

## Cost and Value of Health Care in Cyprus

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### Abstract

This paper presents some facts about aggregate health expenditure and analyses factors affecting the level of household health expenditure in Cyprus, with emphasis on the type of cover of household members. The implications of individuals' entitlement to free public care for the well-being of households are also investigated to determine the value of free medical care, as perceived by consumers.

We find that the age of household head and household income play a key role in determining the level of health expenditure. In particular, household spending on medical care decreases with the age of household head up to 40 years and increases for older heads. As income increase so does health expenditure but at a declining rate. Medical expenditure also varies with the type of cover of the head and members of the household. Additional household members create economies of scale in health expenditure when members are covered by public/government, private employer or a combination of medical cover schemes. The well-being analysis shows that the provision of public health care in Cyprus mostly benefits poor households and those with older heads, in the sense that they enjoy a reduction in their total household health expenditure due to eligibility to freely provided public health care.

**Keywords:** Health expenditure, health care system, public provision of health care.

### 1. Introduction

The role of private and public sector in financing health care is a topic of interest to both academics and policy-makers, especially in the last few years that health costs are rising rapidly. The main drivers of the soaring health expenditure are considered to be technological innovations in health care and pharmaceuticals, as well as population ageing.

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According to World Health Organisation (WHO) estimates for 2005, in the European Union total health care expenditure was 8.9% of GDP, with 6.8% and 2.1% being the public and private sector health expenditure to GDP, respectively. The share of health expenditure to GDP for Cyprus, based on the same estimates, was well below the EU average and just above 6% of GDP, with 2.8% and 3.4% being the corresponding shares of the public and private sector. The low percentage of health expenditure to GDP in Cyprus can be attributed to factors such as the absence of a national health insurance scheme, the relatively young structure of the population and the limited spending on medical research. The large share of the private sector can be attributed to the absence of a national health system offering universal cover; instead, there is an outdated and inefficient system, where an oversized private health care sector often duplicates the freely (or at reduced cost) provided state health care (Golna et al., 2004).

It is well known that the provision of health care in the private sector suffers from inefficiencies due to market imperfections. The asymmetric information between health care providers and patients creates the 'principal-agent problem': the health care provider (agent) knows more about a medical condition than the patient (principal), thus patients' decisions regarding treatment depend heavily on the diagnosis/information given by the medical practitioner. Asymmetric information between doctor and patient can boost demand for medical services in the private market. Another inefficiency of the private sector is moral hazard in the provision of health insurance, whereby the insured patient might be prone to overuse health services, since a large part of his/her medical expenses are covered by the insurance. Moreover, the provision of health care from the private sector fails to create positive externalities, as access to medical services is granted only to those who can afford it. Insurance companies would not sell health insurance policies to individuals with severe health problems, as the former would have to incur the treatment cost of the latter with very high probability (i.e. insurance companies try to avoid adverse selection). Thus, when health care is provided in the private market not all individuals are able to access these services, therefore no positive externalities can be created from an improved level of health care that can be attained when those in need (e.g. severe or contagious diseases) are treated free of charge.

Market imperfections in the private health care market leave room for government intervention. Publicly provided medical care should be designed in such a way that the effects of information asymmetry are limited (i.e. public sector providers should not have an incentive to encourage overtreatment) and higher levels of health care, for example for contagious diseases, and therefore positive externalities can be achieved.

Market failure can be reduced through the development of a regulatory framework for the health insurance market. The government also intervenes in health care provision to achieve income redistribution goals. For example, it can redistribute income by adopting a system where free health care provision is means-tested. Alternatively, it can adopt a universally free health care provision scheme and “benchmark” quality to a level desirable for low income people, thereby encouraging high income individuals to opt out of the free public provision. To the extent that the rich finances the public health care (through taxation) without benefiting from it, income is redistributed from higher to low income groups.

A public-private mix which is the case of most health care systems combines the pros and cons of public (free) and private provision. However, the role assigned to each sector and the features (externalities, redistribution-inequality, inefficient production, asymmetric information, etc) that are more dominant in a health care system depend on policy-makers’ priorities. Di Matteo (2000) examined the determinants of the public-private mix of health care in Canada over the period 1975-1996 and finds that the factors affecting the most this mix are per capita income, government health transfer variables and the increasing inequality of income distribution.

In most countries with a National Health Service (NHS) system there is a parallel private sector alongside the public one. This is the case in the UK, where the majority of the physicians usually spend time in both sectors, but most private medical services are provided by physicians whose main commitment is to the NHS (Propper, 2000). Brekke and Sørsgard (2007) examine the interaction between publicly provided free health care in a NHS with costly private care. They state that in a system where physicians can work in both sectors they may shift patients seeking public care to their private practice and allocate their labour supply to the sector that provides the higher benefit, thereby affecting both the demand and supply side. They show that allowing physician dual practice (both public and private) ‘crowds out’ public provision and results in lower overall health care provision. Moreover, they find that in a NHS where the health authority decides whether or not to allow private provision and sets the public sector remuneration, a ban on dual practice is more efficient, if private sector competition is weak and public and private care are sufficiently close substitutes. Nevertheless, they argue that if private sector competition is sufficiently hard, a mixed system with dual practice is always preferable to a pure NHS system.

There were also demand studies that examined the nature of the public-private mix (Akin, 1984 and Heller, 1982). They use household level data to examine the utilisation patterns and consider factors affecting the choice

between public and private providers. Their findings suggest that even the relatively poor were willing to pay towards private health care. Hanson et al. (2004) estimated the effect of quality on patients' choice between public and private outpatient care in Cyprus. They found that patients' choice of provider is sensitive to quality and that interpersonal quality (i.e. the time dedicated by doctor to patient, the extent to which the doctor provides explanations about tests/procedures/results, and the courtesy and helpfulness of the doctor) is more important than either technical quality or system-related factors.

This paper presents some facts regarding aggregate health expenditure in Cyprus and an analysis of the factors that affect household health expenditure. Emphasis is given on the effect of the type of cover of household members on household health expenditure. The implications of individuals' entitlement to free public health care on the well-being of households are also investigated to determine the value of the freely provided state health care, as perceived by consumers. We find that the age of household head and household income play a key role in determining the level of health expenditure. We also investigate how medical expenditure varies with the type of head's, as well as with other members' health care cover (government, employer, private, etc) and whether there are economies of scale in health expenditure within the family. The well-being analysis shows which households and to what extent benefit from the provision of public health care, by calculating the savings in health expenditure attributed to free access to this type of health care.

The paper is organised as follows. Section 2 discusses the evolution of aggregate health expenditure in Cyprus and provides some comparisons with other countries. Section 3 investigates the factors affecting household health expenditure, as well as the implications of individuals' eligibility to free public health care services on their well-being. Section 4 provides a discussion and concludes.

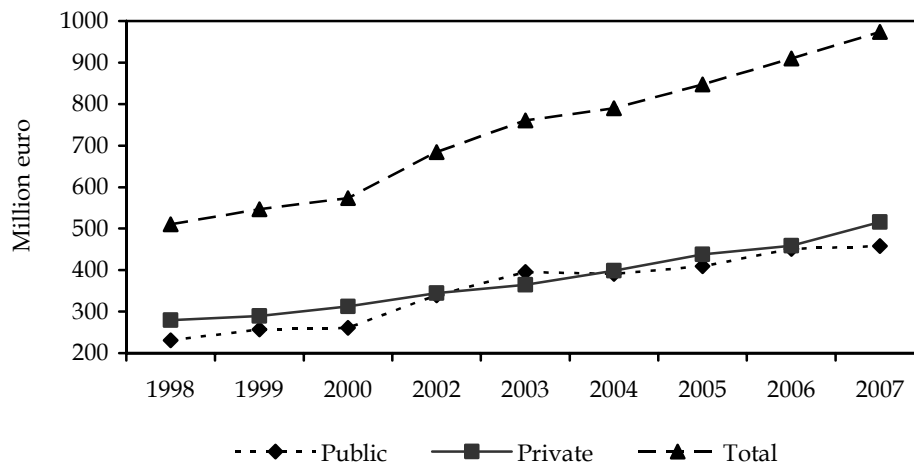
## **2. Aggregate health expenditure**

Figure 1 shows total health expenditure in Cyprus together with public and private expenditure on health services, in million euro, from 1998 to

2007.<sup>1</sup> Public sector spending is comprised of employee compensation and social benefits, intermediate consumption, various current transfers and gross capital formation. Private sector expenditure consists of medical products and services, hospital care, therapeutic equipment, health insurance and capital investment.

FIGURE 1

*Public, private and total health expenditure, 1998-2007*



Source: Statistical Service of Cyprus.

Total health expenditure has increased over time from 510 million euro in 1998 to 974 million euro in 2007. Public and private expenditure on health services move closely together and both show an upward trend. The private sector exhibits slightly higher expenditure than the public sector in all years, except for 2003. For the period 1998 to 2007 total health expenditure in Cyprus as a percentage to GDP is steady over time, around 6% per year. Private health expenditure for the same period was about 3% to 3.5% of GDP per year. Public health expenditure on the other hand shows greater variation over time, ranging between 2.5% and 3.5% of GDP.

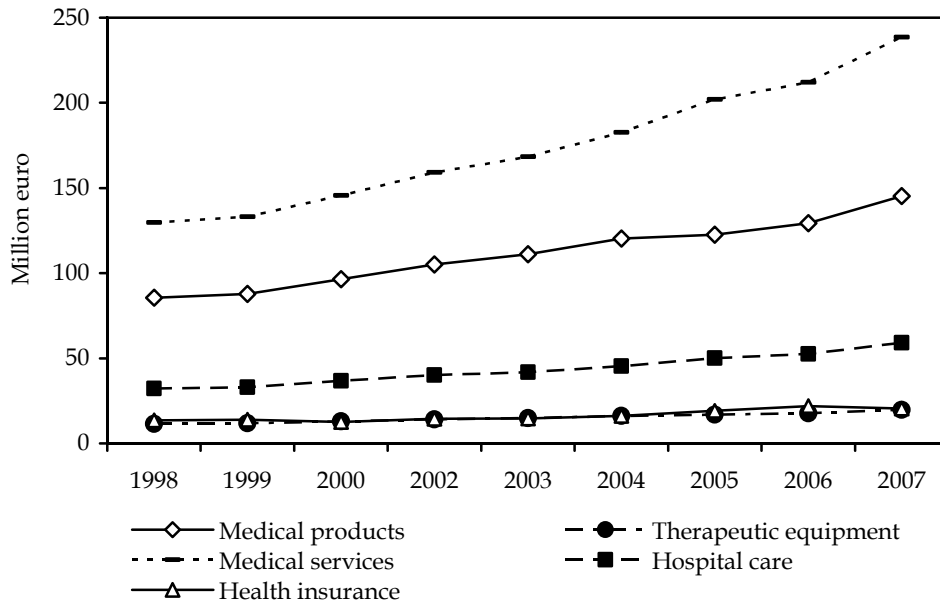
Figure 2 shows the evolution over time of the different components of private health expenditure. Medical services spending (physicians, dentists, etc) is the largest and the most rapidly increasing component of

<sup>1</sup> Data on health expenditure prior to 1998 are not comparable with those shown in Figure 1 because of revisions in health expenditure figures from 1998 onwards (Statistical Service, 2009).

private health expenditure: it rose from 130 million euro in 1998 to 239 million euro in 2007. Medical and pharmaceutical products form the second largest component of private health expenditure followed by hospital care. Health insurance and therapeutic equipment/appliances are the smallest parts of private health expenditure, ranging from about 12 million euro in 1998 to 20 million euro in 2007.

FIGURE 2

*Components of current private health expenditure, 1998-2007*



Source: Statistical Service of Cyprus.

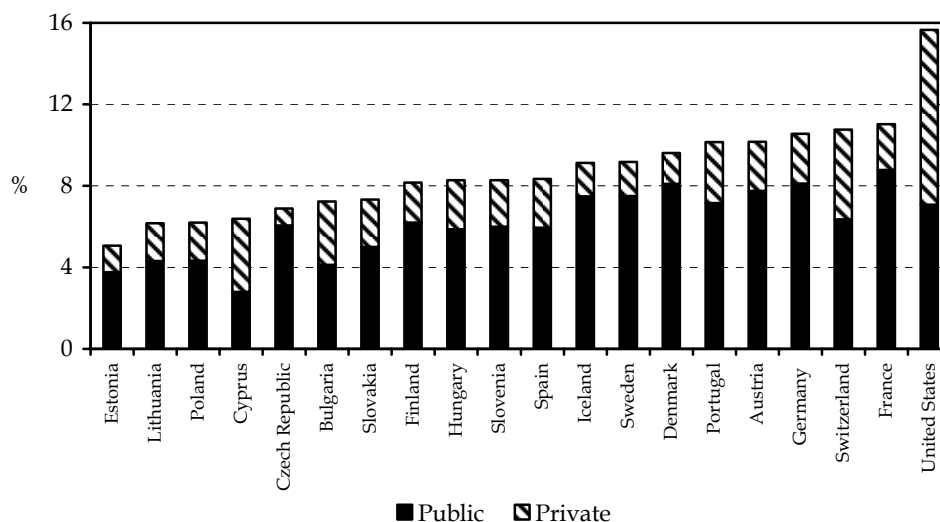
Figure 3 presents the percentage of public and private health expenditure to GDP in different countries for 2006.<sup>2</sup> Cyprus exhibits the fourth smallest percentage of total health expenditure to GDP, around 6%, only slightly above that of countries with substantially lower per capita GDP, like Estonia, Lithuania and Poland. The United States ranks first in the graph with health expenditure to GDP close to 16%; France, Switzerland and Germany follow with 11%. Moreover, if we look at the split of total health

<sup>2</sup> The data used for comparisons across countries were obtained from the European Statistical Service (Eurostat) database and refer to the latest available year, 2006. The countries presented are those that supplied data for 2006.

expenditure as percentage to GDP between the public and private sectors, we observe that public expenditure has a larger share in all countries except in the United States and Cyprus, where the share of private health expenditure is slightly higher.

FIGURE 3

*Percentage of health expenditure to GDP, 2006*



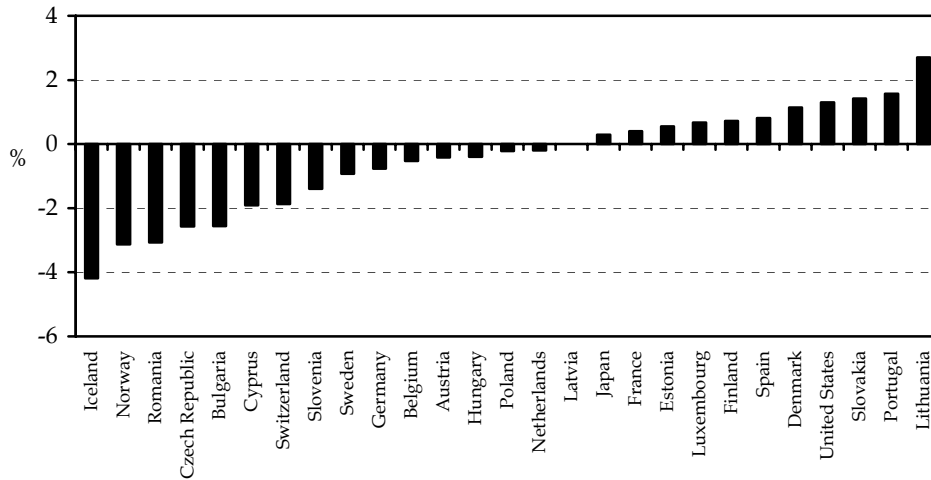
Source: Eurostat.

Figure 4 shows the average annual percentage change of total health expenditure as a percentage to GDP, for the period 2003 to 2006. More than half of the countries shown in the figure demonstrate, on average, a negative annual change in total health expenditure for the period 2003 to 2006, with an annual growth rate ranging between -4% and 3%.

The largest decreases in the share of total health expenditure to GDP are reported for Iceland, Norway and Romania, while the biggest annual increases occurred in Lithuania, Portugal and Slovakia. For Cyprus the yearly change in health expenditure as a percentage of GDP, for the period 2003 to 2006, was negative, with an average decrease of about 2% per year.

FIGURE 4

*Average annual change of health expenditure to GDP, 2003-2006*



Source: Eurostat.

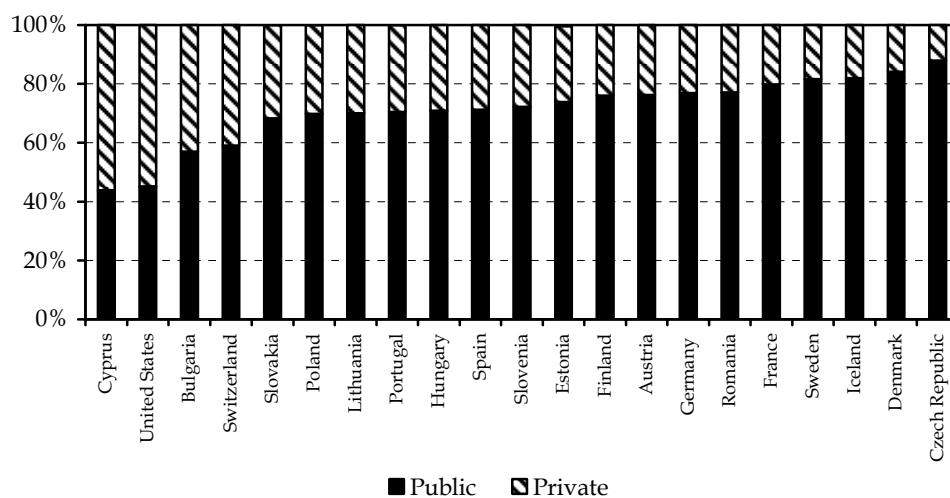
The distribution of total health expenditure between the public and private sector in 2006, for different countries is shown in Figure 5. The countries are sorted in ascending order in terms of public health expenditure share to total health expenditure. Cyprus exhibits the smallest public health expenditure share (44%) followed by the United States (45%), Bulgaria (57%) and Switzerland (59%). The Czech Republic, Denmark, Iceland and Sweden had the largest public health care sector, with the public health care expenditure accounting over 80% of total health expenditure.

Figure 6 presents the per capita public, private and total health expenditure in 2006. The countries are ranked according to their per capita health expenditure. In the bottom end is Romania with per capita health expenditure just over 400 euro and in the top end the United States with per capita health expenditure of nearly 6000 euro. Per capita health expenditure in Cyprus for the same year was 1362 euro, a figure closer to that of new EU member states (Czech Republic, Hungary) rather than the per capita health expenditure of older EU members such as France, Germany and Austria.



FIGURE 5

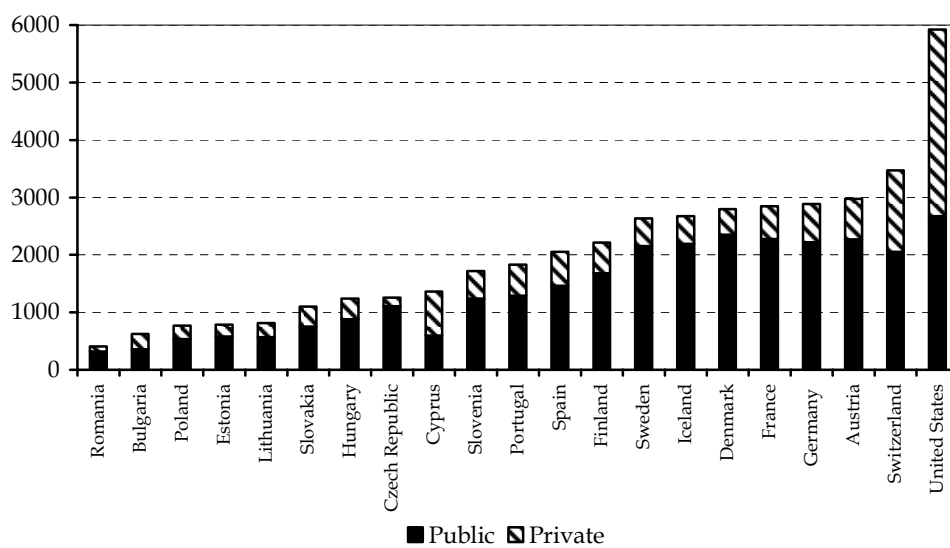
*Distribution of health expenditure between public and private sector, 2006*



Source: Eurostat.

FIGURE 6

*Per capita public, private and total health expenditure, 2006*



Source: Eurostat.

### 3. Household health expenditure

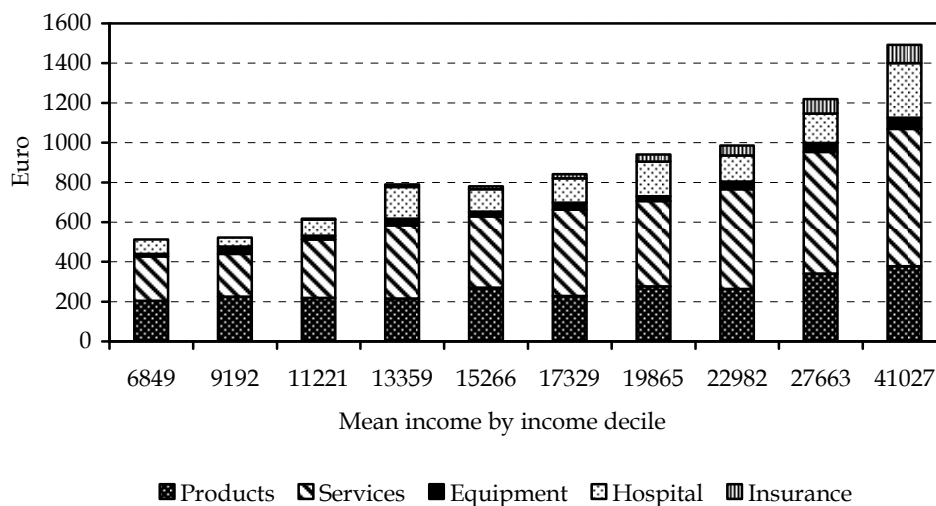
In this section we analyse household health expenditure in Cyprus using data from the Family Expenditure Survey (FES) of 1996 and 2003. We investigate factors affecting health expenditure incurred by households and the implications of eligibility to free public health care for the well-being of households.

#### 3.1. Factors affecting household health expenditure

Figure 7, reports the level and composition of annual household health expenditure by income decile, calculated from the FES 2003 and expressed in 2009 prices. As we can see, the level of health expenditure increases with income, with the largest component of this expenditure going to medical services. In particular, the cost of medical services rises from 223 euro for the lowest decile to 692 euro for the richest 10% of households. Medical products and hospital care follow as the second and third biggest part of household health expenditure. Overall, the expenditure on products exhibits small variation over income groups. Expenditure on hospital care is less than 100 euro for the lowest three income categories, between 110 and 150 for the next six deciles and 275 euro for the highest income group.

FIGURE 7

*Annual health expenditure by income decile (2009 prices)*



Source: Family Expenditure Survey data and own calculations.

Health insurance is the smallest component of household health expenditure. It appears that only a very small number of households in the first eight income deciles own medical insurance, while households in the top two deciles allocate only a small fraction of their health expenditure (about 6%) to purchasing medical insurance. In general, the market for health insurance in Cyprus is not well-developed and the contracts offered tend to be simple (Golna et al., 2004).

Figure 8 shows the percentage increase in health expenditure induced by an additional household member, by type of cover of this extra member. The figure shows that the increase in health-related cost is smaller when an individual has (i) public/government cover (15%) or (ii) public/government cover and cover by his/her private sector employer (19%). The largest increase in household health expenditure occurs when an additional member in the household has only personal (62%), a mixture of personal and public/government (65%) or employer/personal (55%) cover.<sup>3</sup> It is worth noting that health expenditure increases by the same percentage for those with government or employer cover and those without any cover. Specifically, an additional member in a household without any medical cover incurs about 9% higher health expenditure than an extra member in a household eligible to free public health; and 5% higher health expenditure than an extra member in a household with government or employer cover.

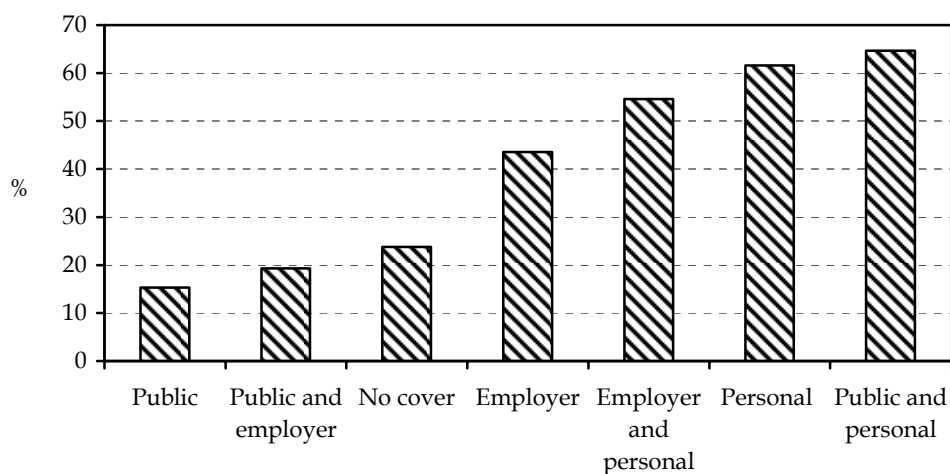
The results below suggest that households with access to free public health services do not appear to save on health expenditure compared to households without medical cover. This finding therefore raises questions about the benefit of free publicly provided health care to consumers. This issue will be explored further in the next subsection.

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<sup>3</sup> Figure 8 should be interpreted as reflecting economies of scale in the household, so the large increase corresponding, for example, to personal cover probably means that this type of cover applies to small-size households where the second or third person incurs about the same health expenditure as the first. In contrast, the extra cost of public cover is relatively small.

FIGURE 8

*Percentage increase in health expenditure by type of cover  
(per household member)*



Source: Own calculations.

Table 1 shows the estimated effect of various factors on household health expenditure. Head's education and age, household size and income and the household's age mix appear to be key determinants of health expenditure. Households whose heads completed secondary or tertiary education tend to have lower health expenditure than those with heads with lower education by about 0.4% and 0.8% of income, respectively. An additional household member, on average, increases health cost by 0.4% of household income. If the additional individual is a child less than five years of age, then the rise in health cost is as high as 1.2 % of income. Older household members also add substantially to health expenditure. In particular, members over 75 increase health care spending by about 1% of household income. As one would expect sickness benefit recipients or chronically ill/disable members incur very high medical care cost, raising health expenditure by 1.6% and 2.2% of income, respectively.

TABLE 1

*Factors affecting expenditure for health care (change as percentage of income)*

Characteristic	Estimated effect <sup>1</sup>	t-ratio
<i>Head's education<sup>2</sup> and age</i>		
Secondary	-0.44***	-1.89
Tertiary	-0.79***	-2.90
Age*10	-1.60***	-3.25
Age square*10	0.02***	4.38
<i>Household characteristics</i>		
Rural residency	0.28***	1.37
Size	0.42***	2.29
Members aged 0-5	1.19***	7.08
Members aged 6-10	0.43***	2.86
Members aged 61-75	0.18***	1.14
Members aged 75+	0.94***	2.65
Sickness benefit recipients	1.57***	2.97
Chronically ill/disabled members	2.18***	3.64
Income <sup>3</sup>	2.50***	5.51
Income square	-0.70***	-5.28
Surveyed in 2003	0.13***	0.05
Constant	5.49***	4.55

Notes: <sup>1</sup> The asterisks indicate the significance level where \*, \*\* and \*\*\* show significance at 10%, 5% and 1% respectively.

<sup>2</sup> The excluded variable is primary education.

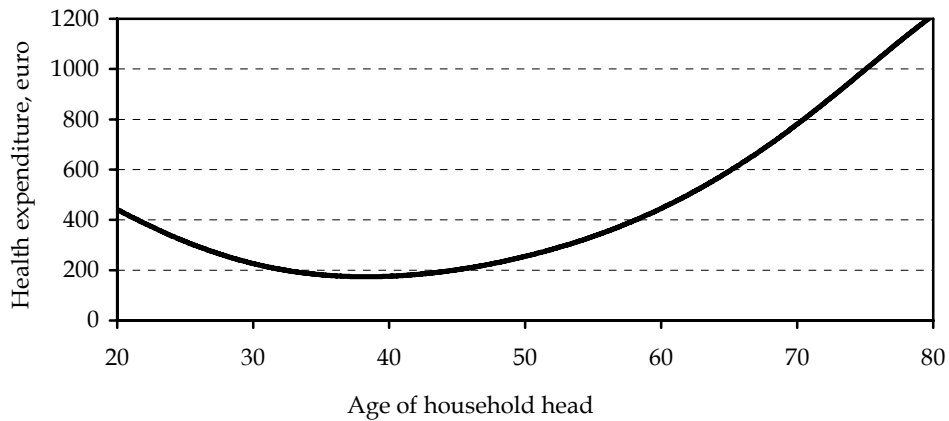
<sup>3</sup> Household total expenditure (expressed in logarithms) is used as a proxy for household income.

Head's age and household income have an increasing effect on health expenditure but the rate of increase is not constant: age tends to decrease health expenditure at an increasing rate, while income increases health expenditure at a decreasing rate. Given this non-linearity and complications from the presence of age group effects in the regression, we use the estimated parameters in Table 1 to produce a smoothed plot of the relationship between (i) health expenditure and the age of household head (Figure 9) and (ii) health expenditure and household income (Figure 10). It should be emphasised here that these two graphs show the effect of age and income on health expenditure, when all other factors affecting health expenditure are kept constant. Thus, it is meaningful to measure along the vertical axis the change in (not the level of) household health expenditure (expressed in 2009 prices).

Figure 9 shows that health expenditure decreases with the age of household head (up to the age of 40) and then increases: initially slightly (up to the age of 50) and then sharply, especially after 70.

FIGURE 9

*Health expenditure by age of household head (euro per household member)*

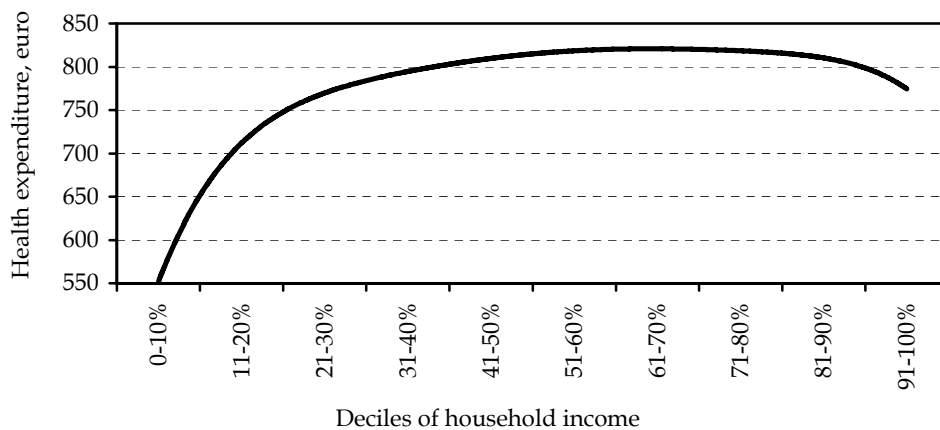


Source: Own calculations.

Figure 10 plots health expenditure against income deciles. As seen health expenditure initially increases sharply with income but after the second income decile the positive effect of further rise in income becomes smaller and smaller. Indeed, after the 4<sup>th</sup> income decile health expenditure remains more or less constant until the 8<sup>th</sup> income decile when it starts falling. This shape of health expenditure indicates that medical care is a luxury for the low and necessity for top income groups.

FIGURE 10

*Health expenditure by income decile (euro per household member)*



Source: Own calculations.

Table 2 presents the estimated effect of head's and other household members' type of cover on health expenditure. A household whose head has personal medical cover incurs higher health expenditure by 1.12% of its income compared to a household with a non-covered head. Health expenditure for other types of head's cover does not differ significantly from that of households whose head does not have any cover.

Nevertheless, the results show that additional household members, besides the head, tend to lower health expenditure, i.e. economies of scale seem to be at work within the household with respect to expenditure on medical care. Furthermore, it appears that the extent to which an additional individual in the household decreases health expenditure depends on her/his type of cover. The largest reduction in health expenditure is realised by households with additional members entitled to public medical cover, followed by those whose members (other than the head) are covered through a private sector employer. Not surprisingly, the decrease in health expenditure is the smallest when the extra household members have personal medical cover.

TABLE 2  
*Types of cover affecting expenditure for health care*  
*(change as percentage of income)*

Characteristic	Estimated effect <sup>1</sup>	t-ratio
<i>Head's type of medical cover<sup>2</sup></i>		
Public	0.15***	0.46
Personal	1.12***	2.42
By private sector employer	0.35***	1.08
Combination	0.73***	1.66
<i>Other members' type of cover</i>		
No cover	-0.87***	-4.15
Public	-1.13***	-5.56
Personal	-0.51***	-1.80
By private sector employer	-0.96***	-3.60
Combination	-0.89***	-4.65

Notes: <sup>1</sup> The asterisks indicate the significance level where \*, \*\* and \*\*\* show significance at 10%, 5% and 1% respectively.

<sup>2</sup> The excluded variable is no medical cover.

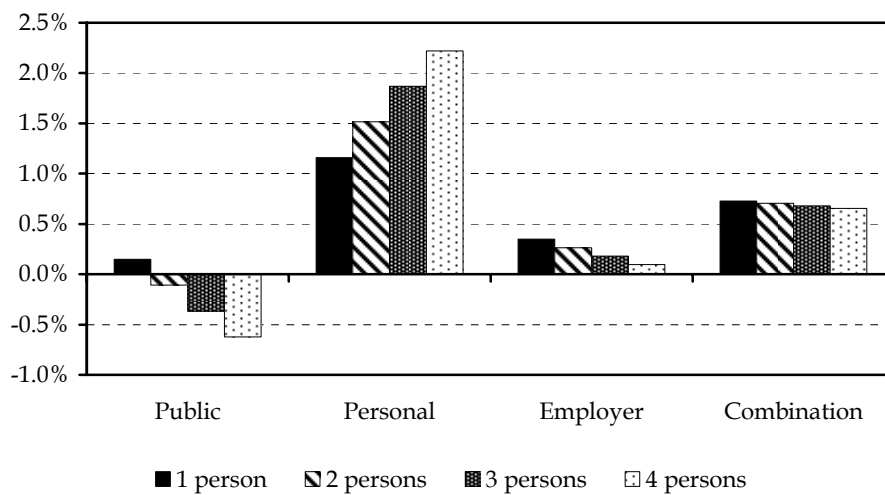
Figure 11 shows how health expenditure, as a percentage of income, differs between households whose members have a particular type of medical cover and those whose members do not have any health cover. The comparison is carried out for different household sizes. In the case of one-person households with some type of medical cover, health expenditure is

always higher than that of a single-person household without a cover. The largest difference in health expenditure occurs when an individual has personal cover as opposed to no cover; while eligibility to free public health care increases expenditure by less than 0.2% of income.

- For households with two or more persons entitled to free public health care, we observe a decline in health expenditure as household size increases. For example, for a four-person household with public medical cover expenditure on health care is lower by 0.6% of income than that of a similar household whose members are not covered.
- Households whose members are covered by a private sector employer or participate in a combination of health cover schemes also experience economies of scale regarding health expenditure. A household with four members covered by an employer or by a combination of schemes incurs slightly higher health expenditure by 0.1% and 0.6% of income respectively, compared to a four-person household without any medical cover.
- Households whose members have personal cover exhibit the largest increases in health expenditure as household size increases. For instance, a household with four members pay 2.2% of its income more on medical care than an uncovered but otherwise similar household; and nearly 3% more than a household with four persons eligible to free public health care.

FIGURE 11

*Health expenditure by type of cover (change as percentage of income)*



Source: Own calculations.



From Figure 11 we can deduce that households that pay exclusively out of pocket for their health care, that is households without medical cover or households with personal cover (i.e. insurance purchased in the private sector) incur health expenditure that increases with the household size.

### 3.2. Effect on the well-being of households

In this section we focus on how much value is assigned to free public health cover by those who are eligible. We attempt to estimate this 'money metric' from the consumers' perspective using consumer demand analysis.

It is known from consumer theory that free goods do not translate to well-being of equal value, in other words if an individual is given a particular good free of charge, this does not translate to a cash equivalent of the market value of the good. This is because people prefer an increase in cash income rather than an increase in the consumption of a particular good, as the former does not exclude the possibility to purchase the goods in question, while permitting also the option to spend (part of) the extra cash on other goods.

In simple words, one can construct a cash equivalent of the free health care provision by looking at how individuals or households who are identical in every aspect except for their type of medical cover spend their income on goods: those with access to free public/government medical cover are expected to spend more on luxuries; while those who pay for medical care out of pocket should spend more on necessities. The cash equivalent of free health care (as perceived by consumers) can be estimated as the reduction in income that would make a household or person entitled to free public health care to have the same consumption pattern as a household or person without access to free health care.

Using the technique described above, we estimate the cash equivalent of free public health care entitlement in Cyprus using data from the FES 1996 and 2003.<sup>4</sup> Below we examine how much this money metric of free public health care differs with household characteristics, such as the age of head and household income.

Figure 12 shows the savings (as a percentage of household income) from access to free of charge public medical care for each household member, for different ages of household head. It can be seen from this figure that

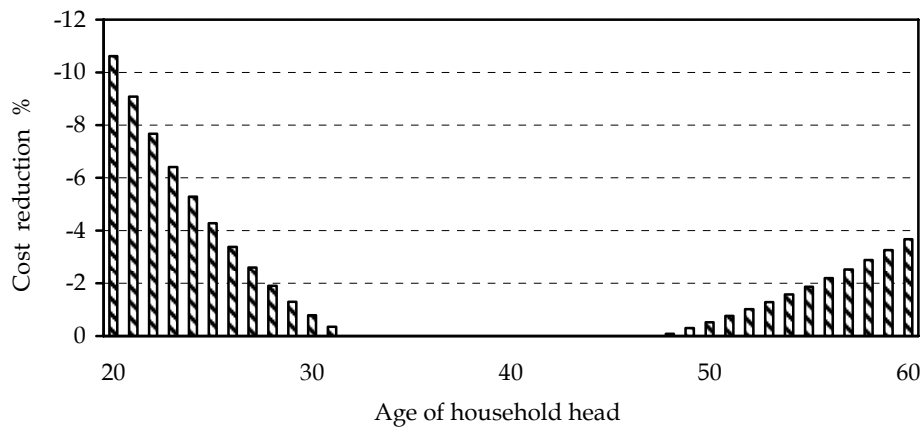
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<sup>4</sup> The estimations are conducted using a demand system of six commodity groups. Details of the model and estimation results are available upon request.

access to free of charge public medical care represents a substantial cost reduction for households with head aged less than 30 and over 50, whereas the remaining households do not appear to benefit from such access. For example, on average, a household whose head is between 20-30 years old can benefit by as much as 5% of its income for each member with access to free public health care. Roughly half this benefit is also enjoyed by households with heads aged 50-60; whereas no perceptible benefit is realised from access to free of charge public medical care for households with heads aged between 30-50. The results suggest that on average free public health care in Cyprus is valued by consumers to be around 2% of their income. This is clearly below the percentage of GDP spent by the government for public health care provision.

FIGURE 12

*Savings from free public health care per household member, by age  
(as percentage of household income)*

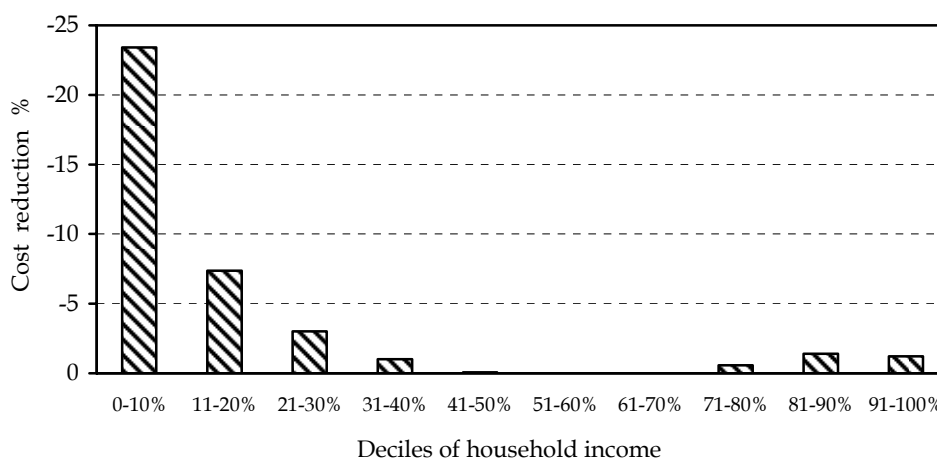


Source: Own calculations.

The savings from access to public health care per household member for different deciles of household income are shown in Figure 13. Cost reduction from entitlement to free public health care tends to concentrate among the lowest three income groups and account for around 10% of their income for each member entitled to public health care cover. For other income groups savings due to eligibility for public health cover are almost non-existent.

FIGURE 13

*Savings from free public health care per household member, by income decile  
(as percentage of household income)*



Source: Own calculations.

#### 4. Discussion and conclusions

This paper provides some stylized facts on aggregate and household health expenditure in Cyprus. First it describes the evolution of aggregate health expenditure over time and offers a comparison with other countries. Then the factors affecting the health expenditure of households are explored and the implications of individuals' eligibility to free public health care services on their well-being are investigated. Ultimately, our analysis addresses the question "what is 'free' health care worth to consumers?".

Aggregate data show that total health expenditure in Cyprus has an upward trend over time, with the private sector component exhibiting a slightly faster rate of increase than its public sector counterpart. The percentage of health expenditure to GDP is quite constant over time at about 6% per year. Furthermore, the share of the private sector expenditure to total health care spending is slightly larger than the share of the public sector. More than half of aggregate expenditure on health services in Cyprus goes to the private sector, a fact also observed in the United States, but does not apply to other European countries.

Among the factors which are found to affect the level of household expenditure on health care are head's education, household size, age mix,

the presence of sickness benefit recipients or chronically ill/disabled persons in the household, as well as the age of the head and household income. For households with heads up to 40 years of age health expenditure decreases and then increases with the age of head. Health expenditure increases with income, albeit at a decreasing rate.

A key factor influencing the health expenditure of a household appears to be the type of medical cover of its members. For one-person households the absence of medical cover leads to lower health expenditure than in the case where some type of medical cover is present, even if the latter is in the form of free access to public/government cover. For households with two or more persons the presence of public sector cover decreases health expenditure, whereas personal medical cover results in the highest health expenditure. In the case of medical cover by the public/government or private sector employer we observe economies of scale in health expenditure, in the sense that more household members increase health expenditure less than proportionately. In contrast, households paying exclusively out of pocket for their health care (i.e. those with personal or without medical cover), health expenditure increases in proportion to household size.

The analysis of the effects of public/government cover, i.e. access to free public health care, on the well-being of households shows that households with very young or older heads appear to benefit from entitlement to free medical care, but the same does not hold for those whose head is in his/her thirties and forties. Moreover, this benefit concentrates among households in lower income groups. This suggests that the current health care system in Cyprus is equitable, in the sense that it is in favour of poorer individuals who are in greater need of free health care. However, it is estimated that while 85%-90% of the population is eligible for free or at reduced cost public health care, many population groups (particularly, households with medium and high income and heads in the economically productive age categories) do not use this benefit. Instead, they resort to purchasing health care from the private sector. This implies that the health care system in Cyprus is not efficient, as the purchase of medical care from the private sector by a large number of households whose medical needs are already covered by the state creates a wasteful duplication in the provision of health care services.

One possible explanation for the inefficiency of the health care system in Cyprus is the high opportunity cost in terms of waiting time (e.g. queuing, waiting lists) for receiving care in the public sector as opposed to a quicker access to treatment in the private sector. Another reason is the lower perceived quality (especially at primary level) of the public health care provision, mostly as a result of the limited facilities available for enhancing

the comfort and treatment of individuals, which induces people to look for more attentive health care in the private sector.

A testament to the limitations of the public health care provision in Cyprus is the fact that the private health care sector is 'fully developed' at all levels (primary, secondary and tertiary) and accounts for more than half of the total health care expenditure. The large size of the private sector in Cyprus exaggerates the inherent inefficiency associated with purchasing health care in the free market, such as the principal-agent problem. As is well known, the asymmetric information between the health care provider and the patient (the doctor knows more about a medical condition than the patient) makes the evolution of patient's condition heavily dependent on the diagnosis/information supplied by the physician. The lack of a mechanism to solve this market imperfection encourages overtreatment and, consequently, levels of health expenditure above the optimum.

The inadequacies of the Cyprus health system need urgent attention, as the ageing of the population and the rising health care costs are likely to exacerbate the inefficiency of the current system. The long planned introduction of the National Health Insurance System (NHIS) is aspired to address many of the challenges that the current system is facing. It will provide universal cover funded through the contributions of employees, employers, self-employed, pensioners and the government. The new system is expected to offer the same range of services as the current one, but in a restructured delivery system. The general practitioner will be the entry point to this delivery system, with specialised health care available through referral.

In principle, the introduction of the NHIS is expected to alleviate wasteful aspects of the current health care system. As both public and private health care services will operate under the new national health system, some economies of scale are expected to be realised from mass ordering of pharmaceuticals and other medical products. It is also expected that the competition between public and private sector providers will be enhanced, resulting in improvements in the quality, effectiveness and efficiency of health care services. Furthermore, the coordination between the public and the private sector will increase, thereby limiting the duplication of services. Patients will benefit from the implementation of the new system through cost savings from unnecessary visits to specialists.

The crucial question regarding the introduction of the NHIS is whether the gains described above will balance the cost of the new system. In our opinion, net benefits from the introduction of NHIS cannot be realised without paying enough attention to economic fundamentals of health care, in particular, addressing both the production inefficiency of the public

sector and the inherent failures of the free market. In this context a decisive factor can be the extent to which the new system will exploit complementarities and substitutabilities between the public and private sectors so that the resulting public-private mix encourages positive and discourages negative aspects of health care provision.

Overall, the new NHIS is not likely to achieve its objectives without providing a framework for the public and the private sector to function in synergy. A necessary (but not sufficient) condition is to allow more role for the private sector in the production of health care services to reduce government inefficiency; while giving the regulatory control of the system to the public sector to limit information asymmetry, create more positive externalities and promote equity.

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