



# Working Paper

**Caring or Curing?  
On the Nature of Health Care in Modern  
Societies**

Peter Kotzian

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Editorial Note:

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## Abstract

Is health care a luxury or a necessity? Ever since the publication of Newhouse paper in 1977, this question has put forth a multitude of studies but still the substantive question is open. The empirical research on the nature of health care is mostly based on macro respectively micro level relationships among measures of wealth and expenditure for health care. Depending on the elasticity estimated, health care is classified by a study as a luxury, a necessity or both.

Based on a micro level explanation of why wealth may change the preferences of citizens with regard to health care, this paper supplements these studies by making an inference from the satisfaction of the citizens with a health care system in combination with information on what the health care system is actually delivering on the preferences and expectations citizens hold with regard to health care and the health care system.

Combining micro and macro level data, the evidence shows that wealth has indeed an effect on what citizens expect from a health care system. However, this change cannot be interpreted in the classical caring or curing distinction of medical services as proposed by Newhouse: even though curing, i.e. a health care system delivering what is necessary and performing well in restoring physiological health, surely no longer is enough to satisfy the citizens, the information available is insufficient to tell what the citizens actually want.

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## 1. Expenditure for health and the nature of health care

Rising health care expenditure (HCE) has been a driver for empirical research in the reasons for variations in HCE among states long before the financial pressures on welfare states made it a theme in everyday life and politics. As early as in 1977, Joseph P. Newhouse published an article in which he tackled questions which are still open even though they have been subject to many empirical as well as theoretical studies since. His research question was threefold:

'What determines the quantity of resources a country devotes to medical care? The question is important because of the presumed consequences of medical-care expenditure for well-being, although the nature of the link between medical-care services and well-being is not well understood.' (Newhouse (1977: 115).

The first question is, how existing variations in HCE among countries can be accounted for. The second question is, whether additional expenditure for health actually has an effect on health in the sense that the life expectancy and the health status of the population is increased: is the health status of the population in a country spending more for health care higher than in a country spending less?

'The conventional view that medical care is a necessity is probably based on the presumption that the marginal unit of medical care produces an improvement in physiological health' ( Newhouse 1977: 121)

Is this widely shared view correct or is – given that a certain level of health status is reached – additional investment in health care without effect on the populations 'physiological' health status? This leads to the third question concerning the nature of health care: does it always make sense to devote additional financial resources to health care since more resources buy a still better health status – or is health care nowadays more or less a luxury, and if this is the case: 'What, then, are these additional resources buying?' (ibid.: 121). To obtain answers, Newhouse looked at the factors influencing HCE, the differences among countries with regard to their expenditures for health and the differences in health status and life expectancy.

### Newhouse' findings

Newhouse started from the preliminary observation that wealthier countries seemingly devote more financial resources to health care without achieving a corresponding improvement in the standard health indicators, e.g. child mortality, life expectancy and so on, when compared to states spending less financial resources for health care. He analyzed a simple data set on HCE and GNP and found with respect to his first question that GNP was the main determinant of HCE with no effect attributable to the institutional setting of the HCS. As to his second question, the answer he arrived at was that additional input of financial resources into the health care system (HCS) does, according to his data, not increase the life expectancy or what he called physiological health of the population. He summed up his main result with the following statement:

'(...) countries that spend more may well buy more caring, but little additional curing' (Newhouse 1977: 122).

Further, he found that the effect of GNP on HCE is positive, indicating a positive income elasticity for health care. If health were a necessity, one would expect people and societies to spend what is necessary for health and spend additional income for other utility generating goods, since, as one could argue, one cannot be more than healthy. Given this twofold evidence, he claimed with regard to the nature of health care, that health care is – at least in wealthy industrialized societies – no longer a necessity but a luxury good, aiming no longer at the restoration or maintenance of physiological health, but at an increase in the subjective quality of life:

'While the marginal unit of medical care may do little or nothing for mortality and morbidity, it may well produce improvements in so-called subjective components of health. Additional resources in ambulatory care may alleviate symptoms (for example, pain, itching), relieve anxiety, and provide prognostic information' (Newhouse 1977: 122)  
and

' (...) in the developed countries, medical care services at the margin have less to do with the common measures of health status such as mortality and morbidity and more to do with services that are less easily measured, such as relief of anxiety, somewhat more accurate diagnosis, and heroic measures near the end of life.' (Newhouse 1977: 123).

## Caring and curing

The difference between curing and caring is hard to define in a mutually exclusive way even so it is quite clear from the wording what Newhouse meant with his distinction. For the purpose of this paper, I will try elaborate the differentiation somewhat further. There are known organic reasons for certain illnesses, which can be treated in a rather mechanical way: given the diagnosis, the medical personnel knows which means to apply to restore the physiological health of the patient. The medical personnel only cures the illness, fulfilling more or less a mechanical 'repair function' and does nothing else. 'Curing' shall be defined in the following as all means and activities necessary to restore the health in a physiological sense and with a direct impact on life expectancy. 'Caring' on the other hand, shall be defined as all other medical services, encompassing all medical (but also psychological) activities without a direct impact on physiological health and the extension of life, but aiming at improvements of subjective quality of life, psychological well being but also showing the patient that his personal problems, perceived needs and wishes are taken seriously by the personnel of the HCS. Clearly, this distinction is crude in the way that it ignores that health is more than just a functioning body – a fact explicitly acknowledged in the WHO's definition of health. Further, no moral judgment is intended, since if the preferences of the citizens are of the kind that they want caring and are ready to pay for it, there is no reason why the HCS should not deliver what the customer wants.

## Further literature on the question

Since the publication of Newhouse' work the academic discussion and empirical research has taken up the question and a multitude of empirical studies has followed.

Most of the literature focused on the question whether the statistical relationship between HCE and GNP found by Newhouse, on which he bases his argument, is real or spurious. In the focus of the

empirical research are the statistical problems and methodological questions, especially arising from the fact that both GNP and HCE are time series with a growing trend. The fact that both variables increase over time may induce an artificial statistical relationship resulting from unit-roots and co-integration.

With regard to the question whether there exists an effect of GNP on HCE, some authors reached the conclusion that both time series are co-integrated and the effects found are spurious (see e.g. Gerdtham/Löthgren (2002)). Other authors find co-integration only for some countries or no co-integration (see for instance Hansen/King (1996) or Blomqvist/Carter (1997)). The substantive question became something like a major driver for innovative statistical methods, existing tests for co-integration were criticized and refined, others were proposed (Okunade/Karakus (2001), see also Gerdtham/Löthgren (1998a, 1998b, and 1999) for an encompassing discussion of the problem and the results of different papers, Jewell et al. (2003) and Freeman (2003) for the most recent approaches). Further, even if the statistical relationship is real, the question remains in which direction the causality works – since a higher GNP may as well be a result of a population with a better health status achieved by higher investments for health care (see for a similar argument Bhargava et al. (2001) and Webber (2002)).

The answer to the substantive question of the nature of health care is usually based on estimates for income elasticity resulting from the studies which found that an effect of GNP / income on HCE exists. Dominating are macro level studies, comparing samples states over time. Of the twenty-one macro level studies estimating income elasticity for health listed in Kanavos/Yfantopoulos (1999), only two come to the finding that health is a 'normal' good while the rest finds elasticities above one. An interesting result requiring an explanation is fact that elasticity estimates differ with the level of the study: in the list presented by Getzen (2000: 266/7), income elasticities above one are only found by macro level studies, while those found by studies at individual or intermediate (regional) level are below one, leading Getzen to the conclusion that 'health care is an individual necessity and a national luxury'.

The studies tackling the substantive question of why HCE substantially differs among countries that are quite similar in their basic economic and social features found several explanatory variables: for instance demographic factors, health related attitudes or technological development (see the results in Gerdtham et al. (1998) and Okunade/Murthy (2002)). One implication of Newhouse' study is, since the wealth of the society is the most important factor in explaining HCE variation, the institutional variation among HCS does not have an impact (Newhouse 1977: 123). Contrary to this result, several more recent quantitative studies try, based on the framework of institutional economics, especially the principle-agent relationship as the basic feature of the health care delivery, to find the institutional factors influencing HCE (see the studies by Lynch (1998), Fattore (1999), Croxon/Propper/Perkins (2001) and Propper/Croxon/Shearer (2002) for the impact of various institutional designs for the physician-patient-relationship, which is seen as the central element of a HCS and the contributions by Gerdtham et al. (1998) and Gerdtham/Jönsson (2000) for an overview on the institutional



determinants of HCE). The results show for instance, that the organization of a HCS does have an impact on HCE which is due to the institutional setting and the incentives created for the suppliers of medical care, while Newhouse argued that the lower HCE found in NHS type HCS is spurious and due to the fact that especially poorer countries choose this type of HCS.

In short, the treatment of the methodological and statistical problems prevails in this strain of literature and the substantive questions which are the central content of Newhouse' article, drifted somewhat out of focus.

## Open questions and problems

The conclusion drawn by Newhouse that health is a luxury rests on three results.

First on the finding that GNP explains very much of the cross-national variation in HCE and institutional features are irrelevant. This finding is disputed for the statistical problems listed above and substantively contradicted by the fact that recent studies find substantial explanatory power for institutional variables.

Second on the result that additional spending for health does seemingly not buy more or better health but something else.

Third on estimates for the income elasticity for health care above one, i.e. the proposition, that the richer people or societies get, the more health care they buy. The line of reasoning underlying this argument is contested for methodological and logical reasons: for instance, Parkin/McGuire/Yule (1987) criticize that a microeconomic framework is used to analyze macroeconomic data, respectively that macro level data is used to test a micro level relationship. The main objection is that the aggregate variables need not to behave the same way as the individual level variables do: the fact that societies with a higher GNP spend more for HCE may not tell us that individuals with a higher income are willing to spend more for health care (see King (1997) for an comprehensive treatment of the ecological inference problem closely related to the problem at hand). The paper by Getzen explicitly sets out to explain, why estimates of income elasticity differ among macro and micro level studies. Further, the effects found for GNP might be due to the fact that the relative prices for health care differ among the countries. Blomqvist/Carter (1997) argue that since health care is a labor intensive good, its relative price will tend to increase as the income levels rise. A further problem arises from the measures used to capture income and wealth. Using GNP calculated with purchasing power parities instead of the US\$ used by Newhouse, for instance Parkin/McGuire/Yule (1987) reach the conclusion 'that medical care, is, if anything a necessity rather than a luxury in economic terms' (ibid. 125, see also the results by Roberts (1999)).

The impact of Newhouse' paper was enormous, also because the implications for health policy and health care reform are substantial. The statement, that health care is a luxury good became, despite the severe critique from various sides, part of the 'conventional wisdom' in health economics (Parkin/McGuire/Yule 1987). But still, as the short review on the literature shows, there is no definitive

answer concerning the nature of health care. Further, given the statistical problems, it seems unlikely that answers can be found at macro level alone, i.e. by quantitative comparisons of states and HCS. Summing up, there are problems not just in the way the argument is tested at the macro level, but it is also questionable, whether the effects found at macro level can be supported with a congruent relationship at micro level. Although Getzen (2000) proposes an explanation which combines health spending at macro level with individual level decision making, he does not conduct a multilevel analysis but summarizes various studies using macro, regional, or micro level data. What is also missing is an explanation that makes understandable why richer people would want to buy more and different health care.

## Plan of the paper

In the following, I will first and briefly look question concerning the impact of additional HCE on health status, especially on objectively measurable physiological health of a population. The question is, whether the additional investments in health do indeed not buy more physiological health (section 2). Next I will look for a mechanism which could explain, why people want more health care and particularly a different kind of health care, i.e. caring, as they get richer (section 3.1). Third, I will in more detail look at the nature of health care in wealthy societies and try to contribute to an answer by looking at what – caring or curing – individuals expect from their HCS. The approach will use information on what a HCS delivers and the satisfaction of the citizens with the HCS to make an inference on the citizens' preferences for caring or curing. By combining micro and macro level data, I will take up the objection raised by Parkin/McGuire/Yule (1987) that cross level inference from macro to micro level is problematic. I will start with macro level comparisons, but will corroborate the findings and arguments with data from the micro level by conducting a multilevel analysis for the EU member states: is there, for instance, a positive relationship at macro level among the performance of a HCS and the aggregated citizens satisfaction with it – and can this finding be corroborated by a corresponding relationship at the micro level? (section 4)

## 2. The impact of additional expenditure on health status

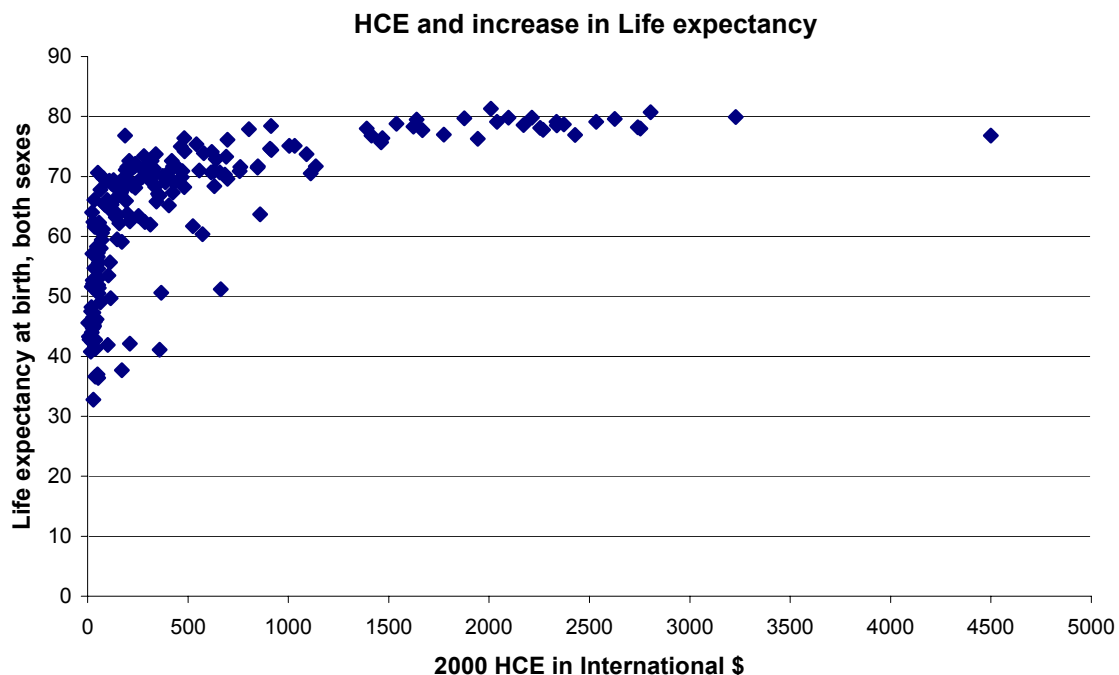
In this section, I will briefly deliver some data concerning Newhouse' question on the impact of additional resources on physiological health. It is usually believed that more money spent increases the health of the population. In the public debate, which intensified parallel to the growth of HCE, especially the suppliers of medical services argue that without additional financial resources the health status of the population will stagnate or even decline. With regard to the effect of additional HCE on health status and life expectancy of a population Newhouse concluded although restricted to a selection of a relatively homogenous group of wealthy industrial societies and without giving clear statistical evidence, that

'Yet there is little reason to believe that the marginal unit of medical care produces an improvement in physiological health. I am aware of no data suggesting that Swedes are

healthier than Norwegians or Finns, or that Canadians are healthier than the residents of the United Kingdom or Australia, despite much higher spending on medical care in Sweden and Canada. For example, infant mortality rates are similar in Norway and Sweden; they are also similar in the United Kingdom, Canada, and Australia.' (Newhouse 1977: 121-122)

Looking at data on HCE and life expectancy, one can indeed observe diminishing returns of additional HCE: the data presented in the following figure is from the WHO's World Health Report 2002. It shows for the year 2000 HCE in international Dollars per head plotted against the life expectancy reached (see WHO (2002: Tables 5 and 8)).

Figure 1: HCE and life expectancy



The diminishing effect of additional financial resources invested in health care is clearly observable. Once about 1000 \$ per head are spent for health and a life expectancy of about 70 to 80 years is reached, even a tripling of expenditure does not increase the life expectancy any more. While most states are of an about equal efficiency when transforming financial input into life expectancy, some, i.e. the ones under the curved line, are inefficient in the sense that they could reach a higher life expectancy with the money they currently invest in health. An example would be South Africa reaching a life expectancy of 51.2 years with an expenditure level of 663 \$, while for instance Costa Rica reaches a life expectancy of 76.4 years by spending 481 \$. Treating the snap shot as a trajectory of development over time, one can say that in the early stages of development even little investments in health care have a huge impact on life expectancy. But once a certain level of health is reached, additional expenditures do not increase life expectancy. Insofar Newhouse argument is supported.

However, even the argument that in the early stages of development HCE as such makes a difference for the life expectancy can be questioned. Since not only the access and the supply of health care for the population but also the overall standard of living increases as a society gets richer the realized increases in the 'physiological' health may be due to a better standard of living and not only to a HCS delivering more and better health care. This line of reasoning is not as absurd as it may seem to be. Although the HCS is relevant for the curing of illnesses, the standard of living – for instance access to clean drinking water, the overall hygienic situation and the supply of food – is relevant for the question whether illnesses occur in the first place.

### **3. The nature of health care**

#### **3.1. Changing nature of health care: a possible explanation**

To say that health is a necessity has more content than just a income elasticity of one or below, and to say that health is a luxury implies certain preferences at individual level. According to Newhouse it is not the case that people just restore health and spend the rest of the income for other, more attractive things. The distinction between caring and curing implies that health, which is necessary to enjoy life and wealth, is restored or maintained. People who are already healthy do not spend still more money for health since healthy people need no cure. At macro level this would imply that a certain medical infrastructure is supplied but with a certain limit. But obviously, there is no limit to HCE.

Hence the question, why could it be that as people get richer, they are no longer satisfied with a HCS that maintains and restores their health but want more than curing? In this section, I will try to investigate the question, why citizens could want a certain kind of health services which are luxury in nature. Since societies get richer as they develop economically, the content of Newhouse' static argument implies, that the nature of the services the citizens want from the HCS changes over time from curing to caring as people and societies as a whole get richer. What mechanisms could explain the change of preferences of the citizens during the economic development ? To find a mechanism by which wealth leads to changes in preferences (curing being taken for granted and the wish to receive caring in addition to curing), one can resort to changes in political values of the citizens: in politics, there is a similar debate concerning a change from materialist to post-materialist values, initiated by Inglehart (1977). Ingleharts' argument, by which he explains the occurrence of severe political protest in wealthy and advanced industrial societies during the late 60s, is based on the Maslows' hierarchy of needs: if people get richer and the material questions of survival and basic, physical wellbeing are settled and a high degree of overall welfare is secured, people take these achievements for granted and want other things, for instance political influence or self-actualization (see Maslow (1954)). Applied to health care, this argument would predict, that once the basics – curing – are given, people indeed take this for granted and the focus of the people changes on caring as the health care equivalent of 'post-materialist values' and 'post-materialist wishes'. It has to be made clear, that this

does by no means imply that curing is no longer relevant, but implies that it is no longer sufficient to satisfy the patients. People do not expect caring instead of curing, but caring in addition to curing.

To test this explanation, one can use satisfaction of individuals with the HCS and infer from what the HCS delivers on whether curing is still enough to satisfy the citizens. Instead on focusing on willingness to pay or income elasticities, I will ask whether a societies wealth and income has an impact on whether the individual is satisfied with a HCS delivering curing or wants more.

### **3.2. Changed preferences as indicator of the nature of health care**

With regard to the nature of health care, I will start from the perspective of the consumer, i.e. the citizen and his preferences. My question is, what can one tell about the nature of health care in wealthy societies when looking at the preferences and the satisfaction of the citizens with the HCS. Although Newhouse' argument and conclusion is based solely on findings at the macro (state-) level, his line of reasoning is also, at least implicitly, based on the individual members of a society and their preferences. The reason why the society as a whole spends more money and buys caring is that the individuals want more caring and are ready to spend more money for this kind of health care. The state or whoever is in control of the HCS, aggregates the individual preferences in the political process and ensures that these kinds of services are supplied by the HCS. To say that health is a luxury good implies certain preferences of the citizens. To say that as GNP increases more caring is bought implies that during the economic development the preferences of the citizens have changed to some degree and people are no longer satisfied with a HCS that merely cures, but want a HCS that 'cares'. The macro level relationship, found by Newhouse and many others, of a strong and positive effect of GNP on HCE would correspond and be corroborated by a strong and positive relationship between an individuals income and its willingness to pay for health care.

A change in the nature of the health care a HCS delivers is hence preceded and accompanied by a change in individual preferences. To capture these preferences, the method of choice would be to make the citizens familiar with the distinction between caring and curing, ask them, first what they primarily expect from the HCS, second whether they are satisfied with a HCS delivering only curing and look whether the differences in the preferences correspond to differences in income. However, this information is not directly available: Although there is a relatively reliable income variable, harmonized into four quartiles and hence comparable over the countries in the survey on which this paper is based, there is no question in the survey, which directly asks what people expect from their HCS. Therefore my approach will be an indirect one. To obtain an answer, I will make an inference from the satisfaction of the citizens with their HCS on the nature of health care. This inference will rest on two basics:

- First, the distinction between caring and curing as defined above.
- Second, the assumption that preferences can be measured by the satisfaction of people: if people want just curing, they will be content with a HCS that delivers this kind of health care in an

economically efficient way. If they want more than curing, i.e. a HCS that 'cares', they will no longer be satisfied with a HCS that just cures.

To make this inference, data on the performance of the HCS is required, which is available: it is objectively known what a HCS delivers. For instance, there exists data on the degree to which a HCS achieves a high level of 'physiological' health or a high life expectancy, features clearly belonging to the curing function. Furthermore there is information on whether the HCS does so in an economically efficient way. This information will be combined with information on the individuals' satisfaction with the HCS. The question then is, whether the patients are content with what they get from the HCS or not. More precisely, are the citizens satisfied with a HCS delivering curing? Two answers are possible:

- If the HCS succeeds in delivering 'curing' and the citizens are satisfied, people still primarily want curing from the HCS. Further, satisfaction is increased if the HCS provides curing in an economically efficient way. Hence, given that the citizens want curing one would expect that the HCS' achievements in curing and in the efficiency by which it does so are relevant for the satisfaction of the citizens with the HCS and both increase the satisfaction. Both effects would imply that in the preferences of the citizens, health is still a necessity and not a luxury good.
- If the restoration of health is irrelevant for the satisfaction of the citizens, or if people aren't satisfied with the HCS, even if it delivers curing in an economically efficient way, this implies that they take the curing function for granted and expect more than curing. By the defining distinction between curing and caring, what they then expect is caring. This would imply, that health care is in the preferences of the citizens no longer a necessity but a luxury good.

In the following, I will try to get an answer by looking at the reasons for satisfaction of the citizens with their HCS. Here one can derive several relationships between individual level attitudes towards the HCS, especially the satisfaction of the citizens/patients with the HCS and properties of the HCS as a system. I will focus on the central statement of Newhouse that health is a luxury good and richer people will purchase more health care and especially demand more caring. The dynamic formulation of the hypothesis is due to the fact that different levels of GNP and hence HCE are linked by economic development over time. This leads to the following hypothesis on the relationship of GNP as an indicator of the wealth of the citizens and the satisfaction of the citizens: the higher the GNP, the more the citizens' preferences have changed from curing to caring and the less satisfied are the citizens if they only get curing. Hence, if the argument is true, as GNP increases, efficiency and objective achievement of the HCS are no longer sufficient to make people satisfied with their HCS.

## **4. Method, data and results**

General approach: combination of macro and micro level data

For a start, I will look at macro level data, i.e. aggregate information on HCS in various countries. This is also done to get a hint whether macro and micro level analyses lead to the same conclusion with regard to the substantive question at hand. This first step of looking for (missing) relationships at the

macro level is also conducted to find a 'story' – a mechanism, which will be tested in the second step in the way of a multilevel regression combining data from micro and macro level.

Clearly, the evidence of a change in the nature of health care during a societies' economic development would be stronger and the change itself would be more obvious if data for states at various stages of economic development, i.e. for developing and industrialized states, were available. In a group of states in which the level of economic development does not differ largely, the change/difference may be not pronounced. However, although the WHO supplies information on the objective achievement of HCS for developing as well for industrialized countries, no information on the satisfaction of the citizens with their HCS is available for less developed countries – indicating that opinion polls and mass surveys clearly are a luxury good with only rich countries spending money for it. Hence the comparison is restricted to the EU states, for which both kinds of information is available.

#### **4.1. Evidence form macro level data: macro level snap-shots**

Looking at the macro level, one can find correlations respectively non-correlations, which tell a story about what people expect from their HCS and what determines whether they are satisfied with it or not. The questions I want to look at are the following: does the objective performance of the HCS, as measured by 'objective' factors like health status, life expectancy, which would be associated with curing, determine the satisfaction of the citizens or are the citizens no longer satisfied by restored health alone? Do they take curing for granted and want more, for instance, 'someone who cares'?

##### **The macro level data**

The figures presented in the following will be used to give a first impression on the relationship of satisfaction and the performance of a HCS with respect to curing or caring. The data on which these figures are based combines system level, i.e. macro level data as well as aggregated individual level data:

a) the 'objective' evaluative data on the HCS is from the World Health Reports, collected and published on a yearly basis by the WHO. The reports contain indicators on responsiveness, attainment, efficiency of the WHO member states HCS. Content and computation of the measures are documented in the statistical annex of the 2000 World Health Report.

**Responsiveness**, is the degree to which the HCS provides intangible elements like dignity, confidentiality, autonomy, prompt attention but also explicitly 'client orientation'. The measure is based on a survey of experts who evaluated the countries with respect to the elements mentioned above, ranging from 8.10 in the US as the most responsive HCS to 3,69 for Somalia, as the least responsive HCS (for the year 1999, see Annex Table 6 in WHO (2000) for a detailed description of the measure).

**Attainment** is a composite measure, capturing in a way how near a real HCS is to an ideal HCS. It combines the level of health achievement, fairness of financial contributions to the HCS,

responsiveness and economic efficiency of the HCS. The attainment indicator has a range from 100 (Japan with a value of 93,4 being the best HCS) to 0 (for the year 1997, see Annex 9 and Annex Table 9 in WHO (2000) for a description).

**Efficiency** captures the HCS' economic efficiency in the production of health, i.e. the efficiency by which resource input is transformed in health output, ranging from France with a value of 0,994 as the most efficient HCS to Sierra Leone as the least efficient HCS (for the year 1997, see WHO (2000), Annex 10 and Annex Table 10).

**Life expectancy**, based on disability adjusted life years (DALEs), is the most objective indicator for how good the HCS is in achieving a long and healthy life for the population (for the year 1997, see WHO (2000), Annex 5 and Annex Table 5).

While responsiveness belongs, given the distinction made in the introduction, to caring, efficiency and life expectancy clearly are curing in nature, with attainment as a mixture of both aspects.

b) Additional information about the HCS as a macro system is total HCE per head in international dollars (for 1997), the number of physicians per 1000 inhabitants (for 1994) and the GNP per head (1995), compiled from various sources (WHO, OECD Health data base, and the collected statistical data on the HCS in the EU member states Schneider et al. (1998)).

c) The subjective data, i.e. the subjective evaluation of the HCS by the citizens, used in the following figures is aggregated individual data from the Eurobarometer 44.3 on which the micro level analysis presented later on is based. It was conducted from February to April 1996 and contains evaluations of the HCS by the respondents under several aspects:

**Inefficiency** is the percentage of people in the country who strongly or slight agree with the statement that health services provided to the average citizen are inefficient. What is the content of this evaluation? The wording indicates, that the variable cannot be interpreted in the sense, that the HCS as such is operating inefficiently in the economic sense of inefficiency in the perception of the citizens. The French wording, used e.g. in Luxembourg, Belgium and France, is 'inefficace', the Netherlands word is 'niet doeltreffend', the Danish word is 'effektive' German word is 'leistungsfähig' the Spanish version is 'ineficientes'. Instead, that what the patients have in mind when answering the question is not inefficiency but ineffectiveness, i.e. the effectiveness of the health services for the restoration of the patients' health.

**Dissatisfaction** captures the citizens' dissatisfaction with the HCS in a country as the aggregated percentage of people who are fairly or very dissatisfied with the country's HCS.

**Change**, is the percentage of people thinking that the national HCS needs fundamental changes or needs to be completely rebuilt.

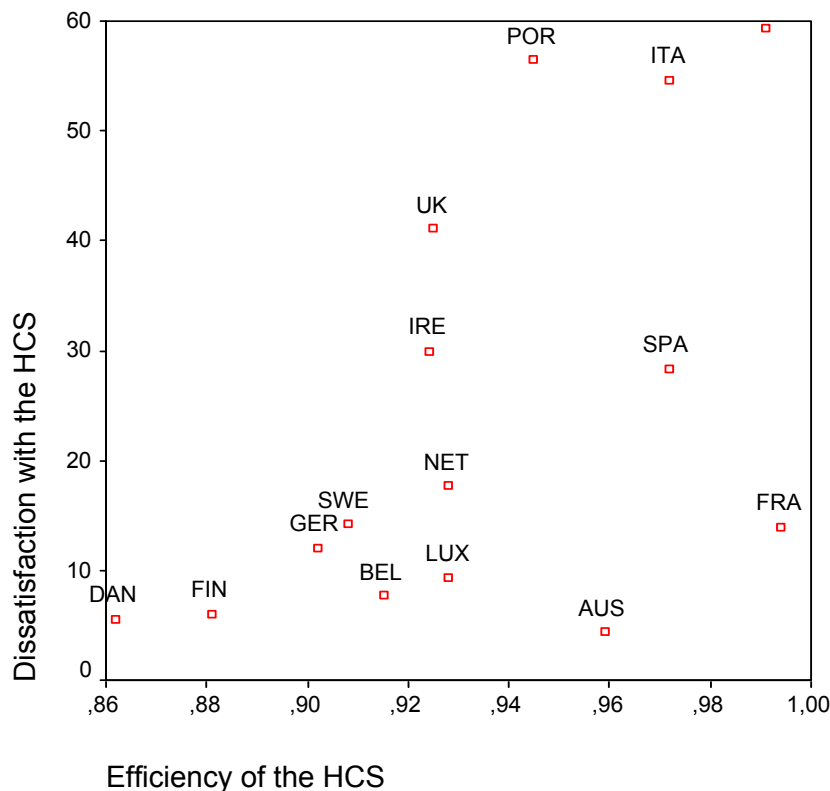


## The evidence

### Objective features of HCS and satisfaction

The following four figures give a first 'snap-shot kind' of impression on what people expect from their HCS by plotting the satisfaction of the individuals against objective indicators for caring respectively curing: three indicators capture 'curing': the first one showing the objective economic efficiency of the HCS, the second showing the HCS' overall attainment, the third one showing the life expectancy achieved by the HCS as the clearest indicator of how good the HCS fulfills its 'curing function'. The responsiveness of the HCS is used as an indicator for 'caring'.

Figure 2: Objective efficiency of the HCS and the satisfaction with the HCS



There seems to be, at macro level, no relationship among the objective efficiency of the HCS and the satisfaction of the citizens with the HCS. This either implies that efficiency is no criterion for the evaluation of a HCS by the citizens or that the citizens are unaware of the objective efficiency of their HCS.

Figure 3: Satisfaction with the HCS and the overall attainment of the HCS

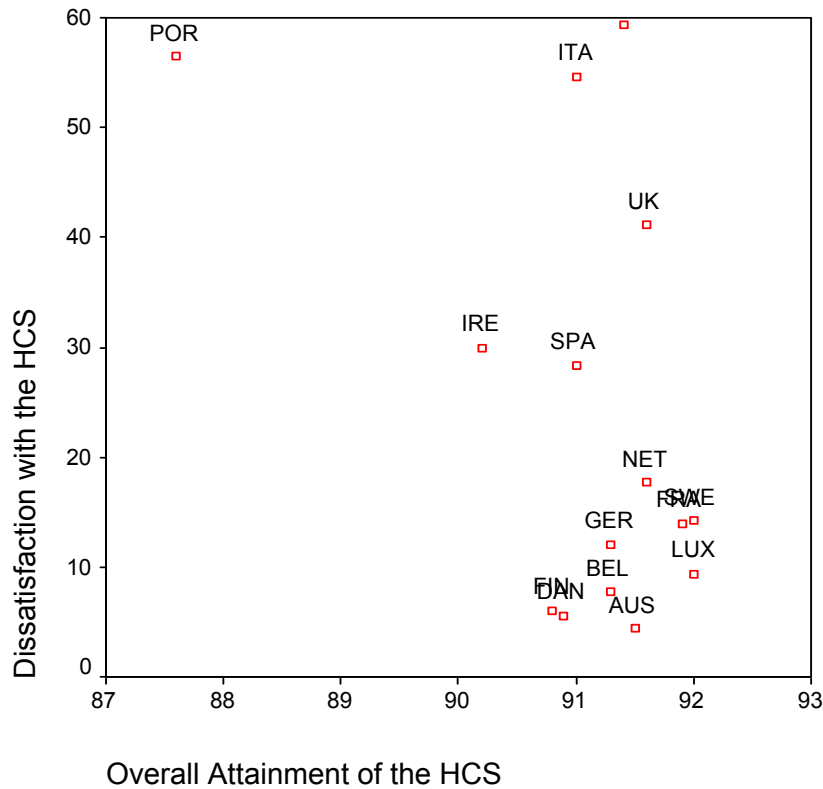


Figure 3 shows, that at least in a static perspective, the objective attainment of the HCS, i.e. how close the HCS is to what the WHO defines as an 'ideal HCS', does not tell us anything about whether people are satisfied with the HCS or not. Apart from Portugal as an extreme outlier, all HCS in Europe reach about the same level of overall attainment but vary extremely with regard to the satisfaction achieved.

Life expectancy is the indicator closest to curing as defined above. The scatter plot of life expectancy by satisfaction in figure 4 shows the same pattern as the aggregate indices: the delivery of physiological health is no longer sufficient to satisfy the people. This implies, that individuals take it for granted, that their health is restored, and no longer evaluate the HCS by this function.

Figure 4: Satisfaction and life expectancy

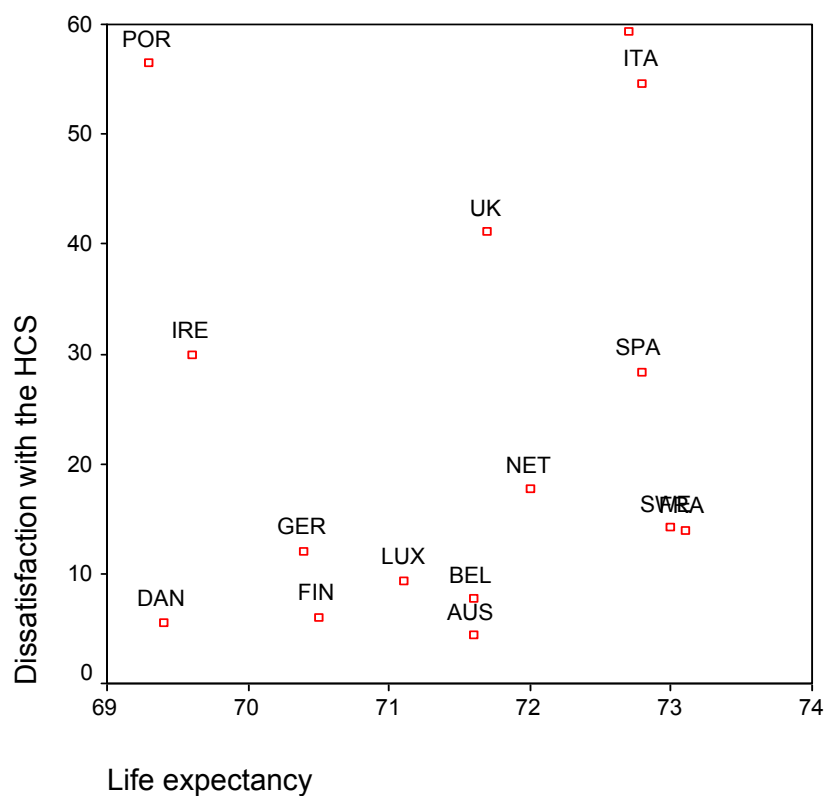
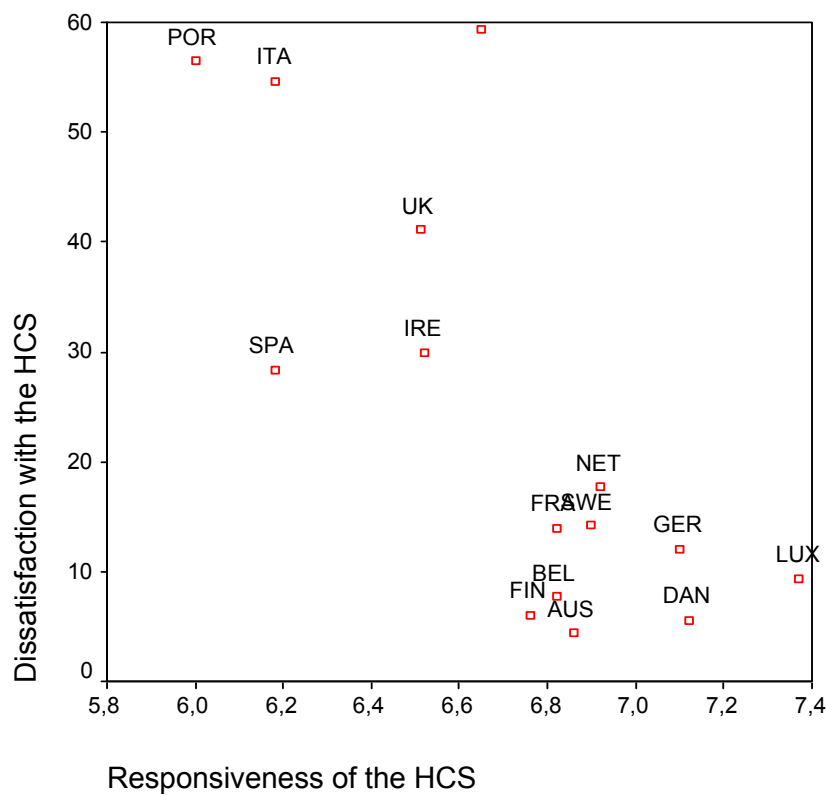


Figure 5: Responsiveness and satisfaction with the HCS

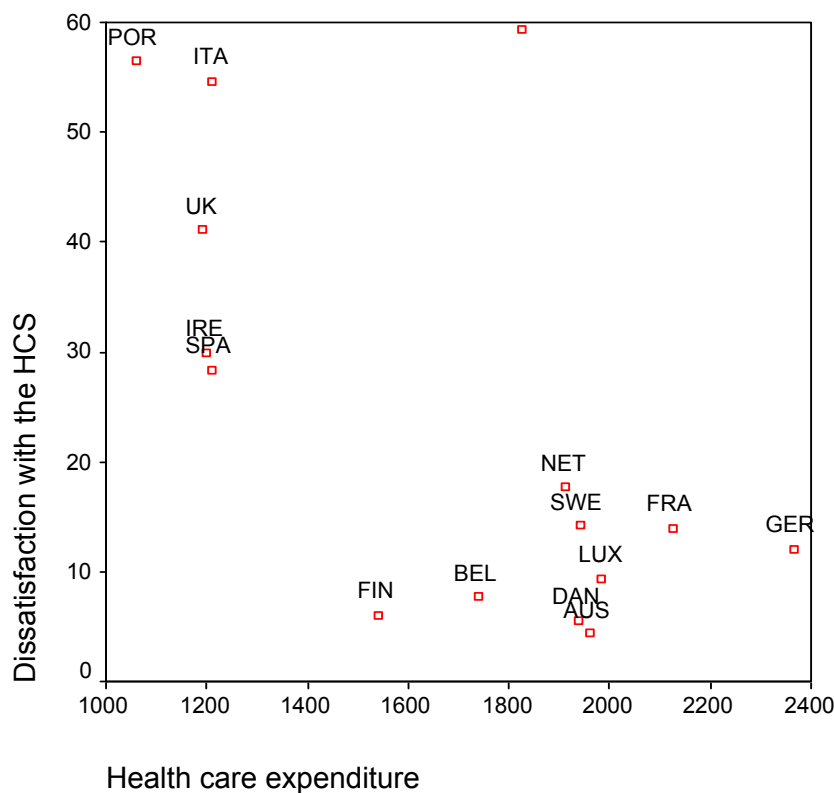


The strong negative relationship in the scatter plot of dissatisfaction by responsiveness – a criterion belonging to the caring aspect – in figure 5 gives a first hint towards what people expect and want from their HCS – and what makes them dissatisfied if they don't get it: people want a responsive HCS, and dissatisfaction increases rapidly if the HCS proves itself to be unresponsive to the patients. Two clusters of HCS are recognizable: the group in the lower right corner consists of HCS of the national health service (NHS) type, in which the government has immediate and far reaching control over the HCS. The corporatist HCS, in which the societal actors are more involved in the day to day operation of the HCS seem to be more 'customer oriented'.

### Can satisfaction be increased by increasing the resources devoted to health care?

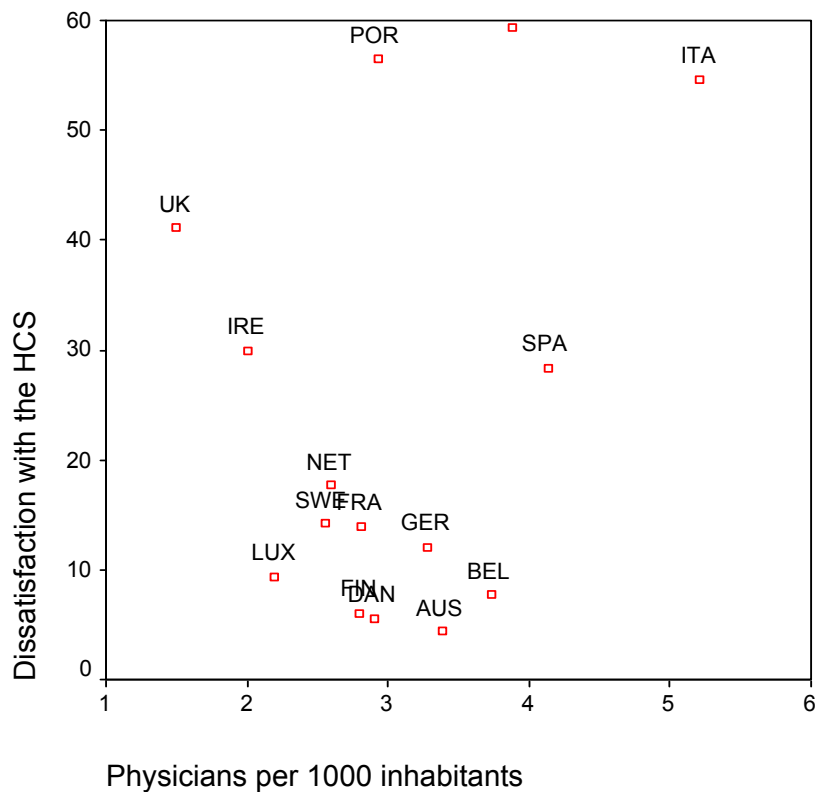
What can the state do to increase the satisfaction of the citizens with the HCS? Many, especially providers of health care, argue, that the HCS would be better if more resources were available for the HCS. More financial resources would make improved medical products and advanced medical technologies available to the patients and hence increase life expectancy and quality of life. More staff employed in the HCS would enable the individual provider, for instance a physician, to spend more time for each patient and therefore be more responsive to the needs of the patients. Hence the question, whether the satisfaction of the citizens can be increased, by devoting more resources to the HCS, i.e. by spending more money and employing more people in the HCS.

Figure 6: Reasons for satisfaction: money spent



Apart from Greece as an outlier, two groups of HCS – again corresponding to type of HCS (NHS or not) – can be identified in figure 6: one group reaching about the same levels of satisfaction by spending very different amounts for health care. Even though Germany spends much more for health per head, the level of satisfaction achieved is lower than in Finland, spending about 1000 \$ less. The other group is made up of states spending about the same for health care but reaching with this expenditure level very different levels of satisfaction in the population. Spain seems to be able to provide a HCS with which the citizens are relatively satisfied while in Italy, although the resources devoted to the HCS are slightly higher, the citizens are very dissatisfied with the HCS.

Figure 7: Reasons for satisfaction: physicians per 1000 inhabitants

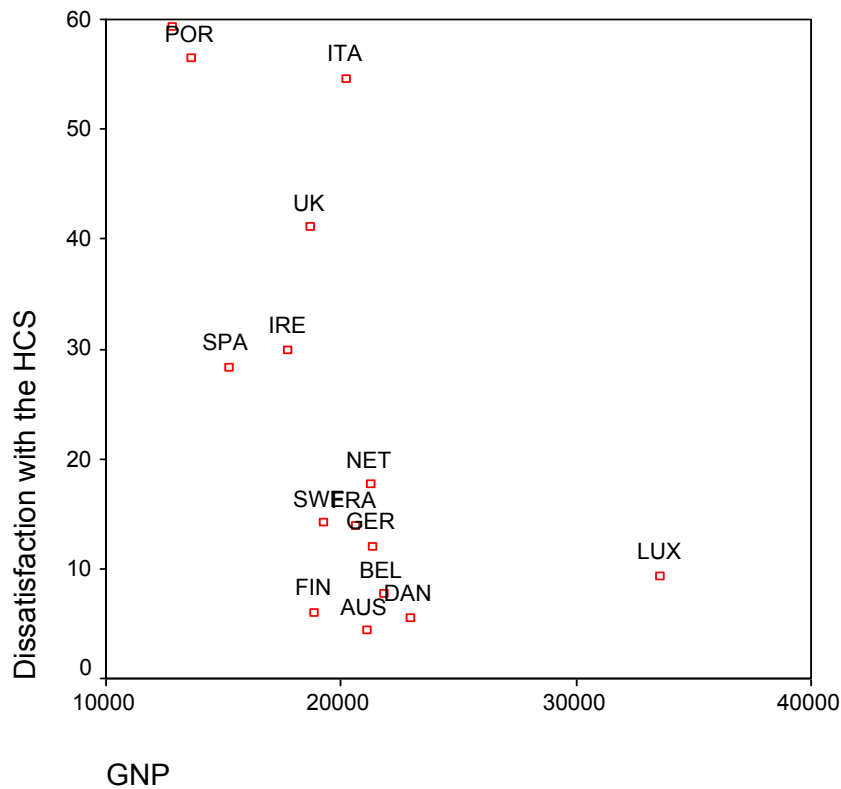


The argument to be tested by figure 7 would be that a higher density of physicians in the country allows each physician to spend more time with his patients, enabling him to be more responsive towards the patients' subjective needs and to care more about the individual patient as a person. If satisfaction would increase with the number of physicians, this would be a strong indicator that the satisfaction of the patient depends on the degree to which the staff of the HCS 'cares' for them, by spending time with them. With regard to the question of the paper, such a finding would imply that people indeed expect caring. However, the figure shows that this seems not to be the case.

## Prosperity and satisfaction

Concerning Newhouse' original argument that rich people expect more and different things from the HCS, one could ask, whether rich people expect more caring and hence are less satisfied, if the HCS only delivers curing. The question to be answered at macro level by the following figure 8 is whether people in richer societies are on average less satisfied with their HCS.

Figure 8: Prosperity and satisfaction



Apart from the outlying case of Luxembourg there is only a very weak relationship between GNP and satisfaction, which most of all rejects the hypothesis: the patients in richer countries are not more dissatisfied with their HCS than patients in less affluent countries.

## Macro level relationships

A macro level regression, using the 15 European countries as cases, is used to sum up the findings already presented and also the impact of some other macro level variables the evaluation of the HCS by the citizens. Dependent variables are the two indicators for satisfaction aggregated from the Eurobarometer survey: satisfaction with the HCS and the perceived need for changes of the HCS. The results of the regressions are given in Table 1.

Table 1: Marco level relationships

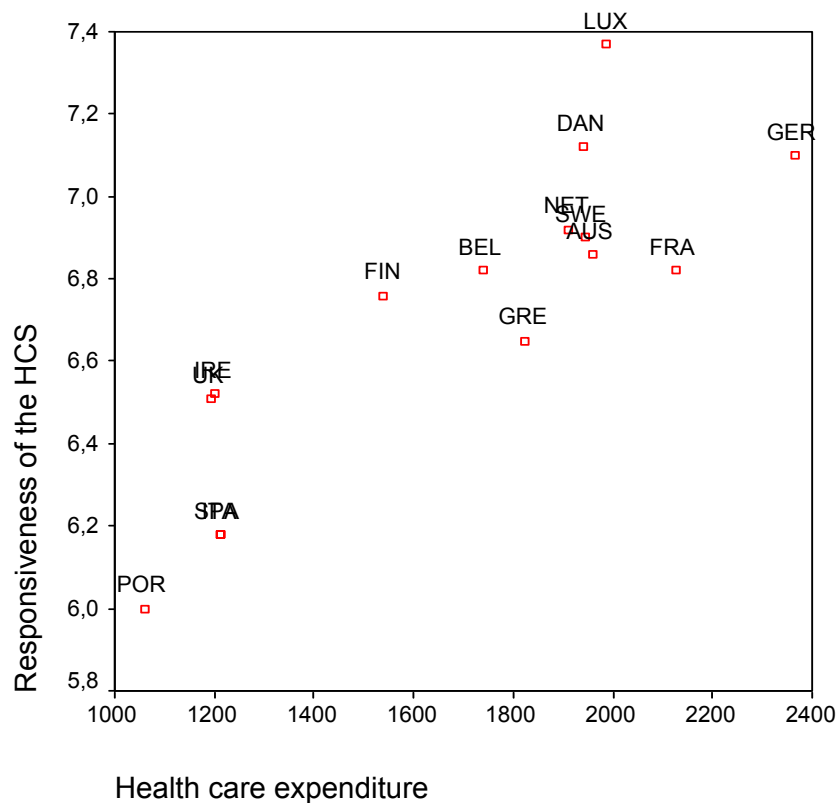
	Change		Dissatisfaction	
	Beta	Sig. Level	Beta	Sig. Level
<b>Macro Features</b>				
GNP per capita	0,186	0,600	-0,539	0,545
HCE per capita	0,161	0,587	-0,035	0,963
Physicians per 1000 inhabitants	-0,010	0,890	-0,104	0,566
Responsiveness	-0,394	0,500	0,408	0,782
Efficiency	0,125	0,349	0,277	0,391
Life expectancy	0,031	0,691	-0,024	0,906
<b>Micro Features: Attitudes</b>				
'Inefficient'	0,038	0,792	0,775	0,007
Dissatisfaction	0,809	0,001		
	<b>Adj. R<sup>2</sup></b>	<b>Std. Error</b>	<b>Adj. R<sup>2</sup></b>	<b>Std. Error</b>
N = 15	0,967	4,203	0,776	9,365

As was to be expected, because of the only vague relationships in the figures and the low number of cases, there are few significant effects. The objective achievement of the HCS even in the form of life expectancy as the most objective indicator is irrelevant for the evaluation of the HCS by the individuals. The strongest effect have the aggregated attitude variables: people want to change the HCS, because they are dissatisfied with it. They are dissatisfied with it, because they perceive the services provided to them by the HCS as inefficient, i.e. ineffective.

#### Excursus: HCE and Responsiveness

As can be seen in figure 9, responsiveness as such can be best explained by HCE, yielding a significant positive correlation of .858 with responsiveness, while the number of physicians per 1000 inhabitants correlates insignificant and negative. The relationship among HCE and satisfaction is therefore an indirect one: HCE increases – by mechanisms unknown – the responsiveness of the HCS and thereby the satisfaction of the citizens with it.

Figure 9: HCE and Responsiveness



## 4.2. Evidence from individual level data

### The individual level data

The individual level data is from the Eurobarometer 44.3 on 'Health Care Issues and Public Security' which contains several questions capturing the attitudes of individuals towards their HCS. The total data set consists of 16235 cases. The dependent variables are the evaluation of the HCS by the individuals, i.e. whether the respondent is satisfied with the HCS and whether, in his opinion, the HCS runs quite well in its present form or needs to be changed or even rebuild. The attitude variables used in the following differ slightly from the aggregated variables used for the macro level comparisons earlier:

**'Satisfaction'** is a variable capturing the satisfaction of the individuals on an ordinal scale ranging from 1 'very dissatisfied' to 5, 'very satisfied' with the HCS.

**'Change'** measures the necessity for a change of the HCS as perceived by the respondent, also on a 1 to 5 scale, ranging from 1, the HCS 'runs quite well', to 5, the HCS 'needs to be rebuild completely'.



Independent variables are socioeconomic factors, for instance age, sex, education and especially income, but also attitude variables, capturing attitudes related to health, the welfare state and health related behavior:

**'Inefficiency'** is the agreement to the statement that the 'health services provided to the average citizen are inefficient', ranging from 1, 'disagree strongly' to 5, 'agree strongly' with 3 'neither nor' as an indifference category. As was argued above, the wording of the question indicates that what the respondent evaluates is not economic efficiency but effectiveness.

**'Essentials'** captures the respondents agreement to the statement, that the government should only provide essential medical services, measured with the same scale as inefficiency. This is a very crude argument, since one could argue, that people preferring a HCS providing more than the just curing function, should refuse any restriction of the services offered to only essential services.

**'MoreTime'** is the respondents agreement to the statement that 'doctors do not spend enough time discussion preventive action and healthy lifestyle with their patients'. The categories are the same as in 'Inefficiency'. Unfortunately the question encompasses two dimensions: the aspect whether the physicians spend enough time with their patients and the aspect whether they physicians care enough about prevention (as opposed to the restoration of health once a illness actually has occurred). Since both dimensions are not attributable to the curing function as defined above, they are seen and interpreted as belonging to the caring category.

**'Prevention'** is an index constructed by summing up the participation of the respondent in preventive medical checkups: the more preventive checkups the respondent conducted, the higher the score. It captures health awareness of the patient: the higher this score, the more important is health as an issue for the respondent, since he invests own resources, e.g. time but often also money, in health measures. Since the preventive measures are not directly aiming at restoring health, they are more likely to belong to health services of the 'caring' type.

All other individual level variables, especially the socioeconomic variables, are either self explaining or have been already described in the section on the macro level analysis. The income variable is recoded into four quartiles, with the value 1 for the lowest and 4 for the highest income quartile. The income variable has lot of presumably non-random missing values, which make the listwise deletion method questionable: when compared to a regression without the income variable, an additional 2000 cases get lost, with still 10660 cases remaining. The problems, particularly the problem of selection bias as described by King et al. (2001) is recognized, but for the reason that the mechanisms leading to a missing value in the income variable are non-random in nature, the remedy proposed by King et al., to impute the missing cases, cannot be used. With the income variable being central for the argument, I will accept the problems.

The macro level variables were attached to the dataset on the country basis, i.e. all French respondents have the same values for GNP etc. Content and labels are the same as in the macro level analysis. All variables were standardized.

### The method: multilevel regression

The nature of the data raises two questions, which make the usage of an OLS regression problematic. First, the dependent variables are not metric but ordinal. However, since both have at least five categories, I have chosen a OLS based model instead of an ordinal logit models, which would be more appropriate. The reason for doing so is, that an ordinal variable with at least five categories does not lead to biased results when treated as a continuous variable (see Bollen (1989: 433ff), while the results are much more easy to interpret. Second, the data consists of individual cases nested within states and the analysis uses characteristics of the states, for instance GNP, and of the individuals, the appropriate method is a multilevel regression (see Snijders/Bosker (1999) and Steenbergen/Jones (2002) for a motivation and introduction). In addition to the multilevel regression, I ran a OLS model as a baseline model<sup>1</sup>. I have chosen fixed effects for the explanatory variables and a random intercept for the countries. The multilevel data structure restricts the number of macro level variables includable in the analysis. Despite about 10.000 cases at micro level, there are only fifteen cases at macro level and hence any inference on the role of macro level features is not made on the basis of 10.000 single cases, but based on fifteen. Even though the macro level variables do not correlate substantially, the small n increases the standard error of the macro level effects. Hence I have restrained myself to the three variables most interesting from the theoretical point of view: these are GNP, HCE and responsiveness.

### The results

The following two tables show the satisfaction of individuals with their HCS ('satisfaction') and factors influencing the necessity perceived by them, that the HCS needs to be changed ('change'). For the analysis, I restrained myself to uni-dimensional indicators with a clear meaning, leaving aside for instance the WHO's attainment indicator of the HCS as a composite measure for the evaluation of the HCS. The combination of several kinds of the HCS' achievement, belonging – as responsiveness – to the caring categories or belonging – as life-expectancy – to the curing categories – prohibits an interpretation with regard to the question at hand.

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<sup>1</sup> Both models, OLS and Multilevel, lead to the same conclusions – a fact that changes dramatically if the number of macro level variables is increased. If the number of macro level variables is doubled to six, all macro effects become insignificant in the multi level version, while they remain highly significant in the OLS model.

Table 2: Determinants of individual satisfaction with the HCS

Satisfaction	OLS-Regression				Multilevel Regression	
	Micro-Level Variables		Micro and Macro Variables		Micro and Macro Variables	
	Estimate	Sig.	Estimate	Sig.	Estimate	Sig.
<b>Responsiveness</b>			0,872	0,000	0,888	0,002
<b>HCE</b>			-0,374	0,000	-0,337	0,046
<b>GNP</b>			-0,251	0,000	-0,306	0,035
<b>Sex</b>	0,010	0,233	0,002	0,770	0,001	0,868
<b>Age</b>	0,044	0,000	0,017	0,056	0,016	0,075
<b>Education</b>	0,130	0,000	0,015	0,083	-0,003	0,735
<b>Inefficiency</b>	-0,401	0,000	-0,317	0,000	-0,286	0,000
<b>Essentials</b>	0,082	0,000	0,083	0,000	0,076	0,000
<b>Prevention</b>	-0,021	0,021	-0,024	0,004	-0,015	0,060
<b>MoreTime</b>	-0,064	0,000	-0,043	0,000	-0,058	0,000
<b>Income</b>	-0,038	0,000	-0,007	0,392	0,000	0,963
	<b>Adj. R2</b>	<b>S.E.</b>	<b>Adj. R2</b>	<b>S.E.</b>		
N = 10660	0,209	0,898	0,313	0,838		

Table 3: Determinants of perceived necessity of change of the HCS

Change	OLS-Regression				Multilevel Regression	
	Micro-Level Variables		Micro and Macro Variables		Micro and Macro Variables	
	Estimate	Sig.	Estimate	Sig.	Estimate	Sig.
<b>Responsiveness</b>			-0,451	0,000	-0,441	0,003
<b>HCE</b>			0,148	0,000	0,142	0,102
<b>GNP</b>			0,169	0,000	0,158	0,040
<b>Sex</b>	-0,003	0,711	0,001	0,900	0,001	0,893
<b>Age</b>	-0,034	0,000	-0,023	0,003	-0,029	0,000
<b>Education</b>	-0,031	0,000	0,019	0,016	0,020	0,007
<b>Inefficiency</b>	0,140	0,000	0,118	0,000	0,096	0,000
<b>Essentials</b>	-0,019	0,010	-0,025	0,000	-0,018	0,010
<b>Prevention</b>	0,022	0,004	0,026	0,000	0,033	0,000
<b>MoreTime</b>	0,042	0,000	0,036	0,000	0,039	0,000
<b>Income</b>	0,034	0,000	0,022	0,003	0,016	0,032
<b>Satisfaction</b>	-0,582	0,000	-0,514	0,000	-0,486	0,000
	<b>Adj. R2</b>	<b>S.E.</b>	<b>Adj. R2</b>	<b>S.E.</b>		
N = 10570	0,454	0,731	0,479	0,714		

A first result is, that the features of the HCS do indeed matter for the evaluation of the HCS by an individual. The effects found are to some degree astonishing:

### Determinants of satisfaction

With regard to the financial resources provided by a society for the provision of health care, no effects of the expected kind can be found: additional resources do not have an increasing effect on satisfaction with the HCS. Spending more money for health care does not increase but instead decreases the satisfaction of the citizens with the HCS: if the level of HCE increases too much, people

get dissatisfied with the HCS, thinking that too much money is spend. This effect of HCE as such can be explained by the prevalence of the HCE in the media and the public discussion. HCE is a easy obtainable figure that is often reported in the media and is furthermore very straightforward to interpret: costs are rising and this in turn often has the immediate consequence that the contributions of the citizens to the HCS also increase, i.e. the respondent has to pay higher contributions or higher taxes. Either way, the increase and the level of expenditure is immediately noticeable by the respondent. HCE is not seen as an integral part of a bundle of benefits and costs, but as costs alone.

This interpretation is corroborated by the findings at the macro level: the output of the HCS, i.e. the benefits such as life expectancy bought by the HCE are irrelevant for the evaluation. The same holds for economic efficiency. Although a dominating theme in the academic and economic research on the design of HCS, efficiency does not play a role in the evaluation of the HCS by the citizens, either because the citizens do not care whether their HCS achieves its aims in an economically efficient way or they have no knowledge and no means to recognize whether their HCS works efficient or not. Whichever the reason, efficiency seems not to be a criterion for the evaluation of a HCS by the citizens while HCE clearly is.

None of the demographic attributes of an individual like age, sex or education has a notable impact on satisfaction. More relevant are personal attitudes. The opinion that the state should only provide the essential medical services the attitude that doctors do not spend enough time to explain preventive measures to the patients or the general health awareness of the respondent (Prevention), which reveals itself in a participation in preventive medical checkups, have an – albeit weak – impact on the satisfaction with the HCS. The by far strongest factor determining satisfaction with the HCS at the individual level is the opinion, that the medical services provided by the HCS to the average citizen are inefficient, i.e. ineffective and of no use to restore the citizens health. However, as could be seen in the macro level comparisons, this opinion is contrary to the objective achievement of the HCS.

What can one tell about the nature of health care? With regard to the question of the kind of health care the citizens want from their HCS, two factors can give a hint: first, responsiveness, the degree to which the HCS is open for the wishes of the citizens is of all variables the one with the by far strongest impact on satisfaction, indicating that people do indeed expect to be taken seriously by the personnel working in the HCS and are not satisfied if the personnel working in the HCS just restores their health without paying attention to what the patient thinks and wants. This clearly is an aspect of caring in the sense defined above. Second, the effect of wealth on the satisfaction is ambiguous: while the effect of GNP is strong and negative, there is nor effect of the household income. People in wealthier societies are less satisfied with the HCS, but this does not correspond to a micro level relationship between wealth and satisfaction. This indicates that the finding by Newhouse is indeed an ecological fallacy.

### **Determinants of the perceived need for changes in the HCS**

The 'objective' variables characterizing the HCS once again have a noteworthy impact on the need for changes in the HCS as perceived by the individuals. Again particularly a low responsiveness can be

seen as a major determinant for the wish to change the HCS. A high level of HCE is seen as a reason for changes by the individuals, but the effect is not statistically significant. Again, wealthier societies do also significantly perceive more need for changes. At the micro level, socioeconomic characteristics, usually very strong in many studies and despite of being significant, are of no noteworthy relevance for the need for changes, the same holds true for the attitude variables. The only attitude with a magnitude worth mentioning is the satisfaction of the respondent with the HCS: respondents who are satisfied do not see a necessity for changes.

What do the results in table 3 tell us about the nature of health care? The argument by Newhouse and the mechanism presented in section 3.1. would predict that measures of wealth, either GNP or income, have an impact on the perceived need for changes. However, as with satisfaction, such impact could only be found for GNP but not at the level of the individual, where the effect is only of marginal magnitude. Similar to the model for satisfaction, responsiveness of the HCS is a strong factor indicating that if the HCS is not responsive to the patients, they want to change it.

## **5. Conclusion**

The aim of the paper was to make an inference from what a HCS is actually delivering and the reported satisfaction of the citizens on the citizens' preferences and thereby on the nature of health care. Core question was, what the determinants of satisfaction tell us about the preferences of the citizens and thereby about the nature of health care. Are citizens satisfied with a HCS fulfilling the curing function or do they take the curing performance, i.e. the fact that a HCS delivers what is necessary, for granted and want more? To summarize the results, the evidence of the micro and macro level analysis indicates that individuals do indeed no longer evaluate the HCS on the basis of its objective performance of the 'curing' function, but that features of the HCS belonging to the 'caring' category are the major determinants of an individuals' satisfaction with the HCS.

The substantive findings indicating that health care is nowadays a luxury are fourfold: first, objective factors indicating that a HCS is very successful in performing the curing function respectively performing this function in an economically efficient way do not have an impact on the citizens' satisfaction with the HCS. Second, in richer societies, people are less satisfied with their HCS – an indication, that the restoration and maintenance of health, the curing function, a task that all European HCS achieve to a high degree, is no longer sufficient to satisfy members of a wealthy society. Third, the responsiveness of the HCS is the major determinant both of satisfaction and the perceived need for changes – responsiveness, a factor belonging to caring, is the main criterion for evaluating the HCS. Fourth, there is no limit for HCE – health is not just restored, which would be achievable with much less expenditure.

On the other hand, it is hard to tell what people exactly want. Some results indicate that either the concept of caring is operationalized in a wrong way or that caring doesn't satisfy the citizens either: first, the number of physicians does not increase the satisfaction. Given that more physicians per 1000

inhabitants mean that each physician has less patients to 'take care' for and hence more time to pay attention to the individual patient, the caring aspect, one would expect the number of physicians to be an major factor in explaining the satisfaction of the persons, if they indeed want that kind of caring. However, this is not the case. Second, satisfaction cannot be achieved by spending more money and it also cannot be achieved by making the HCS more efficient, i.e. making the HCS deliver more or better services for the same amount of money. Instead, people seem to focus on the costs of a HCS as an absolute figure, not on its efficiency or output, i.e. what they get in return for the money they spend. This can be explained by the prevalence of the HCE in the media, as well as in the public and political debates.

Combining the two findings, one could say that curing, i.e. a HCS delivering what is necessary, surely no longer is enough to satisfy the citizens – but the information available is insufficient to tell, what they actually want. Generally speaking, people in forming their attitude towards their HCS and their evaluation of it do not realize or take into account, what their HCS objectively achieves, but form an opinion nearly completely independent of the realities of the HCS.

What does the combination of micro and macro level evidence tell us on the critique brought forward with regard to the method of using macro level data employed by Newhouse and others to test relationships that are based on micro level mechanisms? It has to be stated that there are substantial differences in several features of the HCS among countries which correspond to differences in wealth – but the relationships found at macro level cannot be corroborated by findings at the micro level, where income has no impact. GNP matters for satisfaction, but income doesn't. Using one level of analysis leads, as Getzen has argued, to different conclusions with regard to the substantive question. This puzzle may be accounted for by the fact that the idea of income elasticity is inherently coupled with the market mechanism as an explanatory mechanism: people have to pay for what they want and what they get, if they want more, they have to pay more. In health care this mechanism is not applicable. The principle of solidarity, underlying health insurance systems as well as tax financed national health services, consists exactly in making the individual's capability to pay irrelevant for the quantity and quality of medical service consumed. Unfortunately this also makes the willingness to pay and marginal cost/ benefit ratio irrelevant as a limit for the consummation of medical services, creating the problems of moral hazard as for instance described in Getzen (2000). These incentives set by the solidarity principle for the insured are complemented by the incentives often set by a HCS' remuneration system for the suppliers of health services to supply as much services as possible (see Hay/Leahy (1982), Phelps (1986), Rice (1984), Gaynor/Haas-Wilson/Vogt (2000), Blomqvist (2001), Saltman (2002) and Croxon/Propper/Perkins (2001)). With other words, since the market mechanism is not in use in HCS, the distinction between luxury and necessity which is inherently based on this mechanism, does not make sense for health services.

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