

STATE FUNDING FOR HEALTH-CARE SERVICES AND PUBLIC HEALTH: IS IT BASED ON THE PRINCIPLES OF ECONOMIC THEORY?

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Abstract

This paper is based on the classification of healthcare services and public health actions in light of some fundamental principles of public economics. Specifically, public health actions can be regarded as a public good while healthcare services seem to be a private good. This difference should have a direct impact on their optimum provision by the state, and therefore this classification has to affect the rationale of a resource allocation which is based on economic theory. However, the data do not confirm a situation in which a public good (public health) is largely financed by the state. On the contrary, healthcare services, which have the properties and the characteristics of a private good, are funded by the state with a high percentage of health expenditure. Thus, this paper describes the paradox observed in the health sector, which highlights a mismatch between economic theory and the policies for optimum resource allocation in this sector.

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Keywords: Public Health, Public Goods, Private Goods, Resource Allocation

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Introduction

Given the high and increasing level of health expenditure as a percentage of GDP in most of the developed countries (Jones, 2003), the search for the efficient distribution and the rational management of the resources allocated to this sector is an integral part of public financial management and a key determinant of fiscal sizes. At the same time, it is widely acknowledged and corroborated that health expenditure has a significant influence on the government budget. For this reason, health economics is an important scientific field, whose applications are related to the use of methodological tools for optimal resource allocation in the healthcare sector, in light of scarcity, opportunity cost (Sendi *et al.*, 2002) and the alternative uses of resources.

In general, government interventions in the healthcare sector follow two basic directions. The first is related to the planning, the construction and the operation of the infrastructure of healthcare services, while the second direction is based on public health and prevention activities. The difference between these is obvious and substantial, not only in the targets and the results in clinical and epidemiological terms, but also regarding their classification as public or private goods, as the latter are defined by economic theory.

Based on the above, this paper attempts to investigate the degree of rationality of the division of health expenditure between the directions referred above. This procedure is based on the basic principles of economic theory. Consequently, it aims to find the existence of a correlation between the given resource allocation in this sector and a theoretically more rational resource allocation from government funding in Greece.

Theoretical Background

The theoretical basis of this paper is divided into two sections. The first aims to define clearly the content and the purpose of healthcare services and public health activities. In this way, it is possible to highlight some of their properties and characteristics, which are useful in order to take rational choices and decisions and to formulate effective policies. The second section is related to the classification of healthcare services and public health activities as public or private goods. As stated previously, this classification is based on the fundamental principles of economic theory.

Firstly, it is important to note that according to the World Health Organization, healthcare services provision is the most “visible” function of a healthcare system, associated with the diagnosis, the management and the treatment of a disease. Healthcare services provision requires a range of inputs, including skilled human resources, biomedical and pharmaceutical technology, fixed capital, etc. Furthermore, the provision of healthcare services is applied to individuals or groups of individuals who suffer from the same diseases.

On the other hand, public health can be defined as a political and administrative project for the management and control of the major risk factors for health (Atwood

et al., 1997), based on the use of scientific data and empirical evidence. Public health is mainly related to disease prevention, the control of infectious and communicable diseases, health promotion and the adequate education of individuals in issues that affect their daily hygiene. Therefore, it is less related to individual therapeutic interventions (Verweij *et al.*, 2007). Specifically, public health can be defined as the science of preventing disease, prolonging life and promoting health through the organized efforts of a society (Acheson, 1988). In addition, it is important to remark that the establishment, operation and improvement of the institutions and actions that constitute public health are mainly related to the formation and the improvement of the level of health indicators (such as mortality rate, morbidity rate etc.) for the entire population.

According to historical experience, water quality control, the operation of sewage systems and the treatment of infectious diseases are major determinants of mortality reduction (Bahr, 1993; Susser *et al.*, 1996). In addition, improved nutrition, especially since the 18th century, seems to be an important factor in reducing mortality, while hygiene has also played an important role since the mid-19th century, reducing the mortality due to diseases carried by food or water. Thus, 20% of avoided cases of mortality, from the mid-19th century until the late 20th century, seem to come from hygiene measures and actions (McKeown, 1976). Generally, it is widely accepted that public health actions have been among the most important factors in the increase in life expectancy since the late 19th century (Cutler *et al.*, 2005).

In order to categorize the healthcare services and public health actions, as referred to previously, it is necessary to mention some fundamental theoretical elements of public economics. Thus, according to Table 1, a good is public if the consumption of it by an extra person costs little or nothing and if it is difficult or impossible to exclude this person from the consumption of it. Therefore, a good is considered as public if it presents the characteristics of non-excludability and non-rivalry.

Table 1. Public, private and common goods

	Excludable	Non-excludable
Competing	Private Goods (food, clothes, cars)	Common Goods (fish stocks)
Non-competing	Club Goods (satellite television)	Public Goods (free-to-air television, national defence)

Public health policies have both the characteristics of non-excludability and non-rivalry, because it is impossible to exclude an additional person from the consumption of them, and at the same time there is an almost zero marginal cost coming from the additional consumption. In contrast, the exclusion is potentially feasible in goods that are related to healthcare services (for example in medical treatment), while the additional consumption by one more person leads to additional costs. Therefore, according to this classification, public health actions can be considered as a public good, while healthcare services seem to be private goods (Rosen, 1995).

Furthermore, it is important to clarify that solidarity externalities are observed in national health systems with specific characteristics, like the Beveridge-type or Bismarck-type healthcare system (in which social insurance plays a dominant role). In these cases, healthcare services are treated largely as a quasi-public good, despite the fact that they are not free goods.

Thus, the treatment of infectious diseases, protection from environmental hazards affecting health or policies against smoking and alcohol have the core characteristics of a public good (McNeal, 1976; McMichael *et al.*, 1997), since they are actions related to public health and prevention. Moreover, public health actions, such as vaccination against an infectious disease, create externalities. To prove this, it is useful to mention an example of a vaccination. In this case, the more people vaccinated against a disease, the lower the probability of the appearance of a widespread epidemic. Therefore, the marginal benefit function ignores some important social benefits, which should be included.

In addition to the previous elements mentioned, it is important to mention the relationship between public health actions and healthcare services in terms of substitution and complementarity. Specifically, public health is a substitute for health care services in the case of vaccination, by which public health removes the need for diagnostic and therapeutic medical services for infectious diseases. On the other hand there are cases in which public health actions are complementary goods for health care services, such as in population screening tests.

Material and Methods

The methodology of this paper is based on the classification of healthcare services and public health actions into public or private goods. It is important to highlight that this classification is based on some specific characteristics that these public and private goods have, as defined by the principles of public economics.

As stated previously, public health actions are non-excludable and non-competing goods, whose consumption mainly benefits society as a whole. Therefore, they can be classified as public goods. In contrast, healthcare services primarily benefit the people who consume them. Despite this, healthcare services are often considered public goods, mainly because the government intervenes through social security programs for social and political reasons. Therefore, although healthcare services are theoretically private goods, the state intervention confers on them the status of a quasi-public good.

In this context, the funding of public health actions should be a priority of a national strategy for the health sector, combined with the efforts for effective control and management of the major health problems and hazards, which are also integral parts of public health.

Therefore, the allocation of expenditure on public health actions and healthcare services is an important point for health economics and policy. Despite the existence of a data base for these expenditures from the Organization of Economic Cooperation and Development (OECD), the data seem to be incomplete in the case of Greece. Thus, this paper attempts to estimate the expenditure on public health actions, through the synthesis of data from the state budget, the budgets of social insurance funds and the expenditure of households, combined with data elicited from expert assessments, i.e. personal interviews/communications with the CEOs and Presidents of the major social insurance funds in Greece.

Particularly, expenditure on public health can be expressed as:

$$\begin{aligned} TPHE &= PHE_s + PHE_p \text{ or} \\ TPHE &= PHE_g + PHE_i + PHE_p \end{aligned}$$

Where,

TPHE, the total expenditure on public health

PHE_s , the expenditure on public health by the government

PHE_p , the expenditure on public health by households

PHE_g , the expenditure on public health in the state budget

PHE_i , the expenditure on public health by the social insurance funds

The expenditure for public health actions and preventive measures in the state budget amounted to 57.527 thousand Euros in 2009, while the costs and wages for the people employed in public health (doctors and dentists for public health, public health supervisors, administrative staff and operational expenses) are estimated at 26.065 thousand Euros. Consequently, by adding the previous amounts, the expenditure on public health in the state budget was approximately 83.592 thousand Euros in 2009.

The expenditure of the social insurance funds (IKA, OPAD, OAEE, OGA and others), calculated either from data of their budgets or from estimates of their management. Thus, the expenditure of IKA on public health is 22.611 thousand Euros, while the expenditure of OPAD is estimated at 6.000 thousand Euros and the corresponding costs of OAEE are estimated at 7.211 thousand Euros. Regarding the other social insurance funds which have similar arrangements and procedures with OPAD, the expenditure (based on per capita expenditure of OPAD) approximates the amount of 8.500 thousand Euros.

Finally, an indirect estimate was used to calculate the expenditure of OGA on public health actions, based on the activity of the staff of health centers in rural areas and the distribution of working time in public health actions combined with the operating costs. The estimated amount was approximately 15.000 thousand Euros. Therefore, the public expenditure on public health actions (including government and social insurance funds) was about 143,600 thousand Euros in 2009.

Furthermore, the consumption of public health services by suppliers of the private sector (doctors and diagnostic centers), combined with the consumption and the cost of primary care, were used to assess the expenditure of households for public health actions. This expenditure is estimated at 175,000 thousand Euros.

It is important to stress that these estimates are based on the consumption and use of public health actions, and they do not include diagnostic tests, physician visits and counseling services, which are parts of clinical care and healthcare services. In addition, these estimates do not include the expenditure of state and regional and local government for public health actions related to the quality of water or environmental issues.

Undoubtedly, the data base and statistical series for the health sector in Greece have been improved since the mid-1990s, based on the OECD and EU standards. However, the primary production of data and indicators has significant problems, and as a result, the interstate comparisons are limited and indicative only.

The aforementioned reflect the questioning about the degree of accuracy of the figures for distribution of health expenditure, especially by the government. This issue becomes more important in the case of Greece, where the major risk factors associated with public health (such as smoking, alcohol abuse, high body-mass index in a large proportion of the population, low participation in physical activity, malnutrition) are high in frequency, endangering the health status of the population (Institute for Social and Preventive Medicine, 2006, 2008; National School of Public Health, 2006, 2011).

Results

The distinction between the expenditure on healthcare services and public health in Greece is not clear, mainly because of the absence of data about the expenditure on public health. However, given the necessity of some indicative data for this issue, an estimate of expenditure on public health was attempted, which is summarized in Table 2.

This estimate was based on (a) the expenditure in the state budget (b) the expenditure of the social insurance funds and (c) the expenditure of households. In summary, the three units mentioned previously constitute the total expenditure on public health. It is worth mentioning that the total expenditure includes the prevention and public health actions of the Ministry of Health and Social Solidarity, the salaries of research and administrative staff involved in public health, the activities of social insurance funds as well as household expenditure, which is a part of the expenditure on primary health care.

Table 2. Expenditure on Public Health in Greece

Type of Expenditure	In million Euros	Percentage
Total Health Expenditure	22.891	100,0
Public	13.949	60,7
Private	9.032	39,3
Total Expenditure on Public Health	318,6	100,0
Public	143,6	45,1
Government	83,6	26,2
Social Insurance Funds	60,0	18,9
Private	175,0	54,9

Source: National Statistical Service of Greece, OECD Health Data 2011 and own estimations.

According to the previous assessment, the expenditure on public health as a percentage of total health expenditure is estimated at 1.5%. Moreover, the average expenditure for OECD countries is estimated at 3.1% of total health expenditure and 2.9% for EU countries in 2008¹³. Moreover, the public expenditure on public health is estimated at 1.1% of public expenditure on health, while the total expenditure on public health is approximately 45% from public spending and 55% from private spending. Regarding public expenditure on public health in other countries, this was 82.7 % of total expenditure on public health in OECD countries, and 77.1% in EU countries in 2008.

Discussion and Conclusions

In the theoretical background of this paper there is a reference to the necessity for a classification of healthcare services and public health actions, based on the difference between public and private goods. The purpose of this classification is to examine more effectively the size and the structure of health expenditure and to recommend a different way of thinking on the effective allocation of scarce resources in the alternative objectives of health policy.

Based on the aforementioned, some specific characteristics can be inferred, which are worth analyzing. First of all, public health actions retain the characteristics of a public good, while the provision of healthcare services is regarded as a private good, which, under the umbrella of social insurance is acknowledged as a “merit good”.

Table 3. Expenditure on Health and Public Health in Greece, European Union and OECD

	OECD (31)	EU (27)	Greece
Total Health Expenditure (% of GDP)	9,0	8,4	9,7
Public Expenditure (% Total Health Expenditure)	72,8	73,5	60,3
Private Expenditure (% Total Health Expenditure)	27,2	26,5	39,7
Expenditure on Public Health (% Total Health Expenditure)	3,1	2,9*	1,4
Public Expenditure on Public Health (% Expenditure on Public Health)	82,8	77,1*	45,1
Private Expenditure on Public Health (% Expenditure on Public Health)	17,1	22,9*	54,9

Source: OECD Health Data 2010 and own estimations

*Data for the EU-19 countries

Secondly, according to OECD data, expenditure on public health is internationally a small percentage of total health expenditure. Thirdly, the expenditure on public health in Greece (estimated in this paper) is an even smaller percentage of total health expenditure compared to other countries. Finally, the composition of expenditure on public health in Greece has large differences compared with other developed countries.

However, the scientific debate surrounding the issue of state funding in the health sector can be related to the absence of policies and actions for prevention and public health. Moreover, these actions have proven to have an important role in the elimination of some major diseases which affected humanity for many years, and as a result, they contributed to the increase of life expectancy and improved some important epidemiological indicators. Despite the significance of these, there is a lack of data, which is something that reveals serious distortions in methodology used to set priorities and to structure health expenditure rationally. Therefore, the funding policies for public health actions are not based on evidence, data and measurements, which seem to be necessary for effective policy plans.

Furthermore, given the contribution of public health in improving health, the problem that arises is related to both the low public expenditure on public health as a percentage of the total expenditure on public health as well as the low total expenditure on public health as a percentage of total health expenditure. In short, although it seems

that there is no evidence to prove that healthcare services have greater contribution or effectiveness in improving health, the funding is very unequal, to the detriment of public health actions.

Although the issues of public health and prevention have special significance in Greece, owing to reasons analyzed previously, the expenditure on public health is very low, even compared with the corresponding low expenditure of the other OECD and EU countries.

The above seem to be important, since the risk factors associated with lifestyle, the burden of the environmental problems and the absence of well-organized screening programs requires changes in the policies implemented. In this way, public health actions can be an integral part of new policy planning.

Furthermore, according to the estimate made for the expenditure on public health in Greece, an important paradox is observed, which does not occur in the other developed countries. Specifically, this paradox is related to the fact that the expenditure on a public good, such as public health actions, is equally divided between the public and the private sector. However, according to the principles of public economics and experience so far, public goods are mainly provided by the state, owing to market failures. As a result, the consumers have to bear the burden of paying for public health actions, while these should be provided by the state, like other public goods.

The issue of the state funding of healthcare services and public health has a leading political and social role. Particularly, a private good, such as healthcare services, is funded by the state, while a public good, which can be regarded as its substitute, is underfunded. Although there are examples of private goods provided by the state, in the name of social policy and solidarity, it is a paradox that a public good, whose significance is widely accepted, has very few available state resources committed to it.

Regarding some market failures, it is noteworthy that the nature of externalities seems to be different, when compared with externalities such as air pollution. Specifically, a massive vaccination or a pandemic can be regarded as positive and negative externality respectively, as the action of an agent directly affects the other agents (e.g. the reduction of the possibility of a transmission of a contagious disease, in case of a vaccination). A classical way to face the externalities was expressed by Ronald Coase (establishment of property rights), while Pigovian taxation is also a policy measure to reduce the impact of negative externalities. However, these approaches cannot be the responses to such externalities. For example, in the case of a pandemic, the sufferers did not cause their disease, and thus it is unfair and unreasonable to impose a form of “punishment” or “conformity” on them. Thus, an effective solution could be a prevention strategy, in order to mitigate the negative effects. However, actions such as a prevention strategy require systematic funding of public health actions.

In many countries, including Greece, the state provides both health insurance and healthcare services. In Greece, and generally in the EU, healthcare services are funded

by the state, regardless of the ability to pay (Mossialos and Thomson, 2002). Thus, the state insurance funds do not select insurance packages for individuals or groups with specific characteristics (e.g. the elderly or people with chronic diseases); they just insure the population. The vast majority of people living in Greece are insured, and therefore there are no phenomena of adverse selection or “cream-skimming”, as the government intervenes in response to such market failures. Theoretically, the state guarantees equal access to all, regardless of the heterogeneity of risk types or individual characteristics.

In light of the above, one can claim that financing health care services is a manifestation of belief in equity. This is a true opinion; however the purpose of this paper is to examine the opinion that by supporting public health actions, a national health system can reduce the need for healthcare services. This does not do away with the fact that a national health insurance system should be a main priority of every state. However, this requires a specific plan in order to combine equity and efficiency. The recent example of the Greek national insurance fund highlights a model which does not promote a targeted and structured national insurance policy. Specifically, the almost full insurance coverage provided by the government leads to phenomena which are related to moral hazard, as there is a trade-off between risk reduction and the deadweight loss from moral hazard (Manning and Marquis, 1996). In light of the above, a response to this fact is a change in the rationale and the size of the insurance coverage and the relocation of resources to public health actions.

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