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LONG-RUN AND SHORT-RUN CONSTRAINTS IN THE ACCESS TO PRIVATE HEALTH CARE SERVICES: EVIDENCE FROM SELECTED EUROPEAN COUNTRIES

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LONG-RUN AND SHORT-RUN CONSTRAINTS IN THE ACCESS TO PRIVATE HEALTH CARE SERVICES: EVIDENCE FROM SELECTED EUROPEAN COUNTRIES

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Very preliminary – Do not quote

Abstract

In this paper we try to distinguish long-run and short-run constraints in the access to private health care services. We apply the methodology proposed by Carneiro and Heckman (2003) to the SHARE database, a survey conducted in a number of European countries, involving some 22,000 individuals over the age of 50. Micro-data includes information on health and health consumption, and socioeconomic variables (like income and wealth). Very preliminary results show that the problem of short-run constraints in the access to private health care services could be real, especially in Italy, Spain, and to some extent Greece.

Keywords: health inequalities, private health care services, credit constraints, family background

JEL codes: D31, I10, I31

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1. Introduction

The presence of extensive and persistent health inequalities (i.e. the fact that individuals in equal need are not treated as equal) has been emphasised by a strand of the health economics literature since long ago, both considering self-perceived health status and access to care (e.g. Gwatkin, 2000). Started by investigating inequality in Europe and the U.S., the evidence is now becoming available also for developing countries and for countries in transition. From a policy point of view - given these persistent health inequalities, and a commonly agreed ethical concept that individuals in equal need ought to be treated equally – it is crucial to move beyond, and ask about the role different determinants may play in influencing the health status or the access to care. Taking this view, the literature has identified the key role played by income (in this sense, e.g. Wagstaff, 2002). In particular, there seems to be a close relationship *at the individual level* between income inequality and health inequality (e.g. van Doorslaer et al., 1997). However, as pointed out e.g. by Deaton (2003), personal income could be a proxy for many other factors, such as the lack of minimal health care knowledge or a disadvantaged social environment, that – in turn – may be the underlying "true" causes of the inadequate access to health care services, or of the adoption of unhealthy lifestyles, both conducive to poorer health conditions. But while income may constrain the access to services in the short-run, because poorer individuals may not have enough funds to access services - both for indirect costs (such as transportation), as well as direct costs (in the form of co-payment to publicly provided services) - all the other factors just mentioned can be labelled as "long-run constraints" in the access to medical care. Clearly enough, the policy suggestions to tackle the problems raised by health inequalities will differ, so that it is important to understand which are the prevailing constraints in impeding poorer individuals to get access to health care services.

This paper aims at distinguishing long-run and short-run constraints in the access to a particular type of health care services, namely private services. We concentrate on a group of selected European countries, where most of health services are publicly provided almost free of charge, whilst private services need to be purchased at a given market price. We depart from methodologies applied in the analysis of the causes of

health inequalities (e.g. Marmot et al., 2001; Wagstaff et al., 2003), borrowing from a paper by Carneiro and Heckman (2003) centred on the choice of getting on to college. The basic idea is to split the whole population in healthy people and those who are ill and, for each sub-group, study the access to private health services in each income quartile. The identifying assumption is that people belonging to the highest income quartile are – by definition - not facing any short-run constraint. Hence, we can measure the proportion of constrained individuals with respect to this benchmark. We can differentiate log-run and short-run constrained individuals by controlling for other determinants of the demand for private services, like age, the level of education, lifestyles and habits, the type of job, and so on. This methodology is applied to the SHARE database, a *Survey of Health, Ageing and Retirement in Europe* conducted in a number of selected European countries (ranging from Scandinavia to the Mediterranean), involving some 22,000 individuals over the age of 50[1]. Micro-data includes information on health and health consumption, and socioeconomic variables (like income and wealth).

Very preliminary results show that the problem of short-run constraints in the access to private health care services could be real, especially in Italy, where some 50% of "constrained" individuals (both in the long- and the short-run) can be "credit constrained". Moreover, the role of the long- and the short-run factors seems to be different for the various services we consider here. In particular, short-run constraints seem to play a larger role in the case of dental care. All main results are robust to different definitions of income.

The remainder of the paper is organised as follows: in the next section, we briefly review the available evidence on health inequalities and on their origins, discussing the methodologies proposed so far in the applied health economics literature, and then presenting the methodology employed by Carneiro and Heckman (2003). Our empirical exercise on SHARE data follows. A section of concluding remarks ends the paper.

[1] More information are available at www.share-project.org.

2. Health inequalities and their causes

The available evidence. Health inequalities have been shown to exist in many different dimensions, specifically in different countries (developed and less developed countries, countries in transition), using different concepts and measures for health (self-assessed health status and more objective measures of health) and different categories of health consumption (General Practitioner visits, outpatient and inpatient care utilisation, dental care visits), considering individuals at different age. Inequalities are generally identified by ranking people by an indicator of socio-economic status (for instance, income, wealth, or consumption), and by showing that poorer individuals are also disadvantaged in terms of health (i.e. they report worst health conditions than better off individuals) or health care consumption (i.e. they are less prone to access to services than better off individuals). All the comparison are generally conducted by controlling for most of the factors that are likely to influence individuals' need (such as age, gender, level of education, lifestyles or habits), so that measured inequalities are computed by equalising needs across the whole population.

Wagstaff (2002), in his review of the literature on poverty and health sector inequalities, suggests four main conclusions: a) inequalities are almost always to the disadvantage of the poor; b) inequalities are more pronounced for objective indicators of health, than for self-assessed measures; c) measured inequalities show large variations across countries, depending on the indicators of health and socioeconomic status used; d) inequalities seem to be widening in the last years. That inequalities are almost always to the disadvantage of the poor is of course worrisome for policy makers, since poorer people are already disadvantaged by their economic situation; and, most probably - as suggested by Wagstaff (2002) - the causality between poverty and ill-health is running in both directions. In fact, Van Doorslaer et al. (1997) suggest that there is a close relationship between income inequality and health inequality, in a sample of European countries and the U.S. And this – in turn – can help explain why both income and health inequalities are widening in the last years.

That health inequalities are favouring the rich is however a very simple statement that necessitate some specifications. For instance, considering the self-

assessed health status, in a huge effort to compare different countries, Van Doorslaer et al. (1997) show that there are substantial variation in inequalities across a number of developed countries, with the largest levels of inequality observed in the U.S. and U.K., and the smallest reported for East Germany, Finland, and Sweden. In a companion paper, Van Doorslaer et al. (2000) analyse inequality in the access to care, by considering the imputed value of the actual reported utilisation of three different types of care (GP visits, outpatient visits and inpatient care, while dental care was excluded since the indicators of need were not able to identify the need for this particular type of services). The findings show a different pattern for inequalities for the three different services, with little or no inequalities in visiting a GP, inequalities favouring the better off in the use of outpatient care, and inequalities favouring the lower-income groups as for inpatient care. Almost all these results are confirmed by Van Doorslaer and Masseria (2004), considering a wider set of OECD countries - ranging from Europe to U.S., from Australia to Mexico - and analysing both the probability and the frequency of usage. In fact, while findings for GP and medical specialists closely mirrors those by Van Doorslaer et al. (2000), more equivocal evidence is found for inpatient care utilisation; moreover, for dental care a pro-rich distribution is uncovered. Inequalities favouring the better off for inpatient care is found instead by Masseria and Paolucci (2005), considering a number of European countries. Similar patterns - for the cross-country differences and the different services usage - emerge also for a group of developing countries and countries in transition (for a very simple analysis, Makinen et al., 2000); but the analyses suffer for the low quality of the data available.

An additional specification about the studies on health inequalities needs to be made for the life-cycle component of the observed inequities. As Deaton and Paxson (1998) has pointed out, the correlation between income and health status varies with age, being small early in life, then becoming steadily larger up to late middle age, to weaken again after the age of 60[2]. One possible interpretation - pointed out by authors – is based on the causality running from health to income: health shocks after retirement

[2] Deaton and Paxson (1998) also suggest the existence of a temporal component of the relationship between socioeconomic status and health status. Taking this view, inequalities has been raising in recent years.

do not affect earnings, since most of those incomes come from pensions; on the contrary, health shocks can heavily affect earnings before retirement.

Unravelling the causes of health inequalities. Given the substantial evidence on the existence of health inequalities to the disadvantage of the poor, in a policy perspective it is important to move one step forward, asking about the causes of such inequities. One can think of many different factors affecting individual health status or individual access to care. One such determinants is of course current socioeconomic status, proxied by income, consumption or employment. A lower socioeconomic status could be associated to a lower access to care (because of both direct and indirect costs) and this, in turn, could be the cause of a worst health status with respect to richer individuals. But there might be other determinants, such as for example the level of education, the family background, or the availability of health care facilities at the local level. Following Carneiro and Heckman (2003), in this paper we distinguish between short-run and long-run factors affecting health inequalities. Current socioeconomic status seems to be the only factor affecting health inequalities in the short-run, being itself a proxy for short-run credit constraints; all the other factors appear to be instead "long-run constraints" in achieving health equalities.

While the literature on the existence of health inequalities is abundant, however, results on the causes of such inequalities are rather scarce, and generally do not distinguish between short- and long-run effects. For instance, in a paper concentrating on the Whitehall II study, a sample of British civil servants originally located in London, Marmot et al. (2001) try to understand whether current socioeconomic status was more important than other measures of social status earlier in life in explaining morbidity attributable to three types of disease: coronary disease, chronic bronchitis, and depression. Authors' findings imply that current socioeconomic status in adulthood is more important than father's social class to predict adult morbidity (i.e. short-run constraints seem to prevail on long-run ones). They also suggest that these results are consistent with a "pathway" model in which early life disadvantages affect adult circumstances, rather than disease risk directly. Similar evidence is found also by Currie and Hyson (1999), studying the impact of Low Birthweight (LBW) on socioeconomic

status. LBW impact well into adulthood, affecting educational attainments, self-assessed health status and employment. Moreover, children from households with a low socioeconomic status suffer both from the effects of their social status and the effects of LBW. In a more technically oriented paper, Wagstaff et al. (2003) study the determinants of inequalities in child malnutrition in Vietnam. Their results suggest that the main causes of inequities are household consumption, and regional fixed effects (gauging differences among regions in terms e.g. of resources for health care, hospitals, and other health infrastructures and technologies)[3]. Other factors found to contribute to inequalities are drinking water, sanitation and parental schooling, but their effects appear to be fairly small. Applying the same methodology as in Wagstaff et al. (2003), Van Doorslaer and Masseria (2004) found that needs (i.e. all morbidity and demographic variables), income, education and activity status, as well as regional disparities and the private health insurance coverage, are all playing a role in explaining the observed inequalities in health services usage of three different types of services in different OECD countries. In particular, income in itself is not the single most important factor, since education appear to be a key determinant of a pro-rich distribution in many instances, as work-activity status contributes to a pro-poor distribution. However, the author emphasise that these findings are not common to all countries considered in the study, and the characteristics of the national health system are important for a proper understanding.

Methodological issues. Before moving to the empirical section of the paper and presenting the method proposed by Carneiro and Heckman (2003), in this section we discuss some methodological issues, and develop an unifying framework in the spirit of Wagstaff and Van Doorslaer (2000). We analyse the main methodologies proposed in the literature in order to solve two distinct problems, i.e. how to properly measure health inequalities, and how to decompose the observed inequalities in their underlying causes. The problem of a proper measurement of health inequalities originate from the stylised facts that poor people are both more likely to report a worst health status and more

[3] The importance of regional differences in explaining health inequalities is emphasised also by Masseria and Paolucci (2005) in their analysis of inequalities in the access to inpatient care.

likely to report a higher consumption of health care services, so that studying health inequalities without "equalising" needs across individuals usually ends up with unequal distributions *favouring* the poor. Wagstaff and Van Doorslaer (2000) discuss two methodologies to compute need-standardised medical care figures: the direct standardisation approach and the indirect standardisation approach. To simplify the discussion, let consider a very simple economy, in which the total population of N individuals can be divided into two sub-groups by income (*Y*) - the poor (*P*) and the rich (*R*) – and two sub-groups by health status (*S*) – the healthy (*H*) and the ill (*I*). The *direct* standardisation approach is based on the computation of need-standardised medical care figures m^+ for each income group, according to the following Eq. (1):

$$m_P^+ = (H/N)m_P^H + (I/N)m_P^I \qquad (1)$$
$$m_R^+ = (H/N)m_R^H + (I/N)m_R^I$$

where $m^S{}_Y$ represents the mean quantities of care received in income group *Y=(P,R)* by persons in need category *S=(H,I)*. Of course, in the presence of horizontal equity (i.e. people in equal need are treated equally, irrespective of their income), it must be true that $m^+{}_P = m^+{}_R$. To assess the degree of health inequalities, one can compare - for each income sub-group - the share of standardised medical care with its population share, and refer to standard tools as concentration curves and indices. While the direct approach considers income groups, the *indirect* standardisation approach work out a figures for each individual in the economy indicating the amount of medical care she would have received if she had been treated like others in the same health need category. In other words, we need to compute *m** for each income group, according to the following Eq. (2):

$$m_P^* = (H \cap P/P)m^H + (I \cap P/P)m^I \qquad (2)$$
$$m_R^* = (H \cap R/R)m^H + (I \cap R/R)m^I$$

where m^S represents the mean quantities of care received by persons in need category *S=(H,I)* on the whole sample. Horizontal equity implies the following equalities to hold: $m^H{}_P = m^H{}_R = m^H$ and $m^I{}_P = m^I{}_R = m^I$; i.e., it must be true that healthy (ill) poor and healthy (ill) rich are treated like every other healthy (ill) individual in the economy. Wagstaff and Van Doorslaer (2000) has shown that computation of m^+ and *m** can be

easily arranged by regressing for each income sub-group the actual demand for care *m* on a set of regressors **x**, to be chosen as the best proxies for the individual's need for medical care; hence, these regressions are not to be interpreted as behavioural models, rather as simple devices to compute our variables of interest, and endogeneity is not an issue here. Just to illustrate, consider for example the direct standardization approach[4]; we need to estimate the following regression model for each income sub-group *Y=(P,R)*:

$$m_i = \alpha_Y + \sum \beta_Y x + \delta DHS + u_i \tag{3}$$

where *DHS* is a dummy variable indicating the health status *S* (equal to 1 when the *i-th* individual is ill). Predicted values from Eq. (3) can be easily interpreted as the mean quantities of care $m^S{}_Y$ received by each income sub-group (evaluated at the sample means of the vector **x**):

$$E[m_i \mid DHS = 0] = \hat{\alpha}_Y + \sum \hat{\beta}_Y \bar{x} = m_Y^H \tag{4}$$

$$E[m_i \mid DHS = 1] = \hat{\alpha}_Y + \sum \hat{\beta}_Y \bar{x} + \hat{\delta} = m_Y^I$$

Results of Eq. (4) form the basis for calculating concentration curves and concentration indices.

Having measured properly health inequalities, a second problem to be solved is how to decompose the observed inequities into their determinants, a point particularly interesting for policy making purposes. One simple methodology put forward by Marmot et al. (2001) relies on computing odds ratios using logistic regression, and comparing results for different population sub-groups. For instance, in their study on the causes of inequalities in adult morbidity for three types of disease using the Whitehall II data, Marmot et al. (2001) adjust observed probabilities by considering both age and current employment grade in a logistic regression model, and then compute odds ratios for different population sub-groups identified by father's social class, height, and age at leaving full time education (the potential determinants of observed inequities). The importance of each one of these determinants is assessed by looking at how odds vary within the relevant sub-group. A more sophisticated approach has been proposed by

[4] For more details on the indirect standardization approach, see the original work by Wagstaff and Van Doorslaer (2000).

Wagstaff et al. (2003), exploiting Rao's (1969) theorem. This approach is based on the decomposition of a concentration index *C*, computed on the observed distribution of a measure of health status or health care use, into two components: a deterministic one and a residual. For simplicity, we consider again the previous framework, where *m* measure access to care. Wagstaff et al. (2003) suggest to run a regression of the type of Eq. (3) above on the whole sample, in order to obtain estimates of the relevant β'*s*, measuring the marginal effect on the access to care for each of the determinants included in vector **x**. Concentration index *C* can then be decomposed as follows:

$$C = \sum_k \left(\frac{\beta_k \bar{x}_k}{\bar{m}} \right) C_k + \frac{GC_\varepsilon}{\bar{m}} \qquad (5)$$

where C_k is a concentration index computed on the *k-th* regressor *x*, GC_ε is a generalised concentration index for ε[5], and all other variables are defined as before. The first part of the RHS in Eq. (5) represents the deterministic component, whilst the last part is the residual one, i.e. the part of health inequalities that cannot be accounted for by systematic variations in the *x's*. Notice that the importance of a given regressor in influencing inequalities depends on three different factors: a) the importance of the variable, measured by its mean; b) its distribution with respect to socioeconomic status, measured by the regressor-specific concentration index; c) its marginal effect on the access to care.

3. The empirical analysis

In this section we discuss our empirical analysis, aimed at identifying long-run and short-run constraints in the access to private health care services in a sample of European countries. We first describe our methodology, and then present our empirical exercise.

[5] We refer to the original paper for an exact definition of the generalised concentration index of the residual component.

3.1. The methodology

The methodology used in this paper is borrowed from Carneiro and Heckman (2003), who studied the role of credit constraint in influencing the choice of attending a college. It has been widely applied in the literature on schooling, since understanding college gaps across income quintiles is a key factor in defining efficient and effective policies for human capital formation, hence for long-term economic growth (see e.g. Aakvik et al., 2005 for Norway; Dearden et al., 2004 for UK). Consider again the framework sketched above, where *m* denote now access to *private* health care services. For each population sub-group defined by health status *S=(H,I)*, we run the following regression:

$$m_i = \alpha_S + \sum \beta_S x + \sum \delta Q^Y + u_i \tag{6}$$

where the *x's* identify as before a vector of relevant variables to explain demand for private health care services, and Q^Y are dummy variables for the first three income quartiles *Y=1,2,3*. Notice that Eq. (6) is quite close to the regression used in the direct standardisation approach proposed by Wagstaff and Van Doorslaer (2000), where population sub-groups where instead defined on income. Predicted values from Eq. (6) can be interpreted as "adjusted" demand for private care in each income quartile for all population sub-group by health status:

$$E\left[m_i \mid Q^Y = 0\right] = \hat{\alpha}_S + \sum \hat{\beta}_S \bar{x} = \hat{m}_S^4 \tag{7}$$

$$E\left[m_i \mid Q^Y = 1\right] = \hat{\alpha}_S + \sum \hat{\beta}_S \bar{x} + \hat{\delta} = \hat{m}_S^Y$$

To identify "constrained" individuals we then assume that people belonging to the fourth income quartile are not constrained by definition. Hence, we can measure differences in means with respect to the other quartiles, and interpret these "gaps" as proxies for the share of people constrained. Clearly, we expect all the δ's to be negative. For each population sub-group of healthy and ill people, we compute two types of "gaps", both using "adjusted" and "unadjusted" means:

$$\hat{Gap}_{4,Y} = \hat{m}_S^4 - \hat{m}_S^Y \tag{8}$$

$$Gap_{4,Y} = \overline{m}_S^4 - \overline{m}_S^Y$$

The total shares of constrained individuals can be easily obtained by summing up "gaps" across income quartiles. The share of short-run (credit) constrained individuals in the access to private care is represented by the total share computed using "adjusted" means, i.e. after controlling for all factors affecting the demand for private care like education or lifestyles. The share of long-run constrained individuals is represented by what is left after removing short-run constrained individuals from the total share computed using "unadjusted" means.

3.2. The exercise

Data and variables definition. The data we use come from the *Survey of health, ageing and retirement in Europe* (SHARE), conducted in 2003 on about 15,000 households and 22,000 individuals of ten European countries[6]. In order to participate to the survey, at least one member of each interviewed household must be aged 50 or older. The survey is particularly useful for our purposes, since it contains detailed information on income, wealth, socio-economic characteristics, health conditions and use of health services. We do not use the data for Germany and Austria since the information on the use of private health services is missing. We exclude also Switzerland, given the high number of missing data for the same variable.

A possible problem in the recourse to this dataset lies in the distinction of household members in two categories: eligible and non-eligible persons. The *eligible* individuals are all those aged at least 50, and all partners of a person aged at least 50, irrespectively of their age. All eligible are asked to answer to all sections of the interview. All other household members are non-eligible. For these individuals, the survey collects only some synthetic information about their whole income. The problem arises when one or more of the eligible persons does not participate to the interview, for various reasons (refusal, absence at the moment of the interview, etc.). In this case, there seems to be no section of the questionnaire devoted to collect at least some broad

[6] Italy, France, Germany, Austria, Switzerland, Netherlands, Denmark, Spain, Greece, Sweden.

information on his/her income or other important variables. It follows that, in case one or more eligible persons does not take part to the interview, family income turns out to be underestimated. As the Appendix shows, the incidence of this problem is not uniform across the various countries, but is particularly serious for Italy and Spain. In order to check the importance of this selection problem on the quality of our results, we perform the empirical analysis both on the whole sample and on the sub-sample formed by households where all eligible members participated to the interview.

The main variable we study is a dummy indicating whether a person purchased private health services during the last twelve months. People are divided into two health status groups on the basis of a question on self-assessed health status: the "healthy" are those who answered that their perceived health status is good or very good, while the "ill" are those who stated that their conditions are less than good. The distinction between healthy and non healthy persons is important since these two groups may be led by very different motivation in their demand for health services. The vector **x** in Equation (6) is composed by a set of family and structural variables that may influence the demand for private health services over the long run, like age, education, gender, current and past occupation, the presence of a private insurance, possibly dangerous lifestyles like drinking or smoking, family size.

The demand for private health services. The main points that are worth investigating are the following:

1) Do people on good health purchase more or less private health services than those in bad health conditions, irrespective of their income or wealth?

2) Is there a differential access to private health services according to the household economic resources?

3) If there is a share of the population that does not purchase private health services, does this depend on short-run liquidity constraints or on structural behavioural characteristics of the household?

Table 1 shows the percentage of people that purchased private health services in the various countries. We consider both the whole available sample, and a "selected" sample, considering only the households in which all eligible persons did participate to

the survey. In almost all countries the probability of using private health services is greater for those in bad health conditions. But while in some countries the percentage difference among the two groups of people is very low (Sweden, Italy, France), in others (Netherlands, Denmark, Greece) the difference is much bigger. These percentages refer to the use of private services during the twelve months before the interview. If we had considered a greater time span, we would of course have obtained higher values, since the probability of becoming ill or of needing a doctor tends to increase with the dimension of the time period considered. At the limit, if we consider private and public services together it is clear that the probability of using a health service is 100% for every person. If we restrict the attention only to private services it is of course not certain that this probability will tend to 100% for everyone, but it is surely positively correlated with the length of the period examined.

Tab. 1 Proportion of people using private health services during last 12 months, by stated health conditions

	Whole sample		***Selected sample***	
	Bad health	***Good health***	***Bad health***	***Good health***
Sweden	15.9%	15.8%	15.1%	15.8%
Netherlands	22.7%	14.4%	22.9%	14.4%
Spain	12.2%	10.6%	10.7%	8.2%
Italy	12.2%	11.5%	12.3%	11.5%
France	13.0%	11.2%	13.3%	11.2%
Denmark	20.7%	11.6%	19.4%	10.6%
Greece	21.7%	16.5%	21.4%	16.8%

A preliminary condition that must be verified before analysing the possible determinants of liquidity constraints is the actual presence of some households constrained in their access to private services. Tab. 2 shows the percentage of people that bought private health services in the previous twelve months in each of the four quartiles of the distribution by gross household income. Contrary to what one could expect, only in two countries, Italy and Spain, is this percentage clearly increasing from the poorest to the richest quartile. In some countries, in particular Denmark and Greece, the share of persons purchasing private services is actually *negatively* correlated with

family income. Two conclusions arise from this evidence. First, the pattern of private health service use is very much differentiated across European countries. The view that private service are mainly consumed by rich people is in general not supported by these data. In some countries, however, private services actually seem to be purchased particularly by the rich: in Italy and Spain, the share of the first income quartile purchasing these services is less than half the share of the richest quartile. It follows that Italy and Spain are the two ideal countries to consider if we want to apply the Carneiro and Heckman methodology. Since the results obtained using the restricted sample are very similar to those computed on the whole sample, in the remainder of the section we will discuss only the results obtained using the complete sample.

Tab. 2 Percentage of people using private health services during previous 12 months, by income quartiles

	Sweden	**Netherlands**	**Spain**	**Italy**	**France**	**Denmark**	**Greece**
Whole sample							
1	14.1	17.9	7.9	7.5	13.5	16.4	21.0
2	17.6	15.9	10.3	9.0	11.7	14.1	18.2
3	14.8	19.3	11.9	12.6	11.2	13.2	16.1
4	16.8	15.2	15.3	18.5	11.1	13.9	18.7
Total	*15.8*	*17.1*	*11.4*	*11.9*	*11.9*	*14.4*	*18.5*
	Sweden	**Netherlands**	**Spain**	**Italy**	**France**	**Denmark**	**Greece**
Selected sample							
1	14.1	17.4	6.4	7.7	13.9	15.1	21.2
2	17.6	17.3	9.1	9.0	11.6	12.6	17.9
3	14.7	18.6	10.8	12.6	11.1	12.8	16.9
4	15.5	15.3	11.6	18.4	11.4	13.1	18.5
Total	*15.5*	*17.1*	*9.5*	*11.9*	*12.0*	*13.4*	*18.6*

Long-run and short-run constraints. In order to separate the effects of short-run and long-run constraints on the demand for private services, we apply the methodology described in section 3.1. All countries are here considered, even if, on the basis of Tab. 2, we expect more relevant results from two of them, namely Italy and Spain. It is therefore to these two countries that we devote most of the analysis.

Figure 1 shows, for all countries, the results obtained from applying the Carneiro-Heckman method. For the two groups of ill and healthy persons, further divided into quartiles of gross household income, the figure contains the proportions of people purchasing private health services, both unadjusted (like the percentages reported in Tables 1 and 2) and adjusted after the regressions described in section 3.1. For Italy, the unadjusted data show that the share of people from the richest quartile purchasing private health services is, for the ill group, 14 percentage points higher than for those in the first quartile, while for the healthy groups this difference amounts to 9 percentage points. After controlling for family characteristics, these differences drop to about 5 percentage points in both cases. This is a strong evidence in favour of the presence of both short-run and long-run constraints: the short-run constraints are evident from the differences between the adjusted means. For Italy, therefore, it seems that both short-run and long-run constraints are playing a role in determining the access to private health services, and that short-run constraints exist for all quartiles except the last one (whose members are by hypothesis unconstrained). On the other hand, long-run family characteristics seem to explain a significant part of the gap in participation rates across income quartiles. The results for Spain are very similar to the Italian ones. In the Spanish case the gap in participation rates between the first and the richest quartile is 5 points for the ill and almost 10 points for the healthy. These percentages, after the adjustment for structural family and environmental differences, reduce respectively to 1.7 and 3.3 percentage points.

A chart can only provide a blurred picture of the relevance of a phenomenon. To give a more precise and complete account of the role of constraints, in Table 3 we report for all countries the percentage of constrained people, and, among them, the share of the long-run constrained. The table contains the results of the regressions carried out on both the complete sample and on the sample restricted to those households that do not have missing eligible individuals. We also provide the results of the regressions relative not only to total private health services, but also to one of the most relevant of them, i.e. dental services, where we expect that short-run credit constraints may play a more relevant role than on the whole set of private health services. As anticipated, Italy and Spain seem to be the two only countries where the share of constrained individuals is

significantly higher than zero. In these two cases, nearly 50% of constrained individuals are long-run constrained in Italy, and nearly 80% in Spain.

Results for the selected sample are very similar to those computed on the complete dataset. As expected, the proportion of long-run constrained (again for Italy and Spain) falls if we consider only dental services. In this case, also Greece presents a significant proportion of constrained individuals. Therefore, the only countries where there seems to exist a problem of rationing for dental services are the three nations belonging to the Mediterranean model of Welfare State.

Tab. 3 Proportion of persons constrained and share of long-run constrained

	All private health services		**Dental services**	
	LR & SR constrained individuals (% on tot. individuals)	**LR constrained (% on constrained)**	**LR & SR constrained individuals (% on tot. individuals)**	**LR constrained (% on constrained)**
1) Whole sample				
Denmark	1.06%	62.00%	0.86%	47.59%
Sweden	1.29%	77.55%	0.18%	-
France	0.45%	58.24%	0.42%	79.14%
Greece	1.16%	25.62%	2.69%	38.17%
Italy	6.85%	47.55%	2.76%	30.22%
Netherlands	0.40%	-	0.29%	100.00%
Spain	3.67%	78.35%	1.79%	54.88%
2) Selected sample (excluding households with missing eligible individuals)				
Denmark	1.37%	20.82%	1.70%	34.10%
Sweden	0.50%	74.32%	0.00%	-
France	0.63%	72.58%	0.55%	89.57%
Greece	1.72%	22.57%	3.19%	51.01%
Italy	6.97%	54.85%	3.21%	23.95%
Netherlands	0.28%	-	0.48%	85.48%
Spain	1.88%	41.82%	1.47%	34.82%

4. Conclusion

In this paper we try to distinguish long-run and short-run constraints in the access to private health care services, concentrating on a group of selected European countries. We depart from methodologies applied in the analysis of the causes of health

inequalities, using instead the methodology proposed by Carneiro and Heckman (2003) to analyse the role of family background and credit constraint in educational choices. This methodology is applied to the SHARE database, a survey conducted in a number of European countries (ranging from Scandinavia to the Mediterranean), involving some 22,000 individuals over the age of 50. Micro-data includes information on health and health consumption, and socioeconomic variables (like income and wealth). Very preliminary results show that the problem of short-run constraints in the access to private health care services could be real, especially in Italy, Spain, and to some extent Greece. That credit constraints seems to be important in Mediterranean-style Welfare States is a finding that deserves further investigation.

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Appendix

Tab. A1. Share of households with missing eligible persons (i.e., with eligible persons who did not participate to the survey, for whom no information on personal income is therefore available)

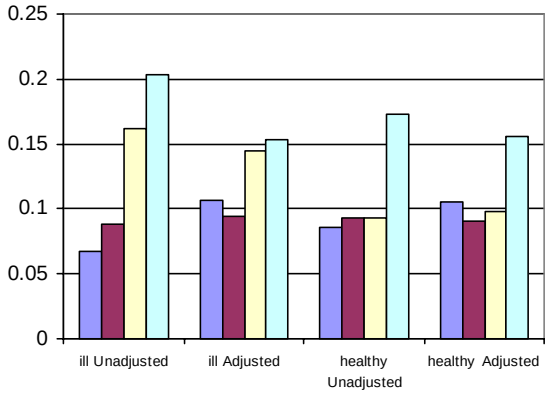
Austria	18%
Germany	22%
Sweden	25%
Netherlands	19%
Spain	43%
Italy	35%
France	4%
Denmark	9%
Greece	12%
Switzerland	20%
Total	**22%**

Tab. A2. P values of the F test for the country-level regressions on the whole sample, used to compute the values reported in Fig. 1 and Tab. 3

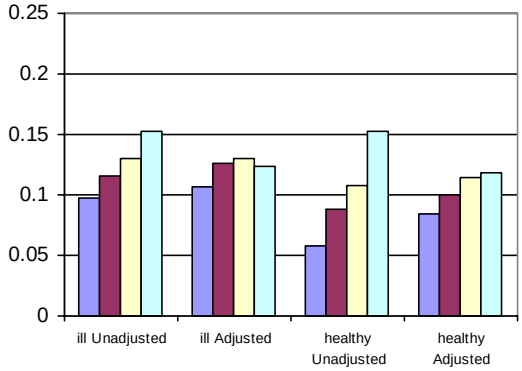
Prob > F =	**Ill**	**Healthy**
Italy	0.0000	0.0000
Spain	0.0000	0.0000
Netherlands	0.0001	0.0004
Greece	0.0001	0.0000
France	0.0006	0.0089
Sweden	0.0068	0.0000
Denmark	0.0031	0.0458

Fig. 1 Proportion purchasing private health services by health status and income quartile

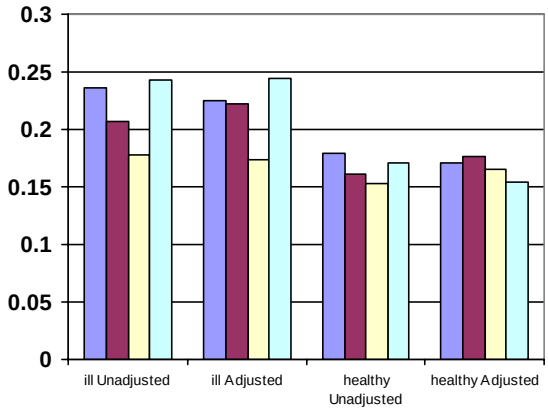
ITALY



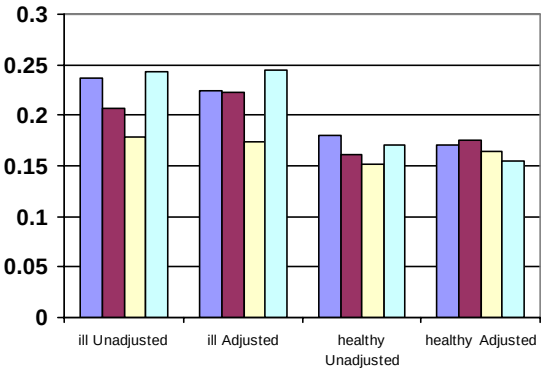
SPAIN



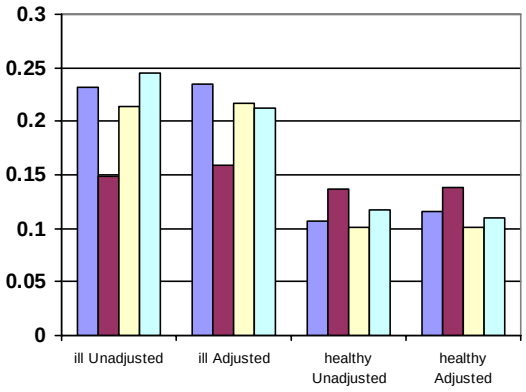
GREECE



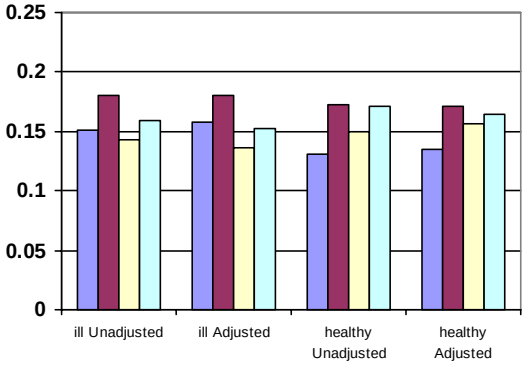
FRANCE



DENMARK



SWEDEN



NETHERLANDS