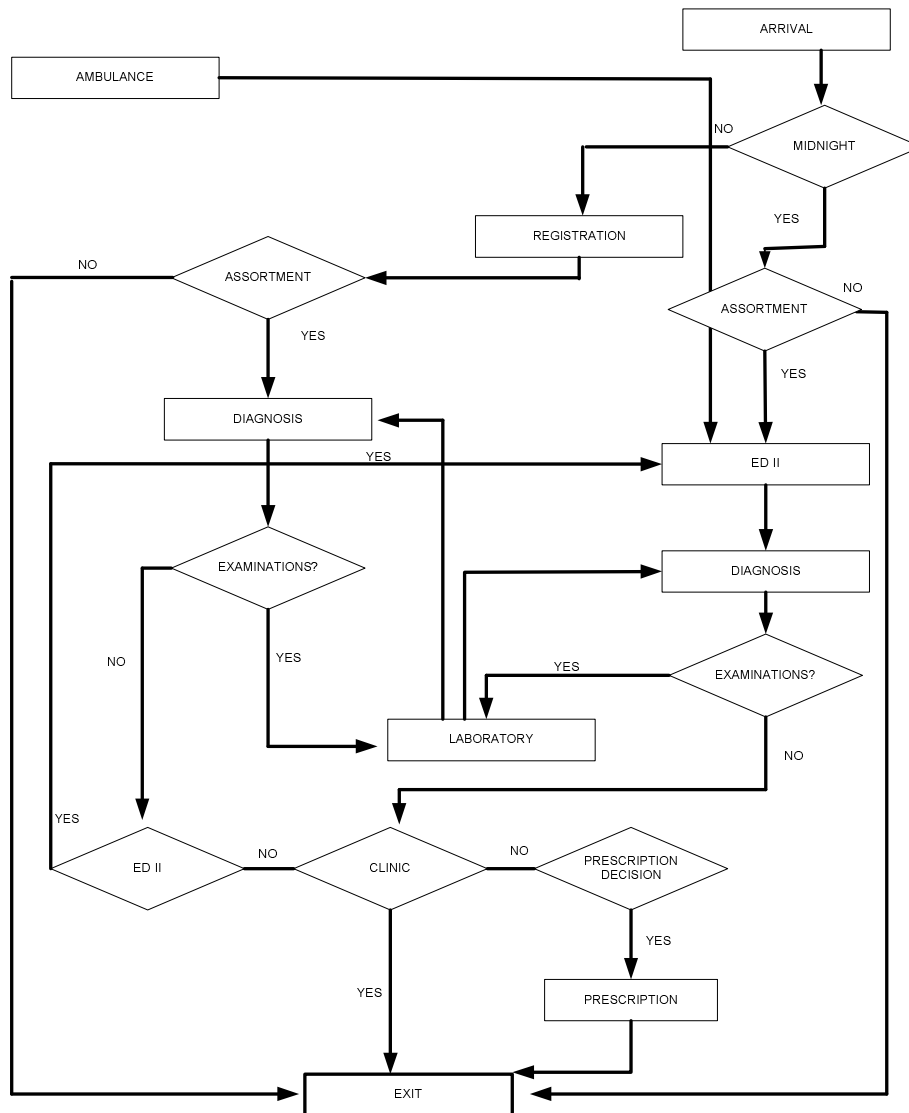

Figure 2: ED Work Flow

When a patient arrives at the ED prior to 23:00 he/she have to register at the registration office. The patient will provide data like name, age and he/She has to pay 5 euro for the examination. Afterwards he/she has to wait at the waiting room. A nurse will ask the patient the problem that he/she faces and will characterize the level of the triage. The patients that arrive by the ambulance may skip this process and are sent directly to the ED 2. It should be noted that the urgent patients having the worst health problems or injuries receive the highest priority. At many cases cardiological incidences, serious accidents are sent directly to the ED2. The scope of the ED 2 is twofold. Patients that enter the ED of the hospital after 23:00 will be served from the

ED2 because the ED1 is closed. The second scope is that ED2 usually in a 24-hour base treats patients that face serious problems with their health, in other words belong to the yellow and red scale of triage. When a patient enters the room of diagnosis the nurse will check the temperature, blood pressure and heartbeat. Then the physician will provide initial examination. Depending on the level of triage a patient waits for the lab results at the waiting room or on the bed. When the physician delivers the results of the examination have three choices. The first choice if the case is serious is to send the patient to the appropriate department of the hospital. The second choice is to write a prescription and sent the patient back to the home. The third choice is to decide that the patient will stay at the wards of the ED in order to make more lab tests. In order to gather data from the ED, a team of 5 doctors gathered data through observation.

Personnel of the hospital fill one specific form during each patient arrival. These documents were, actually, recorded observations. Each recorded observation consists of the following parameters: entry time at the hospital, registration time, entrance time at the examination room, diagnose time, exit time, and date of entrance end departure. In addition to these parameters, the number of treatment facility (2 in total in our case), the number of the available doctors at the treatment facility, the triage, and the category of the event were recorded.

	Doctors Work Load	Nurses Work Load	Beds Work Load	Total length of stay	Waiting times	DMs Ranking
Fast track	0,64	0,50	0,41	101	13	1
Fast track (-1) Doctor (-1) nurse	0,73	0,71	0,43	126	33	2
Merging EDs	0,57	0,66	0,26	195	15	3
Nurses (+2)	0,89	0,67	0,51	186	84	4
Baseline Scenario	0,86	0,95	0,37	228	138	5
Doctors (+1)	0,65	0,95	0,35	266	178	6
Doctors (-1) Nurses (+2)	0,96	0,51	0,37	364	247	7

Table 1: Simulation Results

After the analysis of the data using the SIMUL8 software table 1 reveals the score for each criterion and alternative. The last column presents the preferences of the DM. As we can see the best solution for the ED based on the view of the DM is the implementation of the fast track unit and the worst scenario is to reduce the doctors by 1 and to increase nurses by 2. It should be noted that analyzing the existing mode of the ED the total waiting time is 228 minutes and the working load for the staff is too

high. More analytically the working load of the doctor in a shift is 86% and 95% for the nurses.
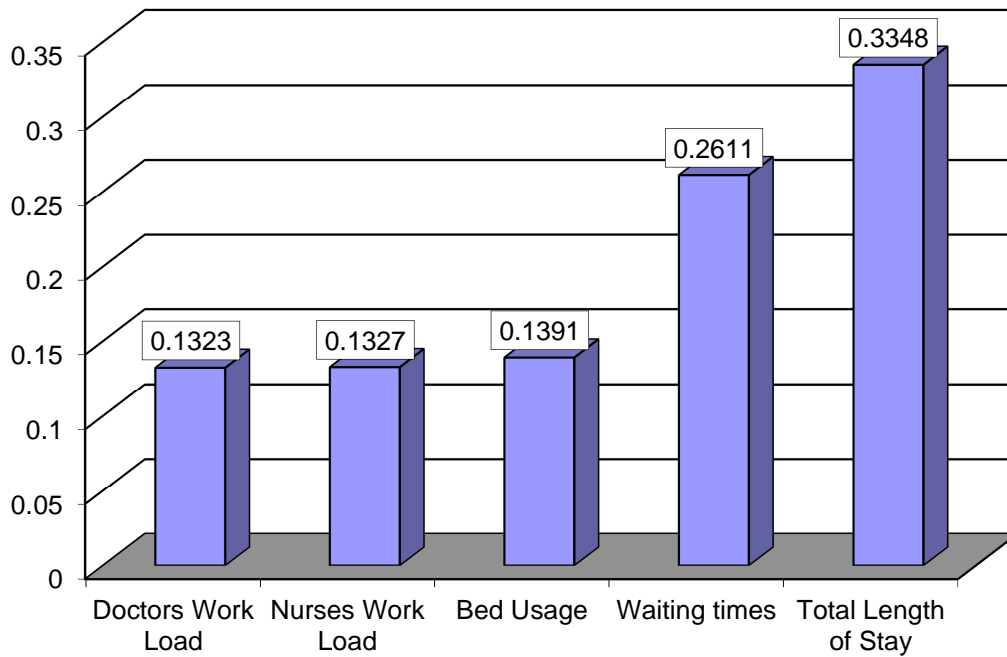

Diagram 1: Criteria Weights

Analyzing the results (diagram 1) of the UTASTAR algorithm it is obvious that the most important criterion for the DM in order to redesign the ED is the total length of stay and the waiting times. Other criteria like the working load of the doctors and nurses are less important for the DM.

	Utilities	DM Ranking	MED-UTA Ranking
Fast track	0.8225	1	1
Fast track (-1) Doctor (-1) nurse	0.7143	2	2
Merging EDs	0.6643	3	3
Nurses (+2)	0.5867	4	4
Baseline Scenario	0.5008	5	5
Doctors (+1)	0.4235	6	6
Doctors (-1) Nurses (+2)	0.3318	7	7

Table 2 Utilities-MED-UTA Ranking

Based on the preferences of the DM (table 2) the UTASTAR algorithm reveals the same ranking with the one of the DM. It is obvious that UTASTAR method that the necessary required information can be easily collected. Moreover, the current application showed that UTASTAR is a valuable technique that may help the DM to analyze his/her behavior a cognitive style.

4. Conclusion

In our day Greek health system tries to respond to the public demand for valuable health services under the restrictions of the austerity. The proposed methodology can be an effective tool in order to optimize the health care services in Greece and to control better the economics of the hospitals, the work load of the staff and the usage of the resources of the hospitals. MED-UTA has the ability in one hand to reproduce the current mode of a department using simulation techniques, while at the same time it can evaluate alternatives scenarios in order to measure the effect of these decisions on the operation of the hospital. On the other hand, the added value is that the methodology reveals the behavior of the DM making him/her to get robust decisions.

References

1. Samaha, S., Armel, W.S, and Starks, D.W. (2003). "Emergency departments I: the use of simulation to reduce the length of stay in an emergency department", 35th Conference on Winter Simulation, Orleans, USA.

2. Takakuwa, S., and Shiozaki, H. (2004). "Functional analysis for operating emergency department of a general hospital", 36th Conference on Winter Simulation, Washington, USA.

3. Komashie, A., and Mousavi, A. (2005). "Modeling emergency departments using discrete even simulation techniques", 37th Conference on Winter Simulation, Florida, USA.

4. Baesler F.F, Jahnsen H.E, and DaCosta M. Emergency departments I: the use of simulation and design of experiments for estimating maximum capacity in an emergency room. 35th Conference on Winter Simulation, Orleans, USA.

5. Evans, G.W, and Gor, T.B. (1996). "Unger E. A simulation model for valuating personnel schedules in a hospital emergency department", 28th Conference on Winter Simulation, New York, USA.

6. Rossetti, M.D, Trzcinski, G.F, and Syverud, S.A. (1999). "Emergency department simulation and determination of optimal attending physician staffing schedules", 31st Conference on Winter Simulation, New York, USA.

7. Alvarez, A.M, and Centeno, M.A. (1999). "Enhancing simulation models for emergency rooms using VBA", 31st Conference on Winter Simulation, New York, USA.

8. Centeno, M.A, Giachetti, R, and Linn, R. (2003). "Emergency departments II: a simulation-ILP based tool for scheduling ER staff", 35th Conference on Winter Simulation, Orleans, USA.

9. Connelly, L.G., and Bair, A.E. (2004). "Discrete event simulation of emergency department activity: a platform for system-level operations research", *Academic Emergency Medicine*, 11, 1177– 1185.

10. Miller, M.J, Ferrin, D.M, and Szymanski, J.M. (2003). "Emergency departments II: simulating Six Sigma improvement ideas for a hospital emergency department", 35th Conference on Winter Simulation, Orleans, USA.

11. Kumar, A.P., and Kapur, R. (1989). "Discrete simulation applicationscheduling staff for the emergency room", 21st Conference on Winter Simulation, Whashington; USA.

12. Blake, J.T., and Carter, M.W. (1996). "An analysis of emergency room wait time issues via computer simulation", *INFOR,* 34, 263– 272.

13. Coats, T.J., and Michalis, S. (2001). "Mathematical modelling of patient flow through an accident and emergency department", *The Emergency Medical Journal,*18, 190–192.

14. Beaulieu, H., Ferland, J.A., Gendron, B, and Michelon, P. (2000). "A mathematical programming approach for scheduling physicians in the emergency room", *Health Care Management Science,* 3, 193–200.

15. Bjorkgren, M.A, Hakkinen, U., and Linna, M. (2011). "Measuring efficiency of long-term care units in Finland", *Health Care Management Science*, 3, 193–200.

16. Jacobson, S.H, Sewell, E.C, Deuson, E, and Weniger. B.G. (1999). "An integer programming model for vaccine procurement and delivery for

childhood immunization: A pilot study", *Health Care Management Science*, 2,1–9.

17. Kaplan, E.H, and Pollack, H. (1998). "Allocating HIV prevention resources", *Socio-economic Planning Services*, 32, 257-263.

18. Kotsiantis S. (2007). "Supervised Machine Learning: A Review of Classification Techniques". Informatica,31, 249-268.

19. Grigoroudis, E., Orfanoudaki, E., and Zopounidis, C. (2012). "Strategic performance measurement in a health care organization: A multiple criteria approach based on balanced scorecard", *Omega*, 40, 104-119.

20. Hamad, A., and Arisha, A. (2012). "Multicriteria framework for emergency department in Irish hospital", Winter simulation conference, Berlin, Germany.

21. Weng, S., Wang, L., Tsai, B., and Chang, C. (2011). "Using simulation and data envelopment analysis in optimal health care efficiency allocations", Winter simulation conference, Arizona, USA.

22. Ismail, K., Abo-Hamad, W., and Arisha, A. (2010). "Integrating balanced scorecard and simulation modelling to improve emergency department performance in Irish hospitals", Winter simulation conference, Baltimore, USA.

23. Eskandari, H., Khosravi, S., and Riyahifard, M. (2011). "Improving the emergency department performance using simulation and MCDM methods", Winter simulation conference, Arizona, USA.

24. Siskos, J., and Zopounidis C. (1987). "The evaluation criteria of the venture capital investment activity: An interactive assessment", *European Journal of Operational Research*, 31, 304-313.

25. Oral, M., Kettani, O., Cosset, J.C., and Daouas M. (1992). "An estimation model for country risk rating", *International Journal of Forecasting*, 8, 583-593.

26. Matsatsinis, N.F., and Siskos, Y. (2003). Intelligent support systems for marketing decision, Dordrecht: Kluwer Academic Publishers.

27. Siskos, J., and Matsatsinis N.F. (1993). A DSS for market analysis and new product design*, Journal of Decision Systems, 2, 35-60.*

28. Diakoulaki, D., Zopounidis, C., Mavrotas, G., and Doumpos, M. (1999). "The use of a preference disaggregation method in energy analysis and policy making", *Energy: The International Journal*, 24, 157-166.

29. Grigoroudis, E., Politis, Y., and Siskos, Y. (2002). "Satisfaction benchmarking and customer classification: An application to the branches of a banking organization", *International Transactions in Operational Research*, 9, 599-618.

30. *González-Araya, M.C., Rangel, L.A.D., Lins, M.P.E.,. and Gomes, L.F.A.M, (2002). "Building the additive utility functions for CAD-UFRJ evaluation staff criteria", Annals of Operations Research, 116, 271-288.*

31. Yannacopoulos, D., Manolitzas, P., Tsotsolas, N., and Drosos, D. (2010). "Satisfaction from the Public Services: A Multicriteria Approach", European Conference on Operational Research, Lisbon, Portugal.

32. Giannakopoulos, D., Manolitzas, P., Spyridakos, A. (2010). "Measuring e-Government: A Comparative Study of the G2C Online Services Progress Using Multi-Criteria Analysis", *The International Journal of Decision Support System Technology*, 2, 1-12.

The impact of economic recession in Greece on welfare rights

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Abstract

The constitutional recognition of welfare rights was enacted after several social conflicts. The main welfare right pillars are health provision services and social security. In Greece, the welfare state expanded during the 80's but its distorted and rapid growth contributed mainly to the construction of an unviable and inefficient system. Moreover, the Greek public sector was largely based on extensive facilities serving more the interests of the political patronage system rather than their fundamental purpose. The global financial crisis which affected the country's economy from 2008 onwards is the result of the inherent weaknesses of the Greek state as well as external factors such as the other Eurozone member states and the International Monetary Fund. The crisis uncovered the dysfunctions of the public sector and the welfare state. One of the intrinsic factors that contribute to the creation of the dysfunctional welfare state in Greece is the ineffective health care costs, due to the lack of auditing mechanisms. The high cost accounting of the health care system was one of the main factors that led to the financial crash of the social insurance funds. The result of the multiple economic pressures on the Greek government was the implementation of fiscal consolidation measures which dramatically reduces the income of the middle and lower economic groups. Social rights, due to their flexibility can be permitted reductions more easily than other rights and this fact can cause the creation of new social and economic inequalities. It is true that equal opportunities and social solidarity are two social values that have been hard hit by the austerity measures. The purpose of this article is both to highlight the impact of the financial crisis in Greek society because of public spending cuts in health and social security and other social benefits, and to design policy proposals that will contribute to the achievement of a balance between efficiency of social services and substantial social protection.

Introduction

Social rights comprise rights such as the provision of food, pensions, education, employment and health care, that constitute a fundamental part of many national constitutions. As is generally known, they were subsumed into the constitutions later than civil and political rights under intense political-economic pressures and people's aspirations. After the Second World War, they became established in a more generalized form in the constitutions of most European countries (Sotirelis; Tsaitouridis 2007).

Their fundamental principle consists of implementing policies aimed at creating a decent standard of living for all citizens as members of the society, providing equal opportunities at least in employment, education and health care. The implementation of such policies aims at the general rise of societal sustainability.

The welfare state is the institutional structure which has been created in order to preserve the values of social rights, as it implements policies against social exclusion and inequality. In Greece, the idea upon which the welfare state has been founded and built has faced many difficulties in its implementation. The lack of effective monitoring mechanisms for the implementation of social benefits is one of the main causes of the non-realization of this idea's objectives. Improper political management has resulted in the spending of huge amounts of money without meeting the expected efficiency, as problems have remained and many of them even expanded.

The unfortunate timing of the global economic crisis combined with poor management of public policy finances, including social policy, has led to sharp social spending cuts thus reducing the full range of social rights.

The Welfare State in Greece

During the '80s profound changes in the whole political spectrum were introduced. These changes contributed to the development of the welfare state in Greece by implementing reforms, particularly for the socially vulnerable. The construction of the National Health System and the establishment of a minimum pension for all citizens (1982) are two examples of specific policies whose primary objective was to promote social solidarity and the creation of an integrated model of equal social protection. Nonetheless, there have been major failures that have led to the enourmous expansion of the public sector to such an extent that it has become both ineffective and costly. In particular, there has been waste of public expenditure on health costs (drug costs and hospital equipment). Furthermore, the inflated public sector has resulted in the development of "clientalism" which has been used as a way to promote specific interests of the Greek political system (Yfantopoulos 2007).

During the '90s and in the early 2000's, the Greek government tried to implement political reforms in the public sector while cutting financial costs. These efforts were not crowned with success as they became a matter of conflict between the state and certain corporate interests that were inciting the masses to resist. In general, the partisan interests did not allow Greek governments to implement reformative policies for fear of losing part of their electoral strength.

Until the outbreak of the financial crisis in 2008, high worldwide growth rates and the large amounts of money entering Greece through the European Union's support programs contributed to the creation of a seemingly stable economic climate without solving the inherent weaknesses of the public sector. The large inefficiencies of the Greek public system became particularly evident after the onset of the global economic crisis. Furthermore, a belated key element was that after the accession of Greece to the Common Market its competitiveness decreased and its productive model became unsustainable due to the disproportionate increase in imports in comparison with exports (Indiana University-European Union Center 2011). The effect of this was the limitation of job vacancies, especially when EU funding declined, and the welfare state came under strong pressures as it was responsible for addressing the inherent dysfunctions which resulted in high unemployment, social vulnerability and financial hardship.

Since the occurrence of the financial crisis, the Greek welfare state policies have undergone large budget cuts. The most affected social groups are the vulnerable ones as they are the most exposed to economic and social problems. The cuts in welfare state spending and its inherent weaknesses, led to the reduction of services and benefits and their effectiveness. The main aspect of these restrictions is that they cause a general reduction in the principles of social rights, thus creating several social and economic problems.

The Greek Health policy sector may have started promisingly with the creation of the National Health System but exhibited inherent dysfunctions which now render it ineffective and too expensive for the state budget.

One of the most important factors causing the dual outflow of public funds in Health and Social Security sector, without the anticipated efficacy, is pharmaceutical expenditure and Greek Public Health Insurance Funds spend huge amounts of money for it (Figure 1).
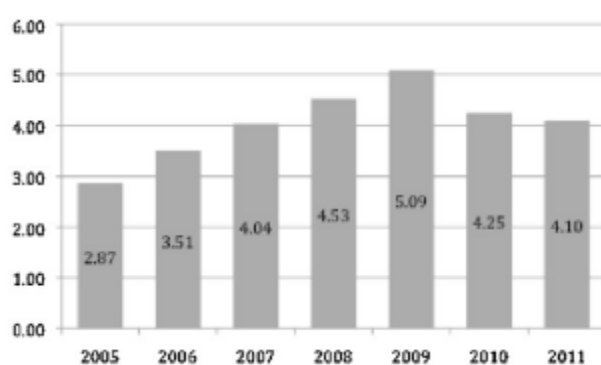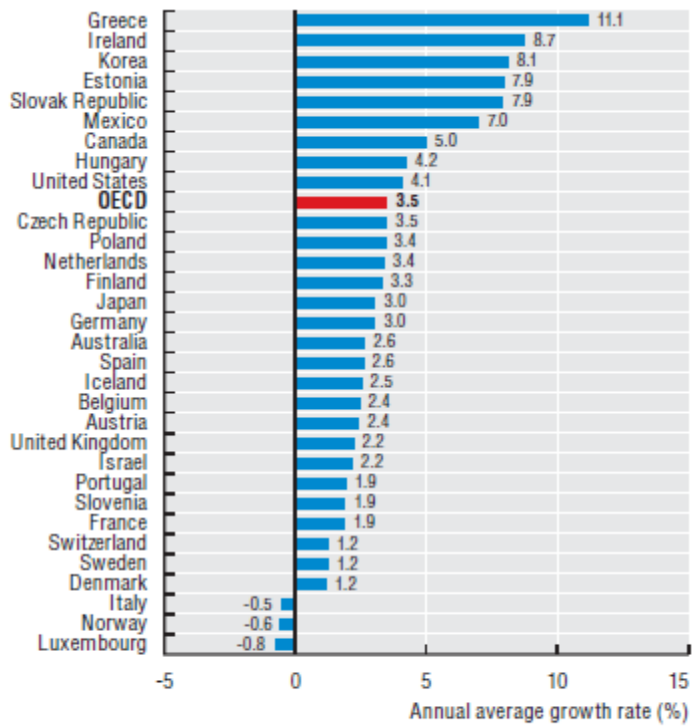

Figure 1: Annual pharmaceutical expenditure of the Greek Public Health Insurance Funds, 2005-2011 (billion Euros).

Source: Vandoros; Stargardt 2013.

One of the major reasons for the huge amounts spent on medicines is polypharmacy. Polypharmacy is an important issue for the Greek National Health System and has led to an irrational use of drugs which has also increased because of the growth in the Over-the-Counter-Drug (OTC) market. A common practice is the over-the-counter-medication purchase in order to treat a whole range of symptoms (Berry et al. 2004).

The lack of an integrated electronic prescribing system (Kounalakis et al. 2003; Klinis et al. 2012), the absence of measures to promote demand for medicines, high prices of genocimes, high prescription frequency and the inapplicability of the list of medicines contributed to the outflow of large amounts of funds for medicines. Moreover, the existence of corruption and "clientelism" among general practitioners (GPs) and some pharmaceutical companies inflated the problem and contributed to high public expenditure for medicines without any real effect for the patients (Transparency International 2012). The consequence of this situation is the increase in economic pressures on social security funds which are the carriers of specific coverage needs of stakeholders.

It can be observed that in the period 2000-2009 pharmaceutical costs rose rapidly as Greece is the first among the OECD countries in the annual growth of pharmaceutical expenditure (Figure 2).

Figure 2: Growth in real per capita pharmaceutical expenditure, 2000-2009.

Moreover, before the crisis, Greece had the highest percentage among the EU countries in terms of pharmaceutical expenses per capita. This high percentage seems to be due to the increase of drug consumption, mostly of OTC medication for self-treatment because of the inefficiencies of the Health Systems, stated above.
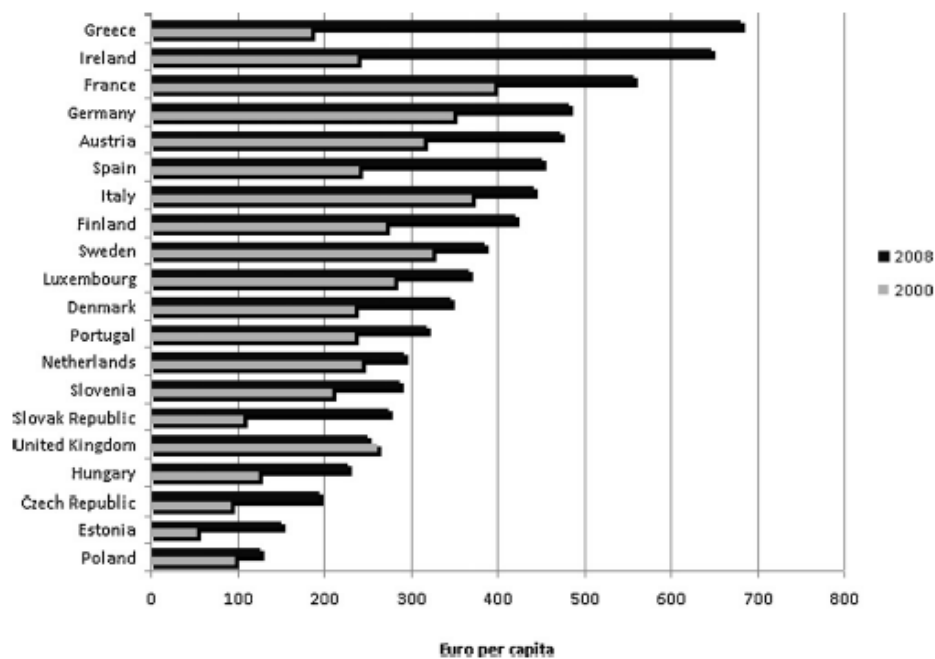

Figure 3: Per capita pharmaceutical expenditure in the European Union.

Source: Vandoros; Stargardt 2013.

The current economic environment and the financial crisis in many European countries and particularly in Greece, impose a great need on the success of the goal of reducing pharmaceutical expenses without any negative impact on the citizens. Several measures have been imposed since 2009 aiming at reducing these expenses (Figure 4). The measures include the increase in patients' involvement when GPs prescribe medicines, the introduction of genocimes in the medicine market in order to increase competition and, consequently, reduce the cost of medicines and the implementation of electronic prescriptions and a drug list. Unfortunately, the implementation of these measures has not had the expected results, with the exception of a slight reduction in the cost of medicines. But several problems with the quality, availability and participation of the insured in the market for drugs have emerged and made the measures ineffective.

Additionally, the Greek Health System faces several other dysfunctions. In order to combat these and to make the system more "efficient", governments since the onset of the financial crisis, have implemented horizontal austerity measures which have increased social vulnerability without having created a comprehensive framework for the protection of financially weaker groups. An example of such policies is that every patient must pay the sum of one euro per GP prescription and 25 € for medical expenses in National Health System hospitals as additional social insurance fees. But this is contrary to the aims of a socially equitable welfare system which should provide health benefits (hospitalization, granting prescriptions within NHS hospitals) to all insured citizens as a means of providing social protection.

The above examples of the implementation of health policies in Greece vividly illustrate the malfanctions of the entire social welfare system. Therefore, the welfare state in Greece, although created to promote social solidarity, has not achieved that goal because of these widespread malfunctions encountered in all areas of social welfare.
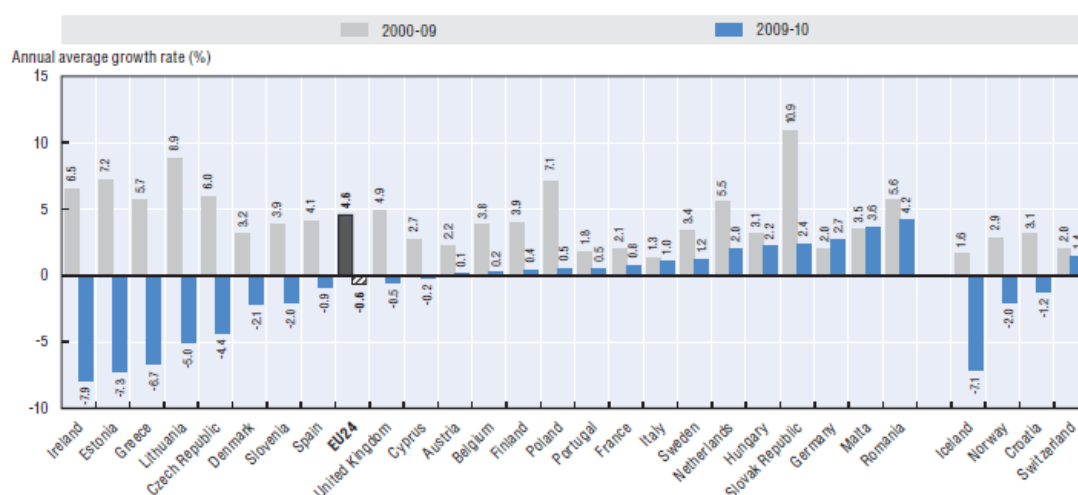
Source: OECD Health Data 2012; Eurostat Statistics Database; WHO Global Health Expenditure Database.

StatLink ⟲ http://dx.doi.org/10.1787/888932705444

Figure 4: Annual average growth in health expenditure per capita, in real terms, 2000-2010.

Case study-Social Security Provisions

A pension system, labor insurance and dealing with unemployment are the main pillars of social welfare. Since the outbreak of the financial crisis several reform measures have been imposed with the aim of "streamlining" public expenditure, such as the drastic curtailment of welfare rights.

The reduction in social welfare benefits increases social vulnerability problems, reduces the effectiveness of the welfare system and creates difficulties in the rationalization of the system's costs. The current welfare system can be viewed as unbalanced, that is, the greater the number of unemployed, as a result of austerity measures, the more difficult it is for the system to achieve its social and economic objectives.

This situation reflects the elimination of special benefits to the unemployed and the establishment of a unified benefit based on income, valid only for long term unemployment and aimed at reducing the number of people on unemployment benefit. Such policies increase social vulnerability considering the recent high unemployment rates (Figure 5).
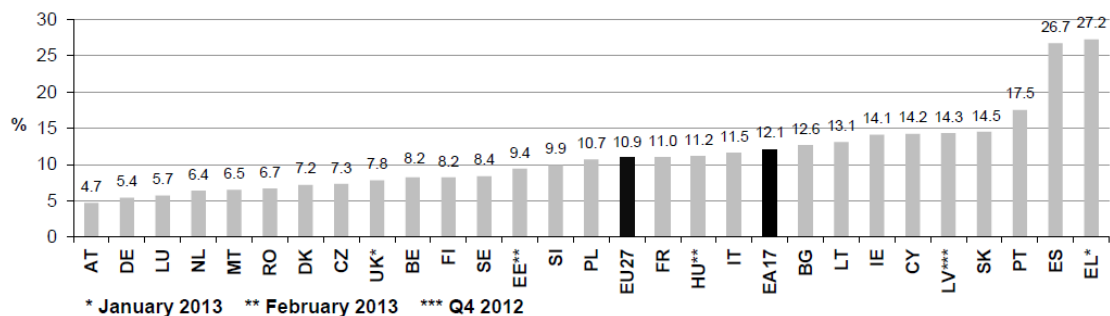

Figure 5: Unemployment rates in EU in March 2013.

Source: Eurostat 2013.

The Greek pension system comprises an important pillar of the welfare state that aims at protecting stakeholders both during work and retirement. European pension systems have faced several pressures during the last decades due to an increase in life expectancy and rises in unemployment as the worker population is the main financier of the pensionable population. Like other areas of the welfare state, the pension system has been hit by the economic crisis. The corollary of this is the introduction of structural changes during the last three years. The latter were imposed by the Medium-Term Fiscal Strategy 2013-2016 and include an increase in the retirement age by two years at the same time as the tiered reduction of pensions between 1000,01 € and 1500 € by 5% between 1500,01 € and 2000 € by 10% and more than 2000,01 € by 15%. Furthermore, gratuities will be reduced and further pension benefits abolished.[1] These horizontal measures affect mostly low income pensioners and can be regarded as measures which increase social and economic inequalities.

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[1] Additional money given during two specific periods per year

Social Security Provisions were designed to support vulnerable social groups and in order to deal with the different vulnerability problems specific different benefits had been established. With the implementation of the Medium-Term Fiscal Strategy 2013-2016 these differences cease to exist and general provisions and horizontal cuts have been established. These measures increase social-vulnerability problems as they do not provide solutions to growing unemployment and they cause huge financial pressures on social provision funds. Furthermore, it should be noted that if progressive structural changes had been implemented during the previous two decades the system would have been more fortified against the current economic crisis as it would have faced fewer structural problems (Rosanvallon 2003).

Policy Proposals

The implemented policies of the last three years are not purely national policies but have a degree of external intervention from the troika[2]. These austerity measures affect mainly the social provision policies and therefore social inequalities and social vulnerability are increasing (31% of the Greek population is at risk of poverty. Source: Eurostat 2012).

The current form of the welfare state is not able to protect vulnerable groups despite its huge expenditure (Matsaganis 2011). Therefore, there is a necessity to reform the Greek welfare state keeping a balance between economic rationalization of social spending and the existence of qualitative and efficient social benefit provisions. Also, the Health sector should implement a comprehensive program of electronic prescribing, promote quality genocime medicines and implement intervention both to pharmacy staff and to medicine-counter assistants aiming at promoting safe and effective use of non-prescription medicines. These policies would reduce pharmaceutical spending and save public funds. Furthermore, the promotion of an integrated primary care system will allow more effective treatment of health problems and reduce hospital care costs.

Moreover, it is suggested that the reforms in the insurance system should be based on principles of social equality and social rights and any benefit cuts should include socio-economic criteria. Horizontal measures such as the repeal of monthly payments to all pensioners affect negatively low income pensioners and are not socially equitable. In order to create a sustainable insurance system it is necessary to combat unemployment. This could be achieved through the promotion of economic growth and competitiveness which will generate investment and create new job vacancies. A reduction in bureaucracy, excessive legislation and the adoption of a socially fair and sustainable tax system will contribute to attracting investment, creating new job vacancies and thus to the sustainability of the welfare state which should not mutate to a charity state (Robolis 2012) that will not be able to solve any social issue.

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[2] International Monetary Fund, European Commission, European Central Bank.

References

1. Berry, D., Raynor, T., Knapp, P., Bersellini, E., (2004). "Over the counter medicines and the need for immediate action: a further evaluation of European Commission recommended wordings for communicating risk", *Patient Education and Counselling*, 53 (2): 129-34

2. European Union Center, Indiana University, (2011). The Euro and Greece Explained, Bloomington: Indiana University, College of Arts and Sciences.

3. Eurostat, (2012). Poverty and Social Exclusion in the EU27, Eurostat News Release, 171/2012, 3 December 2012.

4. Eurostat, (2013). Euro Indicators-Unemployment, Eurostat News Release, 70/2013, 30 April 2013.

5. Klinis, S., Markaki, A., Kounalakis, D., Symvoulakis, E.K., (2012). "Monitoring Reasons for Encounter via an Electronic Patient Record System: the Case of a Rural Practice Initiative", *International Journal of Medical Science*, 9(8):704-707. doi:10.7150/ijms.4999.

6. Kounalakis, D.K., Lionis, C., Okkes, I., Lamberts, H., (2003). "Developing an appropriate EPR system for the Greek primary care setting", *Journal of Medical Systems*, Vol. 27, No. 3.

7. Matsaganis, M. (2011). "The welfare state and the crisis: the case of Greece", *Journal of European Social Policy* 2011, 21: 501.

8. OECD, (2011). Health at a Glance 2011: OECD Indicators, OECD Publishing.

9. OECD, (2012). Health at a Glance 2012: OECD Indicators, OECD Publishing.

10. OECD, (2012). Social spending after the crisis: Social expenditure (SOCX) data update 2012, OECD Publishing.

11. Robolis, S., (2012). *Financial Crisis and Welfare State*, Thessaloniki: Epikentro. [In Greek].

12. Rosanvallon, P., (2000). *The New Social Question: Rethinking the Welfare State*, Princeton: Princeton University Press.

13. Sotirelis, G., Tsaitouridis, C., eds. (2007). *Social Rights and Welfare State Crisis,* Athina: Savvalas. [In Greek].

14. Transparency International, (2012). Corruption Perceptions Index 2012.

15. Vandoros, S., Stargardt, T. (2013). "Reforms in the Greek pharmaceutical market during the financial crisis", *Health Policy,* 109, 1-6.

16. Yfantopoulos, J. (2007). "The welfare state in Greece", in A. J. Bacaloumis (ed.), *About Greece*, General Secretariat of Communication, General Secretariat of Information, 328-342.