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Xesfingi, Sofia and Vozikis, Athanassios

University of Piraeus

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Citizens' Preferences on Health Care Expenditure Allocation: Evidence from Greece

Sofia Xesfingi and Athanassios Vozikis

Abstract

Priority setting and resource allocation across various health care functions is a critical issue in health policy and strategic decision making. As health resources are limited while there are so many health challenges to resolve, consumers and payers have to make difficult decisions about expenditure allocation. Our research focus on the (dis)agreement between citizens' preferences and actual public health expenditure across broad health care functions, on whether this (dis)agreement is persistent, on whether various demographic factors amplify this (dis)agreement and to derive useful implications for public health policies. Using survey data of 3,029 citizens in Greece for the year 2012 and employing logit estimation techniques, we analyzed the effect of demographic and other factors in shaping citizens' (dis)agreement with public health expenditure allocation. Our results demonstrate the important role of income, family members and residence in shaping citizens' preferences regarding health expenditure priorities in almost all health care functions, while other demographic factors such as job, age, gender and marital status do partly associate and play a significant role.

1. Introduction

Developed countries spend considerable resources on health, though there are large variations in the levels and rates of growth in the health spending. In 2012 EU member states devoted an average 8.7% of their GDP to health spending, with Greece spending to be 9.3% (OECD, 2014). According to recent estimates, spending on health will mount to 20% of GDP by 2050 in most of OECD countries (Drouin *et al.* 2008).

Health systems are mostly funded either from general public revenues (e.g. Canada), or through a social security system with a separate budget and hypothecated taxes or contributions (e.g. Australia, France, Belgium, Japan and Germany). The health care system in Greece is financed by a mix of public and private resources. Public statutory financing is based on social insurance and tax (Economou, 2010). Greece has seen per capita health spending fall by 9% each year since the onset of the severe economic crisis in 2009. Health care rationing refers to mechanisms that are used to allocate health care resources. As (financial and health services related) resources are limited, to meet health system goals set by the World Health Organization (WHO, 2010) (WHO, 2015), consumers and payers demand greater accountability and have to make difficult decisions about which health functions to support (Dresser, 2009), while unequal provision of health services, rapid urbanization and civil conflict are documented, even when the same level of resources is allocated to public health across different countries (Ghobarah *et al.*, 2004). Consequently, priority setting and resource allocation across different health functions is an issue of utmost importance for the present and for the years to come.

Although citizens' preferences formation may shape resource allocation decisions in public and private health services delivery, there is still scant evidence on formal public involvement in health care priority setting and resource allocation activity (Mitton *et al.*, 2009). Early debates on public involvement in healthcare decision-making have mainly aimed at strengthening the role of citizens as consumers in the healthcare sector, while later debates emphasized the role of citizen participation and competency as a means of improving the performance of the healthcare system (SVRKiG, 1997) (Deutscher Bundestag, 2001). Among the recent attempts, the study of Church *et al.* (2002) examined the concept of citizen participation in the context of a series of basic questions through which decision-makers may draw some policy relevance. This study became a point of reference for an informed discussion of the possibilities for improved citizen participation in health-care decision-making. Whitty *et al.* (2014) discussed the theoretical framework about the optimal approach

to access public preferences. Furthermore, Rosen and Karlberg (2002) compared the views of citizens and health-care decision-makers on health-care financing and revealed that the general public have high expectations on public health-care that do not fit with the decision-makers' views on what should be offered. In a review of the empirical literature, Carpini, et al (2004) discussed the expectations, drawn from deliberative democratic theory, regarding the benefits (and, for some, pitfalls) assumed to derive from discursive participation and citizen engagement. According to Shaw *et al.* (2001), citizens require resource allocation decision in health to be informed by considerations of equity as well as efficiency. The study of Dolan and Shaw (2001) demonstrated that people are willing to sacrifice overall health benefits for a more equal distribution of health. Analogous evidence is documented in Schwappach (2003), where the vast majority of the respondents were willing to trade efficiency for a more equal distribution of resources. In similar vein, the study of Anderson *et al.* (2011) showed that there was strong support among respondents for giving equal priority to people regardless of their personal characteristics, while findings of other studies suggest that health care is informally rationed according to the age and sex of the patient (Brockmann, 2002). Finally, in Wiseman *et al.* (2003) respondents were asked whether they felt the preferences of general public should be used to inform priority setting. Results showed that the public overwhelmingly wanted their preferences to inform priority-setting decision in health care.

The purpose our research was to study whether there is a (dis)agreement between citizens' preferences and actual public spending on a spectrum of health care functions, whether this (dis)agreement is persistent across broad health care programs, whether demographic factors of the participants amplify this (dis)agreement and to derive useful implications for public health care policies.

We chose to study Greece for three main reasons: First, the out-of-pocket health expenditure is higher than anywhere else in the European Union either as a proportion of gross domestic product (GDP), or in per capita terms (OECD, 2014a). Second, Greece is in recession since 2009 and given tight budgets it is interesting to analyze the allocation of the limited health resources and whether citizens consent to this (Zavras, et al., 2012). At the same time, it can be argued that the financial crisis is a no easy way out, as elevated prevalence of certain diseases is already reported, although many researchers dispute over a causal association between recession and these health outcomes (Fragoulakis, et al, 2014). Finally, Greece, as also many of the Mediterranean countries, has demographics (low birth rate, high longevity, high unemployment, etc) that could consist a serious issue for the future of the health care sector (WHO, 2011).

Our results demonstrate the important role of income, family members and residence in shaping citizens' preferences regarding health financing priorities in almost all health core functions, while other demographic factors such as job, age, gender and marital status do partly associate and play a significant role.

2. Methodology

This section presents the research methodology and the data used, and describes the model and the estimation method.

2.1 Data

We conducted a survey taking a convenient sample of 3,029 persons (citizens) in Greece during the year 2012. Our research included a wide range of socio-economic characteristics of the participant citizens while the latter, are requested to allocate a hypothetical amount of money (i.e. 100€) in the System of Health Accounts (SHA) health care functions (ICHA-HC), but including also investment, though treated separately as Capital formation in health, to meet the total expenditure in health (current spending plus Capital formation) (OECD, Eurostat, WHO, 2011). Given the actual public spending on all equivalent health programs, we were able to calculate the size and the statistical significance of the difference between citizens' preferences and the public spending in health care in each health care function. Finally, we employed logit estimation techniques to study the effect of demographic factors in shaping citizens' (dis)agreement with public spending on health care.

Table 1, below, presents a short description of these categories.

Table 1: The classification of health care functions at the first-digit level

Health Care functions	Description
1 HC.1 Curative care	The principal medical intent is to relieve symptoms of illness or injury, to reduce the severity of an illness or injury or to protect against exacerbation and/or complication of an illness which could threaten life.
2 HC.2 Rehabilitative care	Emphasis lies on improving the functional levels of the persons served and where the functional limitations are either due to a recent event of illness or injury or of a recurrent nature (regression or progression).
3 HC.3 Long-term care (health)	Ongoing health and nursing care given to in-patients who need assistance on a continuing basis due to chronic impairments and a reduced degree of independence and activities of daily living.

4	HC.4 Ancillary services	Clinical laboratory, diagnostic imaging, patient transport and emergency rescue.
5	HC.5 Medical goods	Retail trade, fitting, maintaining and renting medical goods and appliances (public pharmacies, opticians, sanitary shops, teleshopping).
6	HC.6 Preventive care	Vaccination campaigns, school health services, prevention of (non)communicable diseases, occupational health care.
7	HC.7 Governance, and health system and financing administration	Planning, management, regulation and collection of funds and handling of claims of the delivery system.
8	HK Capital account	Capital formation, education and training of health personnel, research and development, environmental health, food and hygiene.

Source: International Classification of Health Accounts (OECD, Eurostat, WHO, 2011).

The first five health care functions consist the major component of the personal health services and goods, while functions (6) and (7) form the major component of the public health (collective) services. The sum of functions (1) to (7) consist the total current expenditure on health. Finally, adding function (8) one gets the total health expenditure categories.

A number of demographic factors were also requested and recorded from the participants such as *Gender*, *Age*, *MaritalStatus*, *Job*, *Residence*, *Members* and *Income*. The ordinal variables were classified according to Hellenic Statistical Authority classification standards. More specifically, *Gender* takes the value of 0 for male and 1 for female; *Age* consists of six intervals and takes the value of 1 for 15-24, 2 for 25-39, 3 for 40-54, 4 for 55-64, 5 for 65-79 and 6 for >80 years old; *MaritalStatus* is a categorical variable and takes the value of 1 for singles, 2 for married, 3 for divorcees, 4 for separated and 5 for widows; *Job* represents that the employment status and is 1 for employed, 0 otherwise; *Residence* indicates the location of residency and is 1 for the prefecture of Athens, 0 otherwise; *Members* is 1 for a single individual, 2 for a married couple, 3 for a family with one child, and so on; *Income* level is grouped in eight classes and takes the value of 1 for <€750, 2 for €751-1100, 3 for €1101-1450, 4 for €1451-1800, 5 for €1801-2200, 6 for €2201-2800, 7 for €2801-3500, 8 for >€3501 (EL.STAT, 2014).

Table 2, below, presents the summary statistics of our sample participants.

Table 2: Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
<i>Gender</i>	3,029	0.503	0.500	0	1
<i>Age</i>	3,029	2.925	1.427	1	6
<i>MaritalStatus</i>	3,029	1.704	0.723	1	5

<i>Job</i>	3,029	0.686	0.464	0	1
<i>Residence</i>	3,029	0.837	0.369	0	1
<i>Members</i>	3,029	2.888	1.374	1	6
<i>Income</i>	3,029	5.158	2.230	1	8

As Table 2 shows, half of our sample participants are men, while the majority of the participants are between ages of 25 and 39. Participants, on average, have one child and live in the prefecture of Athens. Finally, they belong, on average, to middle income classes and about 70% of them are employed.

Next, Table 3 presents the citizens' preferences to public health expenditure allocation, along with the actual public health spending among Health Care functions in Greece for 2012.

Table 3: Summary statistics for health expenditure allocation (citizens' preferences vs. actual public spending)

Variables	Citizens' preferences over health expenditure allocation %					Actual public health expenditure allocation %
	Obs	Mean %	Std. Dev.	Min %	Max %	
<i>1. Curative care</i>	3,029	17.520	8.867	0	60	64.23
<i>2. Rehabilitative care</i>	3,029	12.157	6.564	0	75	0.63
<i>3. Long-term care</i>	3,029	11.104	6.337	0	82	0.66
<i>4. Ancillary care</i>	3,029	8.633	5.239	0	60	4.01
<i>5. Out-patients</i>	3,029	9.095	5.833	0	50	26.55
<i>6. Prevention-Public health</i>	3,029	15.331	8.960	0	79	1.68
<i>7. Administration</i>	3,029	11.170	6.521	0	50	2.15
<i>8. Capital formation</i>	3,029	14.992	11.078	0	98	0.09

Source: OECD Health Statistics 2014 and own calculations

Table 3 shows that Greek citizens allocated the hypothetical amount (on health expenditure) almost equally (about 12.5%) across all health categories. Furthermore, they allocated more than half of the budget (almost 60%) to personal health services and goods (variables 1-5), one quarter to collective health care services (variables 6-7), and the rest (15%) to capital formation (variable 8). The corresponding actual public expenditure in the aforementioned categories is 64.23, 0.63, 0.66, 4.01, 26.55, 1.68, 2.15 and 0.09, respectively. Information on the public's health expenditure in Greece for the year 2012 among Health

Care functions is calculated from OECD (2014b) data.

Table 4, below, presents the correlations across Health Care functions (civilian's preferences)

Table 4: Correlations across Health Care functions (citizens' preferences)

Variables	1	2	3	4	5	6	7	8
1. Curative care	1.000							
2. Rehabilitative care	0.148*	1.000						
3. Long-term care	-0.068*	0.164*	1.000					
4. Ancillary care	-0.114*	-0.067*	0.071*	1.000				
5. Out-patients	-0.153*	-0.105*	-0.098*	0.088*	1.000			
6. Prevention-Public health	-0.265*	-0.233*	-0.214*	-0.230*	-0.131*	1.000		
7. Administration	-0.271*	-0.280*	-0.213*	-0.143*	-0.085*	0.067*	1.000	
8. Capital formation	-0.340*	-0.364*	-0.298*	-0.159*	-0.171*	-0.198*	-0.026	1.000

Note: (*) indicate significance at 5% level of significance.

As Table 4 shows, there is no strong correlation across Health Care functions, as the Pearson correlation coefficient is small (smaller than 0.3 in most cases). A stronger association, however, is demonstrated between the variables “*capital formation*” with “*curative care*” (0.34) and “*rehabilitative care*” (0.36).

So far, we have discussed how citizens have expressed their preferences for allocating a hypothetical amount of money (budget) across major Health Care functions. This allocation reveals only the preferences of the citizens on how the government should allocate (and prioritize) the expenditure across these Health Care functions. Nevertheless, actual public health expenditure on these functions seems to be indeed very different.

To statistically examine these differences, we performed the following test: The citizens' expenditure allocation preferences means were tested under the hypothesis that they are equal with the public health expenditure allocation means in every Health Care function (variable). We reject the null hypothesis at 95% interval confidence ($\alpha=5\%$ level of significance) for all cases. Therefore, the means of the citizens' preferences are statistically different from the actual public expenditure means for all eight functions. Consequently, there seems to be some disagreement between citizens' preferences and actual public expenditure on health expenditure allocation.

Furthermore, our study aims to quantify this ‘disagreement’. In doing so, we took the difference between the two stakeholders' (citizens and government) means, for each of the

eight variables (functions) and calculated the distribution of deviations. Then, we introduce a dummy variable taking the value of 1 for ‘strong’ disagreement between the two stakeholders for deviations higher than the 66th percentile of the distribution; 2 for ‘modest’ agreement for deviations between the 3rd and 66th percentile of distribution; and finally, 3 for ‘almost’ agreement for deviations below the 33rd percentile of the distribution.

In the next section, we present our model, which aims to explain the sources of this (dis)agreement.

2.2 Model

The likelihood of a citizens’ preferences to coincide with actual public health expenditure allocation can be described by an ordered logit model as follows:

$$\Pr(Y=c|X_i) = F(X_i\beta),$$

where, the endogenous variable Y is the degree of citizens’ agreement with actual public health expenditure allocation and is an integer ranging from 1 (fully disagree) to 3 (fully agree); F is the standard logistic cumulative distribution function; and X is a set of covariates defined as:

$$X_i\beta = \beta_0 + \beta_1\textit{Gender}_i + \beta_2\textit{Age}_i + \beta_3\textit{MaritalStatus}_i + \beta_4\textit{Job}_i + \beta_5\textit{Residence}_i + \beta_6\textit{Members}_i + \beta_7\textit{Income}_i + \varepsilon_i, \varepsilon_i \sim \text{Logistic}(0,1)$$

where, *Gender* is a dummy variable that takes the values 0 and 1 if the citizen is male and female respectively; *Age* is the age of the citizen and is a dummy that takes the value of 1 (for ages 15 to 24), 2 (for ages 25 to 39), 3 (for ages 40 to 54), 4 (for ages 55 to 64), 5 (for ages 65 to 79), and 6 (for ages >80 years old); *MaritalStatus* is a dummy and is 1 for singles, 2 for married, 3 for divorced, 4 for separated, and 5 for window; *Job* is a dummy for the employment status of the citizen and takes the values 0 for unemployed and 1 employed; *City* is a dummy variable that takes the value 1 if the citizen lives in Athens and 0 otherwise; *Members* is the citizen’s total family members (is 1 for a single person, 2 for a married couple, 3 for a family with one child, and so on); *Income* is a dummy for the income level of the citizen and is 1 for income level < €750, 2 for €751-€1100, 3 for €1101-€1450, 4 for €1451-€1800, 5 for €1801-€2200, 6 for €2201-€2800, 7 for €2801-€3500, and 8 for income level > €3501.

The selection of the variables in X_i set can be justified by various studies (Anderson *et al.*, 2011) (Werntoft, Hallberg, and Edberg, 2007a) (Werntoft, Hallberg, and Edberg, 2007b) (Kyriopoulos *et al.* 2014) (WHO, 2010) (Diederich, Winkelhage, Wirsik, 2011) (Rosen and Karlberg, 2002) (Economou *et al.*, 2004)

3. Results

Table 5, below, presents estimates of odds ratios for each one of the eight Health Care functions. One can read the odds ratios as follows: if the odd ratio, a , is bigger than 1 ($a > 1$), then the probability of a citizen being satisfied with the actual public health expenditure allocation, i.e. $Y = 3$ (full agreement), increases by $(a-1)*100\%$, whereas the probability decreases by $(1-a)*100\%$, if the odd ratio is smaller than one ($a < 1$).

Table 5: Logit Estimates (odds ratios) for Various Health Care functions.
 (dependent variable: Deviation between citizens' preferences and actual public health expenditure)

Odds Ratios	<i>Personal health services and goods</i>					<i>Public (Collective) health care services</i>		<i>Capital formation</i>
	1	2	3	4	5	6	7	8
	<i>Curative care</i>	<i>Rehabilitative care</i>	<i>Long-term care</i>	<i>Ancillary care</i>	<i>Out-patients</i>	<i>Prevention - Public Health</i>	<i>Administration</i>	<i>Capital formation</i>
<i>Gender</i>	0.975 (0.191)	1.231*** (0.094)	0.939 (0.078)	0.937 (0.148)	1.041 (0.106)	1.008 (0.075)	0.852* (0.083)	1.194** (0.085)
<i>Age</i>	0.875 (0.073)	0.932* (0.031)	1.026 (0.037)	1.067 (0.077)	0.936 (0.043)	0.976 (0.032)	0.980 (0.044)	1.091*** (0.034)
<i>MaritalStatus</i>	1.062 (0.135)	1.007 (0.059)	0.851** (0.055)	1.105 (0.165)	0.989 (0.090)	0.997 (0.062)	1.191** (0.101)	1.010 (0.057)
<i>Job</i>	3.322*** (0.943)	0.974 (0.090)	1.246** (0.124)	1.260 (0.227)	0.884 (0.105)	0.917 (0.082)	0.758** (0.092)	1.389*** (0.119)
<i>Residence</i>	0.610** (0.140)	0.748*** (0.080)	0.903 (0.104)	1.344 (0.264)	0.693*** (0.089)	0.756*** (0.082)	1.152 (0.147)	1.180* (0.115)
<i>Members</i>	1.041 (0.076)	0.917*** (0.029)	0.910*** (0.030)	1.008 (0.066)	1.146*** (0.049)	1.170*** (0.036)	1.094** (0.045)	0.974 (0.030)
<i>Income</i>	0.783*** (0.039)	1.037* (0.020)	1.061*** (0.022)	1.051 (0.041)	0.937** (0.024)	0.932*** (0.017)	1.007 (0.025)	0.998 (0.018)
Pseudo-R ²	0.0614	0.0057	0.0072	0.0072	0.0117	0.0081	0.0075	0.0055
Wald	50.13	26.45	29.40	12.85	34.25	43.02	23.72	31.22
Obs	3,029	3,029	3,029	3,029	3,029	3,029	3,029	3,029

Note: Heteroscedasticity-robust standard errors in parentheses; (***), (**), (*) indicate significance at 1%, 5%, and 10%, respectively.

According to Table 5, all demographic factors explain the deviations between citizens' preferences with actual public health expenditure allocation. Among the demographic factors, *Members*, *Residence* and *Income* appear to be statistically significant in the majority (5 out of 8) of Health Care functions. The factor *Job* is statistically significant in almost half of the Health Care functions, *Gender* is statistically significant in three functions and finally *Age* and *MaritalStatus* are statistically significant in only two functions.

More specifically, the number of family members (*Members*) has a positive and statistically significant role in the majority of Health Care functions. For instance, for the category "medical goods and services dispensed on out-patients" (5), when an additional member in a participant's life, increases the probability of a citizens' preference to be in agreement with public health expenditure allocation increases by 14.6% $[(1.146-1)*100\%]$. Similar positive effect is also documented for the functions "public health-prevention" (6) and "administration" (7), where the probability of a citizen to be satisfied with public health expenditure allocation increases by 17% and 9.4%, respectively. However, the opposite holds for the categories of "rehabilitative care" (2) and "long-term care" (3) in the case when a citizen's family is getting bigger, then his/her probability of being satisfied with public health expenditure allocation decreases by 8% and 9%, respectively.

Furthermore, the income class of a participant (*Income*) has a positive and statistically significant association with the function "long-term care" (3). As the citizen's level of income increases and changes income class, the probability of being satisfied increases by 6.1%. For the functions "curative care" (1), "medical goods dispensed to out-patients" (5) and "prevention-public health" (6), the income effect is negative. That means the higher the level of income of a citizen is, the probability of being in agreement with public's spending decreases by 21.7%, 6.3% and 6.8%, respectively.

Where the civilian resides (*Residence*) also plays a role in a civilian's preferences and perception of health rationing. This factor is statistically associated with the health categories of "curative care" (column 1), "rehabilitative care" (column 2), "medical goods dispensed to out-going patients" (column 5), "health categories of prevention-public health" (6) and "capital formation" (column 8). In the latter case, there is a positive association, with the probability of a civilian being in fully agreement with public health expenditure allocation to increase by 18% if the citizen moves from the rest of the country to the prefecture of Athens. In all other aforementioned cases, the *Residence* effect is negative and the average decrease of a citizen's probability of being in fully agreement with the actual public health expenditure allocation is 30%.

The employment status of a citizen is also an important factor for shaping the degree of

(dis)agreement between public and his/her own hypothetical expenditure allocation. The estimate of *Job* is statistical significant in four functions, namely “curative care” (1), “long-term care” (3), “administration” (7) and “capital formation” (8). More specifically, there is a positive association with respect to “curative care”. Positive is also the *Job* effect for the functions “long-term care” (3) and “capital formation” (8). When a citizen is employed, the probability of being in fully agreement with the actual public health expenditure allocation increases by 24.6% and 38.9%, respectively compared to an unemployed person. The opposite effect is documented for the “administration”, where the holding of a job leads to a decrease of the probability of in fully agreement by 24.2%.

The factor *Gender* seems to be statistically important only for the function “rehabilitative care” (2) and “capital formation” (8). In both variables, there is a positive and strong effect (at 1% and 5% level of significance, respectively), while a negative but with marginal statistical significance (at 10% level of significance) is documented for the function “administration” (7). More particularly, women are more likely to be in agreement with actual public health expenditure allocation (about 23.1% and 19.6% respectively for the functions 2 and 8) compared to a man.

Further, the demographic factor of *Age* seems to be statistically significant only for the function “capital formation” (8). We find that as the citizen grow older, the likelihood of being in fully agreement with actual public health expenditure allocation increases by 9.1%. A marginal significance is also demonstrated for the function “rehabilitative care” (2).

Finally, the marital status (*MaritalStatus*), which plays an important role in two functions that of “long-term care” (3) and “capital formation” (8), is a categorical variable, i.e., there is no intrinsic ordering to the categories, and, therefore, a marginal effect analysis is required and performed in Table 6 in this section below.

Table 6 below, presents the marginal effect analysis for *MaritalStatus* and for the functions in which appear to be statistically significant.

Table 6: Marginal Effects Analysis

Marginal effect	<i>Long-term care</i>	<i>Administration</i>
<i>MaritalStatus</i>		
1 (single)	0.747 (0.015)	0.795 (0.014)
2 (married)	0.718 (0.013)	0.843 (0.010)
3 (divorced)	0.667 (0.043)	0.795 (0.039)

4 (separated)	0.620 (0.052)	0.886 (0.033)
5 (widow)	0.842 (0.100)	0.772 (0.133)

Note: Heteroscedasticity-robust standard errors in parentheses.

The marginal effect analysis of the marital status effect can be read as follows: the probability of a citizen being satisfied because the government met his/her preferences with respect to public health expenditure of long-term care category is 74.7% among those who are single, 71.8% among those who are married, 66.7% among those who are divorced, 62% among those who are separated and 84.2% among widowers. With respect to the function of administration, the probabilities are 79.5%, 84.3%, 79.5%, 88.6% and 77.2%, respectively.

4. Discussion

Aging population, shifting demographics, rising unemployment and financial strain, increasing health care costs and reductions in tax revenues are contributing to deeply stress the Greek healthcare system, while decreased disposable income has made access to healthcare more difficult for many households (Eurofound, 2014). The citizens' extremely low level of satisfaction from the Greek Health System (Health Consumer Powerhouse, 2015), reflects the impact of economic crisis and austerity in health care and in the social policy in general (Kyriopoulos et al, 2014).

In this context, policymakers and service providers are faced with the challenge of better allocate the available (scarce) resources. Priority setting and better allocation in health care expenditure is being introduced as a mean to overcome these problems and to provide a fair distribution of resources (Rosen and Karlberg, 2002). Health care expenditure is both determined exogenously, through non-system external pressures, which may occur at the macroeconomic level, and endogenously, through factors that impact directly on expenditure and are determined mostly at the microeconomic level through a complex set of relationships (Kanavos, 1999). A common approach to policy formulation in the face of resource constraints is to adopt the framework of societal health benefits maximization through reliance on the cost-effectiveness of health services provision, though does not always seem to be socially accepted (Hadorn, 1991). On the other hand, the *Accountability for Reasonableness* (A4R) framework (Daniels & Sabin, 2008) (Ham & Robert, 2003) states that power differences must be mitigated to facilitate effective participation of diverse members in the decision making context for priority setting in health care financing. Finally, Botelho, et

al. (2013) found that although citizens wish to be consulted, they believe doctors should play the most important role on health expenditure allocation and rationing decisions.

In our research we found that, the number of family members seems to play a significant role shaping the citizens' agreement with respect to actual public health expenditure allocation, in the majority of health care functions. The effect, however, of this demographic factor, is not the same in all cases. "Collective health services", for example, have a great impact on children, since vaccination is essential. The same is true with the "medical goods dispensed to out-patients" function since it includes public pharmacies and sanitary shops. In contrast, the "long-term and rehabilitative care" is not highly ranked in parents' preferences, finding present in other study for Greece (Theodorou et al, 2010).

Other demographic factors such as job, age, gender and marital status do partly associate and play a significant role. These findings are consistent with other studies where these criteria for prioritizing medical services, have also controversial results (Diederich, Swait and Wirsik, 2012) (Werntoft and Edberg, 2009) (Kanavos, 1999) (Werntoft, Hallberg and Edberg, 2007a) (Werntoft, Hallberg and Edberg, 2007b). However, other findings (Fotaki, 2013) (Theodorou et al, 2010) (Broqvist and Garpenby, 2014), indicate that personal characteristics such as gender, age, education as context specific of choices in health.

The importance of income in "collective health services" is also reasonable (Economou et al, 2004). The higher the income class of a citizen, the lower his/her hypothetical spending on this function will be. Civilians would prefer more expenditure to be allocated to the functions of "curative care" and to "medical goods dispensed to out-patients." This is also quite reasonable as these functions are very important in daily life, in contrast to the "long-term nursing care" function, which usually include chronic impairment. Citizens tend to focus more on present needs and less on future or expected chronic situations (Werntoft, Hallberg and Edberg, 2007b) (Hauck, Smith and Goddard, 2004).

The preferences of citizens, who live outside the prefecture of Athens, seem to be in disagreement with actual public health expenditure for the majority of health care functions. We must not forget that mechanisms for needs assessment and priority-setting are underdeveloped in the Greek Health System and, as a consequence, the regional distribution of health resources is unequal (Economou, 2010). So, our estimate on the variable *Capital formation*, which shows that the citizens tend to agree with that reality, is consistent with similar findings as appear in the Coelho (2013) study.

Finally, one would expect an employed civilian to allocate more resources to all categories that potential directly related to his/her medical treatment and the utility s/he drives currently or in the future for the medical system and its functions (Sibbald, et al, 2010). Such health

services are those of “curative care”, which is covered by his/her insurance, or “long-term nursing care”, which may cover the possibility of a labor accident, whereas spending on the category “regulation and collection of funds” would not rank high in his/her preferences (Diederich, Winkelhag and Wirsik, 2011) (Schreier et al, 2011).

5. Conclusion

Government and citizens ranks alongside health as one of the general topic are most interested in. But still there are wide disparities between the level and the means of participation in the decision making process. Priority setting and resource allocation across various health care functions is a critical issue in health policy and strategic decision making. As health resources are limited while there are so many health challenges to resolve, consumers and payers have to make difficult decisions about expenditure allocation.

Our research unveiled the significant disagreement between citizens’ preferences and actual public health expenditure across all health care functions, focusing on various demographic factors and deriving useful implications for public health policies.

As a result, government should encourage the citizens’ participation, by introducing policies of empowering the knowledge dissemination and democratization in the decision making process.

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