Explaining wealth-related health inequalities in European countries: the contribution of childhood circumstances and adulthood conditions

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Abstract

This analysis aims to understand the role and the extent of childhood circumstances in current inequality in health among adulthood. Health inequalities have extensively been explained by differences in living and working conditions, access to health care, or health-related behaviours, this article aims to get a step further in exploring the particular role played by parents' social status and their vital status or age at death, on health status in adulthood among European older adults. The wealth-related health inequalities in European countries are measured using the popular concentration index. We implement then the decomposition method of the indices and evaluate the contribution of the various determinants of health introduced in interval regression models. This paper uses data for 11 European countries (Germany, Austria, Belgium, Spain, Denmark, France, Greece, Italy, the Netherlands, Sweden and Switzerland) from the first wave of the 2004 Share. Income-related health inequalities are shown to be significantly higher in Germany, Greece and the Netherlands. Current socio-economic characteristics are the main drivers of these inequalities but childhood circumstances are also relevant determinants of these inequalities. In particular, the contribution of childhood social conditions is equal or even higher than the contribution of individual's social occupation in adulthood in Italy, Belgium and Spain. Furthermore, parental health is likely to increase inequalities in Germany, France and Sweden. Our analysis confirms the hypothesis of a long-term influence of childhood circumstances on health in late adulthood in Europe. As childhood circumstances represent unfair sources of inequality, these results give an empirical evaluation of the contribution of inequalities of opportunities in health to wealth-related health inequalities.

Introduction

Numerous recent European studies have shown persistent social health inequalities on general population data (Mackenbach et al. 2003; Hernandez Quevedo et al. 2007), as well as on sample of older adults (Masseria et al. 2006). Beyond that, many studies have investigated the explication of the mechanisms of these social health inequalities. They highlighted the role played by socioeconomic differences in both current and past living and working conditions; by disparities in the access to many resources related to the health production function, such as education, health care utilisation and social capital (Evans et al. 1994; Marmot and Wilkinson, 1999). On the other hand, a large part of the economic literature has developed methods in order to model health status and decompose the sources of inequalities of health over income and explain the observed differences. The income-related health inequality is measured by concentration indices and the decomposition makes clear how each factor influence health and how it is unequally distributed across income (Wagstaff et al. 2003). This method has been employed to test for differences across European countries (van Doorslaer et al. 2004). Up to now, health inequalities have been extensively by current household and individual level data on income and various other socio-economic characteristics. Indeed, childhood characteristics, such as social background and parental health, have never been included in these types of analyses.

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Nevertheless, if we firstly refer to the existence of international differences across intergenerational social mobility (Lefranc et al. 2004) and secondly, to differences in the long term impact of social background on health status over European countries (Devaux et al. 2008), it is relevant to explore the role of such factors on health inequalities within each country and on inequality differences between European countries.

This article aims to get a step further in exploring the particular role played by parents' social status and their vital status or age at death, on health status in adulthood among older adults. It uses new data for 11 European countries (Germany, Austria, Belgium, Spain, Denmark, France, Greece, Italy, the Netherlands, Sweden and Switzerland) from the first wave of the 2004 Share. We measure the wealth-related health inequalities in European countries using the popular concentration index and implement then the decomposition method to evaluate the contribution of the various new and relevant determinants of health. Health is measured using self-assessed health and an interval grouped regression (van Doorslaer and Jones 2003). We explore the impact of current and past living conditions on cross-country differences in the estimated inequality.

The paper is organised as follows. Section 2 describes the data, the method and the variables used. Section 3 present results and we conclude in a last section.

Data and methods

a) Data

This study relies on the Survey of Health, Ageing and Retirement in Europe (SHARE) carried out in 2004/2005. It is a longitudinal survey that aims to collect medical, social, and economic data on the population aged over 50 in eleven European Union countries (Austria, Belgium, Denmark, France, Germany, Sweden, Greece, Italy, the Netherlands, Spain, and Switzerland) (Borsch-Supan et al. 2005). SHARE follows the design of the US Health and Retirement Study and the English Longitudinal Study of Ageing. It presents the advantage to link an individual's health status in adulthood with his social background. In addition to their current situation, individuals are asked about past circumstances such as their parents' final social status and demographic characteristics (age at death for deceased parents and age at the time of the survey for parents still alive).

b) Measuring and decomposing inequalities

The analysis relies on the decomposition method of health inequalities into explained factors introduced by Wagstaff et al. (2003). This original empirical method permits not only studying inequalities within each country but also comparing the magnitude of inequalities from one country to the other. It analyses health inequalities over a social dimension, most of the time measured by income, and takes into account various determinants influencing health being meanwhile associated to the social dimension. It simultaneously decomposes inequalities into various determining factors

introduced into a linear additive regression model of health and measure the relative contribution of each of these factors to inequality.

The inequality measure relies on the calculation of a concentration index. This index relies on a health concentration curve, which plots the cumulative proportions of the population ranked by increasing social status against the cumulative proportion of health status. If health is equally distributed over the social dimension, the concentration curve coincides with the diagonal. If the sickest are concentrated among the most socially-disadvantaged, then the concentration curve is below the diagonal. The farther the concentration curve is from the diagonal, the higher the degree of inequality is. Conversely, if the concentration curve is above the diagonal, then the sickest are concentrated among the most socially-advantaged. The concentration index is analogous to the Gini index and equals twice the area between the concentration curve and the diagonal. The concentration index takes values comprised between -1 and +1. It is positive (respectively negative) if the concentration curve is above (respectively below) the diagonal. The lowest (respectively the highest) value corresponds to the situation where all the health status in the population is concentrated on the most disadvantaged group (respectively the most advantaged group).

We shall define y_i as individual health and R_i the cumulative proportion of population ranked according to the social dimension up to the i^{th} individual, the concentration index is defined by the following formula:

$$C=\left(\frac{2}{\bar{y}}\right)\mathrm{cov}(y_i,R_i) \text{ where } \bar{y}=E(y_i) \quad (1)$$

If individuals are ranked in the same way according to health and the social variable, then the concentration index equals the Gini index.

The concentration index has some advantages common to those of the Gini index. Firstly, it provides both a quantified and a graphical measure of inequality. Secondly, it provides an inequality measure whose sign depends on the socioeconomic gradient of the inequalities in health. Its measurement is sensitive to changes in distribution of the population across the socioeconomic dimension (Kakwani et al. 1997). Thirdly, it can be used to compare health distributions across different population conditional that the indicator of health is similar from country to country. Similarly, if the indicator of health is comparable from one period to another, this tool gives an indication of changes in inequalities over a period of time.

One of the popular features of concentration index is its ability to incorporate an econometric model for health with several control variables and subsequently proceed to the decomposition of inequality into the contribution of these regressors (Wagstaff & van Doorslaer 2003). The decomposition relies on the assumption according to which the explained variable (i.e. health) is additive in its regressors. The decomposition method permits observing inequality and to identify its sources.

We assume that the following linear regression model defines the health status of individual i according to k regressors, such as k= (1, …, K)

$$y_i=\alpha+\sum_{k=1}^{K}\beta_k x_{ki}+u_i \quad (2)$$

The random error term, u_i is assumed to have expected mean value equal to zero and constant variance. The β_k are assumed constant for every individual i. By substituting this equation in the concentration index formula, we obtain

$$C=\sum_{k=1}^{K}\left(\beta_k\frac{\bar{x}_k}{\bar{y}}\right)C_k+\left(\frac{2}{\bar{y}}\right)\mathrm{cov}(u_i,R_i) \quad (3)$$

The concentration index is assumed to be made up of two components: an explained one, equal to a weighted sum of the concentration indices of the k regressors, and a residual component. The weight represents the estimated health elasticity with respect to regressor k. The estimated inequality in heath is thus expressed as a sum of inequality in each of its determinants, weighted by their own elasticity with health. This decomposition method emphasises the contribution of each regressor to the explanation of the inequality. It gives each regressor's respective impact on health through the elasticity parameter $\hat{e}_k$ as well as the degree of inequality of this regressor's distribution with respect to the social dimension through the concentration index $\hat{C}_k$.

$$\hat{C}=\sum_{k=1}^{K}\hat{e}_k\hat{C}_k \quad (4)$$

Therefore, various regressors can be considered: traditional socioeconomic ones, such as income, education levels, and activity status; geographical conditions, such as regions, areas or urban conditions; health insurance conditions; demographics as well as health status characteristics, such as limitations or healthy behaviours etc. We propose to include innovative regressors such as childhood characteristics. The decomposition has the main advantage to permit a computation of the contributions of particular conditions on which policymakers may concentrate and intervene.

c) Variables

i) Measurement of health

Self-perceived health is a very widespread variable in health surveys. Although its health content has been questioned by comparison to other health indicators, it has also been found to contribute more to supplementary health information than other health indicators, even those determining mortality (Idler and Benyamini 1997). Self-assessed health (SAH) is found to be a very inclusive measure of health reflecting health aspects relevant to survival which are not covered by other health indicators and extends the information obtainable from morbidity indicators by describing the quality rather than merely the quantity of functional abilities. It gives insights into matters of human concern such as pain, suffering or depression that could not be deduced solely from medically-assessed health or

laboratory tests. Several methods for the cardinalisation of this measure have been proposed, van Doorslaer and Jones (2003) compare these alternatives with a new procedure consisting in combining external information on the distribution of a generic measure of health, such as the empirical distribution of the Health Utility Index (HUI) in the 1994 Canadian National Population Health Survey, with the distribution of observed self-assessed health in order to obtain the thresholds of generic health that delimit the categories of the variable. Given this information, SAH can be modelled as an interval regression. This method has been found to be the best to mimic the distribution of generic health. Van Doorslaer and Jones (2003) conclude that the HUI predicted thresholds of each self-assessed health level can be used to compute an interval regression on self-assessed health, even if the survey does not contain any generic health distribution similar to the HUI. Subsequently the same predicted thresholds have been used in some European studies and assumed that distributions of health in any European country were comparable to the Canadian distribution of health (Garcia & Lopez, 2007; van Doorslaer & Koolman, 2004; Lecluyse & Cleemput, 2006). Following the example, we adopt this method for this study. Our measure of health is derived from the respondent's assessment of his/her health status at the date of the interview. It is presented in a categorical variable resulting from the question: "Would you say that your health is i) excellent, ii) very good, iii) good, iv) normal, v) bad. We follow the cardinalisation procedure and assume that there is a stable mapping from HUI that determines SAH. This stable mapping applies not only to Canadian but also to European people. The actual thresholds are 0, 0.428, 0.756, 0.897, 0.947 and 1 for the best possible health status. In concrete terms, we compute these estimated thresholds in an interval regression model of self-assessed health in five categories.

Therefore, an individual who reports bad health will be assumed to have a HUI level that belongs to the interval [0; 0.428]. Concretely, the procedure consists in using the predictions for the latent variable defined within the econometric model described in equation (2), where

$$y_i = a \text{ if } c_{a-1} < y_i^* \leq c_a \quad (5)$$

The parameter $a = 1, 2, 3, 4$ denotes the five categories of SAH and the variables c_{a-1} et c_a are the estimated thresholds whose values were given by the intervals above. The health measure used in the subsequent analysis is thus linear, expressed in HUI units and presents a useful feature for the computation and decomposition of inequality measures.

This cardinalisation procedure provides dispersion into the initial ordered categorical distribution of self-assessed health. Moreover, the interval regression presents several advantages. Firstly, this method avoids the inappropriate use of ordinary least squares (OLS) to model an ordinal categorical variable. Secondly, the interval regression considers external individual information to scale the categories of self-assessed health, which outperforms a construction based on arbitrary rescaling that could predict health status values out of the [0;1] interval. Finally, it considers a vector of individual

characteristics which leads to greater individual-level variations in the measurement of health. In this context, this is the level of HUI that is predicted considering that an individual has some particular characteristics K.

ii) The ranking variable

The construction of the concentration index relies on the ranking of individuals over a social dimension. Most of the studies on health inequalities using a concentration index rank individuals according to the log of the household income per consumption unit. Nevertheless, we choose to consider household wealth. Indeed, our sample is composed of individuals aged 50 years old and this population is particularly heterogeneous as regard to income levels. Individuals who are less than 55 years old mainly are mainly active, those around the age of 60 (between 55 and 65 years old) are in a transition period between professional activity and retirement and, finally the older individuals are relatively more modest if their income level is considered. In this context, an analysis only based on the monetary resources of the households, that is to say mainly retirement pensions for the 65 years old and more would partially take into account living standards. In fact, the average inheritance and wealth result from a process of accumulation over the life cycle and may be higher for older adults than younger ones. Older adults more often are owners of their housing. In that way, a good tool to proxy the social situation of older adults would be to supplement the usual standard of living measures with a measurement of the household inheritance (Baclet, 2006; Jusot, 2006). In SHARE dataset, wealth is a generated variable using a precise questionnaire; we use it as provided in the data but consider it in log.

iii) Other variables

Current individual characteristics as age, sex, social occupation, education level, etc are traditionally considered, such to explain health status. Our paper considers a wider vector if individual characteristics and adds childhood characteristics. In particular, social background is measured by the last job or occupation the father and the mother had. Occupations are described with the ISCO classification (International Standard Classification of Occupations). A proxy variable of parents' health is also constructed using the only information on their health available in the survey: their vital status or age at death. Considering the age of the studied sample, most of the respondents have lost their parents: only 9.31% of the fathers are still alive and 22.85% of the mothers. Concerning health status of deceased parents, we propose an indicator based on their age at death. We divided the deceased parents in two groups, those who died earlier than the median age at death of their own country and those who died later than the median age at death of their own country. We assume thus that health status is better if an individual has lived longer than other people of his country. Parental health is then measured in a discrete variable in three categories: parent alive, parent deceased in later ages and parent prematurely deceased. In this context, we assume that accidental deaths are not significant.

Results

a) Descriptive analysis

Descriptive statistics are presented in table 1 and provide preliminary cross-country comparisons. The mean value of the HUI predicted health (predicted within the interval regression whose results are presented in table 2) varies from one country to the other: it is higher than 0.8 in richer countries such as Sweden, Switzerland, Denmark, Belgium and the Netherlands and the lowest mean health is in Spain.

Switzerland and Denmark are significantly the richest countries if we refer to the annual average household income per consumption unit[1]. On the contrary, Greece, Spain and Italy are the poorest countries and also the countries where mean health is the lowest. The ranking of countries according to the average wealth level is different. Whereas Switzerland stays the most advantaged country, it is followed by France, Belgium, Italy and then the Netherlands. Similarly, whereas Greece stays the most socially disadvantaged country, the average household wealth level is the lowest in Austria and in Sweden. The distribution of self-assessed health is very different : in northern Europe (in Sweden, Denmark, Switzerland and Belgium), more than three quarters of individuals report a very good health status whereas they only represent a bit more than the half of the population in Spain and in Italy. These significant differences in the self-assessment of individual health status have already been underlined on the SHARE dataset (Jürgues 2007). Danish and Swedish people are likely to overestimate largely their health whereas German people underestimate their health. Olsen and Dahl (2007) propose five explanations for these cross-country differences. Firstly, characteristics of the wellbeing, such as social benefits are considered vital for population health. Secondly, socioeconomic development is an important predictor of health: countries having a higher GDP per capita have better population health, although the marginal effect on health of an increase in GDP per capita is diminishing with the country's wealth. The third explanation proposed is the correlation between health disparities and income inequalities. Fourthly, social capital and wellbeing are important determinants of health differences within countries. Finally, lifestyle and health-related risky behaviours, such as food, exercise, stress, and alcohol and tobacco consumption have been found to explain strongly poor health in some countries. Cross-country comparisons in education are tricky as diplomas are differently defined from one country to the other, particularly for low education qualifications. Nevertheless, the proportion of individuals having an education level equal or higher than A-levels is strongly lower in Spain and in Italy (7%) whereas in Denmark or in Sweden, almost one third of the individuals are concerned. Analogously, social occupations are somewhat difficult to compare, we notice a high proportion of unknown social occupations in Spain, Italy and Greece. Since

[1] The SHARE data provide a measure of annual household income generated from a detailed questionnaire on household income sources. We divide this income by the number of individuals living in the household in order to measure an income per consumption unit. To do so we use the OECD equivalence scale, which gives a value of 1 to the first adult living in the household, then 0.5 to any other adults or child aged more than 14 years old and 0.3 to each child aged less than 14 years old.

the age of the studied sample is particularly higher, we can assume that a large part of this high proportion represents women who were homemakers. The proportion of clerks is high in northern Europe whereas in southern countries, as well as in Germany, there are larger proportions of craftmen, skilled and unskilled workers. A 10% proportion of agricultural workers is noticeable in Spain and Greece whereas they represent less than 5% in most of the other countries (except in France 7% and in Italy 6%).

We find similar results for fathers' social occupation, particularly for occupations at the two ends of the social status scale. Higher proportions of fathers who were senior managers are in Sweden, Denmark, the Netherlands and Belgium and there is a high proportion of fathers who were skilled workers in Spain, Italy and Belgium. The distribution of social occupation among fathers shows the evolution of professional status in Europe, particularly the increase of jobs in the tertiary sector to the detriment of the primary sector. There were more agricultural workers in the fathers' generation than in the descendants' generation. Indeed, in the parental generation, each country counts at least 15% of agricultural workers with even higher proportions in southern countries. As for the mothers' professional occupation, it is largely not reported in Sweden, France and Greece. Nevertheless, we can assume that the unknown occupations are homemakers. This assumption relies on both the age of the studied sample but also on the comparison with the proportions of homemakers in other countries. Moreover if we refer to a French study using only the French part of the SHARE dataset and having done a more precise codification of mothers' occupations, the proportions of unknown occupation is clearly comparable to the proportion of homemakers they had (Devaux et al. 2008). Mothers were mainly homemakers in Europe: more than 70% in the Netherlands, in Spain, in Greece, in Italy and in Belgium and a bit less than 60% in Sweden, Denmark, and Switzerland and in France. When mothers were active, they were more likely to work in agriculture in Greece (20.5%), in Austria (11.4%) and in Sweden (10.87%), to be an office clerk in Switzerland (21.7%), in Denmark (14.2%) and in Germany (12.8%). Finally, a high proportion of mothers who were senior managers (13.7%) in France, is striking. Proportions of fathers and mothers, who are still alive, are lower in Austria, Spain, Italy and Germany. It is in Greece and France where higher proportions of parents alive are observed. The average age at death for fathers is always lower than the average age at death of mothers except in Spain and in Italy. The average age at death of fathers is higher for Spanish and Italian fathers whereas the Spanish and Italian mothers experience the lowest average age at death in Europe. France and Greece have the highest average ages at death in Europe.

b) Interval regression analysis

The analysis of inter-individual variation in health relies on the specification of a theoretical model explaining health. The various models we have estimated are not derived from formal models of health production and investment but can be compared to reduced-form estimates of a static model of the demand for health. The interval regression does not provide a structural model for health and so, the

estimated parameters cannot be interpreted from a causal point of view. The first step of the method allows us analysing interval regression models per country, explaining self-assessed health cardinalised using the Canadian HUI according to a vector of current living conditions and a vector of childhood circumstances. For discrete variables, a reference category is omitted; therefore the reference individual is a woman, unskilled workers, without diploma, born of two prematurely deceased parents, who were unskilled workers. The results of the interval regression are presented in table 2. From a general point of view, differences can be observed in terms of significance and in very few cases in terms of sign of their effect on health.

First of all, the estimated coefficients of the log of wealth are directly comparable across countries as wealth as well as health are measured in the same units whatever the country. Wealth has a positive and significant coefficient in every country. Age significantly influences health: health worsens in older ages. As for the influence of gender on health, it is not significant in Austria, Germany, the Netherlands, Denmark and Belgium and men tend to have a better health than women except in France and Denmark. Having a diploma is associated with a better health in every European country but this effect is not significant in Austria and Denmark. Individuals at the top of the social scale (senior managers and professionals, and technicians and associate professionals) are significantly in better health than individuals at the bottom of the social scale (unskilled workers) except in Italy, Germany, Switzerland and Spain (for senior managers and associate professionals). If our assumption, according to which a large proportion of the unknown professions are homemakers, is true, then homemakers are significantly in better health than unskilled workers in Austria, Spain, Denmark and Greece.

Individuals born to a father, who was at the top of the social scale, significantly have a better health in Austria, Germany, Spain, France and Belgium than descendants of unskilled workers. The descendants of office clerks are significantly in better health than the descendants of unskilled workers in Austria, Spain and Belgium whereas they are significantly in less good health in the Netherlands. The health of the descendants of agricultural workers is better than health of the descendants of unskilled workers in Austria, Germany and Belgium. Generally in Austria, descendants of unskilled workers significantly have a less good health status than any other individuals.

The mother's socioeconomic occupation less significantly influences health in adulthood than the father's occupation. Nevertheless, individuals born of a mother who was in higher social positions, have a significantly better health than those born of a mother who was an unskilled worker in Austria and France. Unexpectedly we observe the opposite in Denmark[2]. Being born to a mother who was an office clerk also differs from one country to the other: whereas in Germany, these individuals have a significantly better health than those born of an unskilled mother, in Greece they are significantly in

[2] The relatively higher rate for mothers who were unskilled workers in Denmark as compared to other European countries, may explain that opposite effect.

less good health[3]. In the same way, being born of a mother who was a skilled worker significantly protects more health in adulthood than being born of an unskilled mother in Spain but the opposite is observed in Greece[4]. Finally the individuals born to a mother who was homemaker, are significantly in better health than those born to an unskilled worker in Spain and France whereas in Denmark and in Greece[5], the opposite is observed.

Individuals having a father still alive as well as individuals whose father died in later ages are significantly in better health than individuals whose father is prematurely deceased in Germany, in Sweden, in the Netherlands and in Greece. It is also true in France for still alive fathers only and in Denmark for fathers died in later ages. As for the mothers still alive, their descendants are significantly in better health than the descendants of prematurely died women in Germany, Sweden, the Netherlands, Spain, Italy, and Denmark. Having a mother who died old is less protective for health in adulthood having a father who died old; indeed there is a significantly protective effect on health in Austria and France only.

c) Concentration indices over the distribution of wealth

Concentration indices measured using equation (3) and presented in the table 3 allow understanding the wealth-related health inequalities. First of all, we observe in all the countries of Europe that self-assessed health is unequally distributed in favour of the richest individuals. Graph 1 represents the classification of the countries according to the extent of the degree of concentration with the confidence intervals. In all the countries, the level of inequality is largely significant and different from zero. We observe important differences between the countries. In Switzerland and Sweden, the inequality is significantly weaker than in all the other countries of Europe except Spain. At the other end of the ranking, the inequality is significantly higher in Germany, Greece and the Netherlands than in all the other countries. The concentration index associated to the logarithm of wealth is a one-dimensional concentration index and so, is comparable to a Gini index. Its positive value translates the existence of important inequalities in the distribution of wealth within the population. In all the countries, the wealth-related health inequalities are weaker than wealth inequalities. The two indices have a positive and significant correlation (r=0.66). In addition, these two measurements of the inequalities do not lead to the same classification of the European countries. The most surprising change of position is that of Greece where the wealth inequalities are among the weakest in Greece whereas wealth-related health inequalities are very important there. Switzerland and Sweden, which are the countries with the weakest health inequalities, experience relatively high wealth inequalities.

The concentration indices when they are positive (respectively negative) represent a concentration of the individuals in the high levels of wealth (respectively in the low levels of wealth). As expected, the

[3] The opposite results for Greece could be explained by very weak proportion of mothers who are unskilled workers in that country

[4] Cf. footnote n°3.

[5] Cf. footnotes n°2 and n°3.

senior managers and associate professionals concentrate among the richest in particular in Italy and Spain. The intermediate occupations also concentrate among the richest in all the countries except in Switzerland where they belong to the average social classes. Moreover, in Greece they more strongly concentrate among the richest than senior managers and associate professionals. The social situation of agricultural workers is very different from one country to another: they concentrate among the richest in Denmark and the Netherlands, but they belong to the poorest in Greece and in Germany, Italy and Spain to a lesser extent and they are rather in the average social classes elsewhere. Craftsmen and skilled workers concentrate in the lower social classes, particularly in Sweden, the Netherlands and Denmark. They are however middle-classes in Spain, Italy and Austria.

Regardless of the country, the senior managers, the highly educated individuals (at least A-level) particularly strongly concentrate among the socially favoured individuals in Spain, Italy, the Netherlands and Greece. Whereas Spanish and the Greeks having a diploma at most equivalent to secondary levels concentrate among the richest, in the other European countries this characteristic does not translate really strong social differences. Individuals born of a father who had a higher profession (senior manager and professional) and of a mother, who was senior manager, concentrate among the socially favoured individuals in every country and even more strongly in Greece, Italy, Spain, Austria and the Netherlands. This result thus confirms a social reproduction across generations and particularly for individuals who are at the top of the social scale. Moreover, an individual's wealth is measured on its whole life cycle and takes into account the inheritance transmitted by his/her parents. In the Netherlands, sons of agricultural workers are strongly concentrated among the richest.

Lastly, the individuals whose parents are still alive concentrate among the richest in Europe, more particularly in Austria, Germany and Greece for the fathers and in Austria, the Netherlands and Spain for the mothers.

d) Contributions to wealth-related health inequality

The decomposition method enables us to understand how the various vectors of individual characteristics contribute to the extent of inequalities in the European countries. These contributions can be positive or negative; their sign depend on the sign of their relationship to health (elasticity) and of their distribution according to the richness (concentration index). A contribution of x% of the characteristic K is interpreted as follows. Inequality would be x% weaker, *ceteris paribus*, if either K was equally distributed according to wealth or K had a zero health elasticity. Graph 2 decomposes the inequality of health in each country according to the extent of the contribution of demographic characteristics, current characteristics and childhood circumstances. This decomposition highlights that, regardless of the country, the most important contribution to wealth-related health inequalities is that of current socio-economic variables. Moreover, we observe that the contribution of childhood circumstances in childhood is not negligible in the majority of the European countries and particularly important in Germany, Spain, Austria and the Netherlands. That contribution is less important in Greece and this lower contribution is due to a stronger contribution of demographic characteristics.

Demographic characteristics contribute to a large extent to explain wealth-related health inequalities, particularly in Greece, Germany, Austria, Spain and Italy. The main advantage of the decomposition of inequality in its determining factors is to give intuitions on public policies. Considering that inequalities related to demographic characteristics could not be corrected by a government intervention, it is then widespread to consider the contribution of these variables as policy irrelevant and to measure the extent of inequalities by standardizing the contribution of the demographic characteristics, i.e. by considering the degree of inequality which would be observed if the age and the sex were equally distributed according to wealth. This level of inequality is obtained by withdrawing from the total wealth-related health inequality, the contributions of age and sex. This inequality represents the degree of inequality which is known as potentially avoidable (Van Doorslaer et al. 1997). Regardless of the country, the potentially avoidable inequality is weaker than the total health inequality. Graph 3 represents the discrepancy between the avoidable inequality of health, as measured by the standardised concentration index, and the wealth inequality as measured by the Gini index of the logarithm of wealth. The two indices have a positive and significant correlation (r=0.27), which is much weaker than the correlation between the Gini index and the non-standardised health concentration index.

Graph 4 shows the detailed contributions of current characteristics and childhood circumstances to the avoidable inequality in each country of Europe. This inequality is especially the result of a dominating contribution of wealth inequalities in every country, except in Greece where it is very slightly higher than that of education because of a lower elasticity of health with wealth. Individual's professional occupation weakly contributes to health inequalities in Italy, Belgium and Spain and, it even appears that the contribution of professional occupations of the two parents is equal or even higher. In the same way, in Germany and Austria, the share of health inequality which is explained by the level of education is equal to the share due to the social background. Therefore, we show the great advantage to take into account childhood circumstances in the analysis of health in adulthood: the characteristics usually considered contribute equally or even less than childhood characteristics. The magnitude of the contribution of social background as well as those of parental health varies from one country to the other. Social circumstances positively and significantly contribute to wealth-related health inequality in Germany, Spain, Austria and the Netherlands. However in Italy and Greece, social circumstances do not contribute at all to the inequality. In Switzerland, circumstances tend to decrease inequalities and this diminution is explained by a negative elasticity of health with the father's social position. Parental health tends to increase inequalities in Germany, Denmark, France and Sweden in a more marked way than social circumstances in childhood. Thus, a share of the wealth-related health inequalities in adulthood would be explained by a transmission of health across generations.

Conclusion

This analysis explains in a precise way wealth-related health inequalities among older Europeans. The analysis is based on an original methodology of cardinalisation of self-assessed health and decomposed concentration indices, which had never been used to explore simultaneously the role played by current living conditions and childhood circumstances. The study highlights wealth-related health inequalities significantly higher in Germany, Greece and the Netherlands. These social inequalities of health in Europe are explained largely by individual's current social conditions, particularly his wealth. Nevertheless, the contribution of childhood circumstances is far from negligible. In particular, the contribution of social background to inequality is equal or sometimes more important than the contribution of individual's social occupation in Belgium and Spain. The health of the parents tends to increase inequalities in Germany, Denmark, France and Sweden. A share of the wealth-related health inequalities in adulthood would be explained by a transmission of health across generations. This transmission can be health status itself but also lifestyle and risky health-related behaviours, preferences for health or a similar exposure to a risky or protective environment.

Our empirical strategy presents several limits. First of all, our results suffer from a statistical power. For example, some of the mothers' professional occupations have very weak proportions and so, it would be preferable to gather information. We could work on a binary variable indicating if the mother was active or homemakers. Moreover, as we underlined in the description of the data, some characteristics can be very different from one country to the other and so, induce very different situations. For example, very few individuals do not have any diploma in Denmark, Austria or Germany whereas this situation concerns more that half of the Italian, the Spanish and the Greeks. We shall also quote the case of agricultural workers, who are socially favoured in the Netherlands, Denmark and Belgium but underprivileged in Greece. Then, the data used do not enable us to distinguish if the influence of the childhood health circumstances on health in adulthood comes from a common genetic inheritance, a transmission of particular preferences for health or from a common environment. The use of self-assessed health to measure health presents some limits. There are cultural differences in the way people report less than "good" health (Mackenbach, 2005). Using SHARE data, large differences in general indicators of physical health such as self-assessed health, long-standing health problems, and activity limitations have been emphasised between countries (Borsch-Supan et al. 2005). For instance, German people are likely to rate their health more negatively than Dutch or Danish people and the same applies to Italian and Spanish people as compared to French and Greek people.

As social background and parents' health both represent factors beyond the realm of individual responsibility (Roemer 1998), they represent socially or morally unacceptable sources of inequality. Although our analysis attests the existence of a long-term influence of initial conditions in childhood and adolescence on health in middle-aged and beyond and so, recommends controlling the harmful

effects of childhood circumstances, it is difficult to give precise recommendations as regard to public policies aiming the reduction of social health inequalities.

References

Baclet A. (2006) « Les seniors : des revenus plus faibles pour les plus âgés, compensés par un patrimoine plus élevé » in *Les revenus et le patrimoine des ménages – Edition 2006*, INSEE ; 25-37.

Börsch-Supan A, Brugiavini A, Jürges H, Mackenbach JP, Siegrist J, Weber G. (2005) *Health, ageing and retirement in Europe - First results from the Survey of Health, Ageing and Retirement in Europe*. MEA ed. Mannheim.

Devaux M, Jusot F, Trannoy A, Tubeuf S. (2008) Inégalités des chances en santé en Europe : Quelle influence de l'origine sociale et familiale ? Communication, journée des utilisateurs de l'enquête Share, IRDES.

Evans RG, Barer ML, Marmor TR (1994) Why are some people healthy and others not? The determinants of health of populations, New York: NY; Aldine DeGruyter.

Garcia Gomez P. & Lopez A. N. (2007) Regional differences in socio-economic health inequalities in Spain 1973/74 - 2003. Fundacion BBVA

Hernandez-Quevedo C., Jones A., Lopez A. N., Rice N. (2007) Socio-economic inequalities in health: a comparative longitudinal analysis using the European Community Household Panel. *Social Science and Medicine* 63: 1262.

Jürges H. (2007). True health vs response styles: exploring cross-country differences in self-reported health. *Health Economics* 16(2): 163-178.

Jusot F. (2006) The shape of the relationship between mortality and income in France. *Annales d'économie et de statistique*, 83-84, 89-122.

Lecluyse A., Cleemput I. (2006) Making health continuous: implications of different methods on the measurement of inequality. *Health Economics* 15: 99-104.

Lefranc A., N. Pistolesi, A. Trannoy, 2004. Le revenu selon l'origine sociale. Economie et statistique, 371:49-82.

Mackenbach J. P., Bos V., Andersen O., Cardano M., Costa G., Harding S., Reid A., Hemstrom O., Valkonen T., Kunst A. E. (2003) Widening socioeconomic inequalities in mortality in six western European countries. *International Journal of Epidemiology* 32: 830-837.

Mackenbach J. P. (2005) Health and health care. In: Börsch-Supan A, Brugiavini A, Jürges H, Mackenbach JP, Siegrist J, Weber G, editors. *Health, ageing and retirement in Europe – First results from the Survey of Health, Ageing and Retirement in Europe*. MAE ed. Mannheim. p. 81-149.

Masseria C., Mossalios E., Allin S. (2006) Measurement of socioeconomic inequality of health in 10 European countries: an exploratory analysis of SHARE using three approaches. *European Commission - Research Note LSE*.

Marmot M.G., Wilkinson R.G. (1999), Social Determinants of health, Oxford University Press.

Olsen K., Dahl S-A. (2007) Health differences between European countries. *Social Science and Medicine* 64 (8): 1665-1678.

van Doorslaer E., Jones A. (2003) The determinants of self-reported health inequalities: validation of a new approach to measurement. *Journal of Health Economics* 22: 61-87.

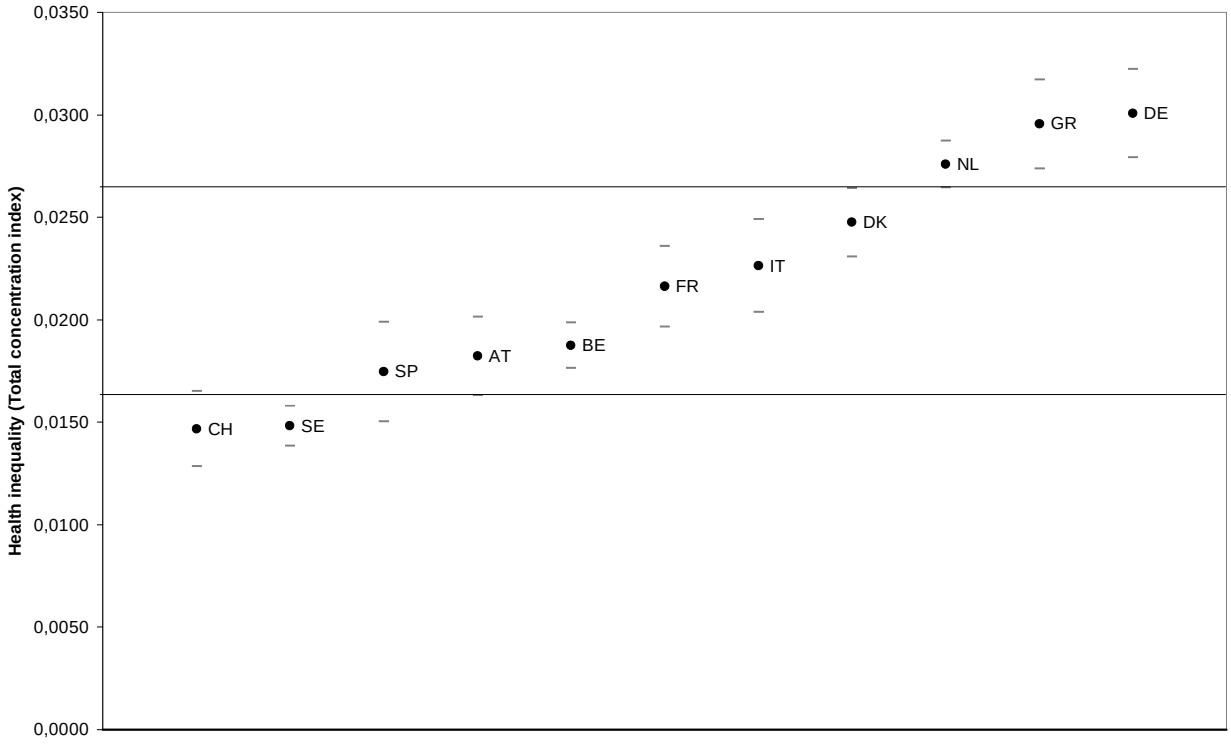
van Doorslaer E., Koolman X. (2004) Explaining the differences in income-related health inequalities across European countries. *Health Economics* 13: 609-628.

Van Doorslaer E, Wagstaff A, Bleichrodt H, et al. (1997) Income-related inequalities in health: some international comparisons. *Journal of Health Economics* 16: 93–112.

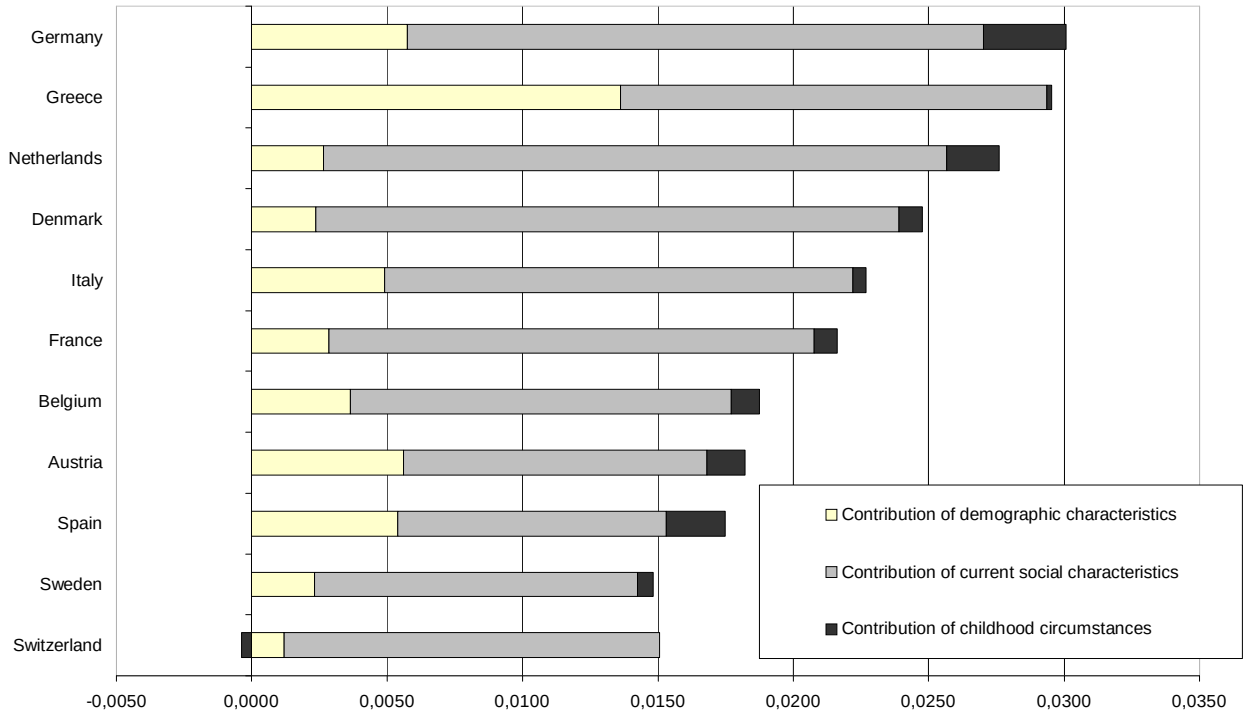
van Ourti T. (2003) Socioeconomic inequality in ill-health amongst the elderly. Should one use current or permanent income? *Journal of Health Economics* 22: 219-41.

Wagstaff A., van Doorslaer E., Watanabe N. (2003) On decomposing the causes of health sector inequalities with an application to malnutrition inequalities in Vietnam. *Journal of Econometrics* 112: 207-223.

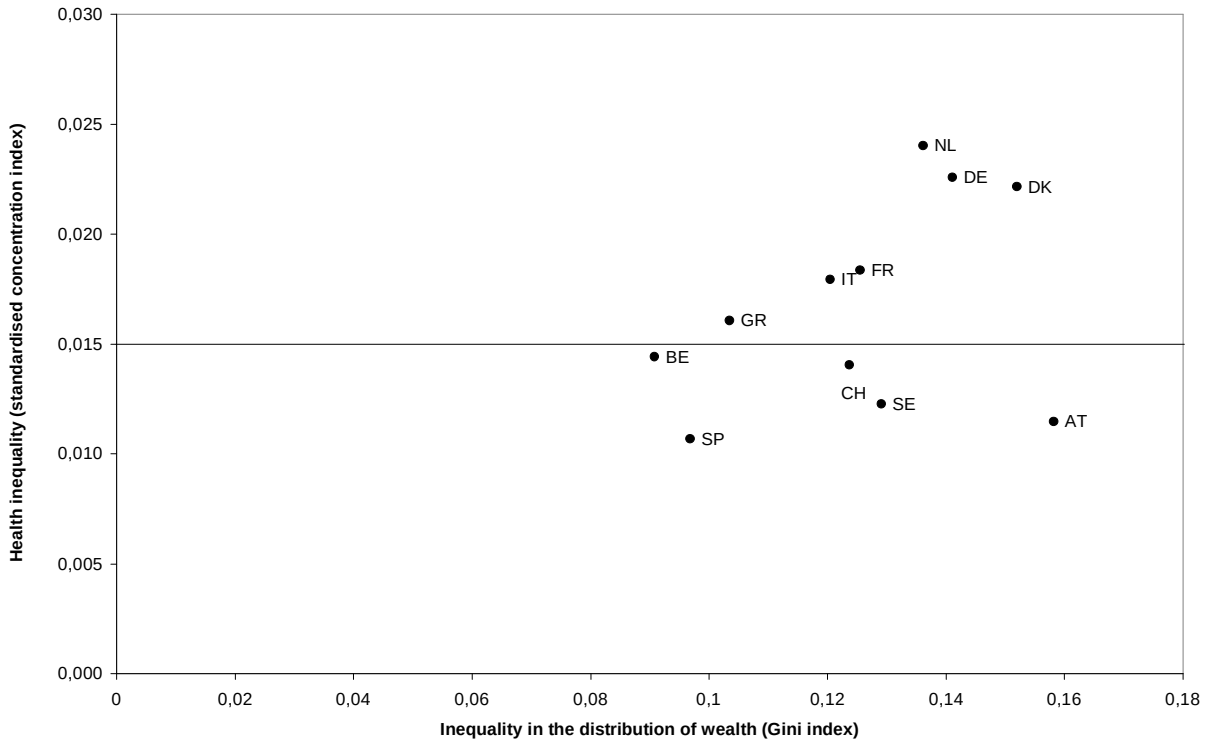
Graph 1: Health inequalities in Europe: concentration index and confidence intervals



Graph 2: Decomposition of health inequalities in Europe (unstandardised CI)



Graph 3: Relationship between health inequalities and wealth inequalities in Europe



Graph 4: Contribution of current characteristics and social background to social health inequalities in Europe

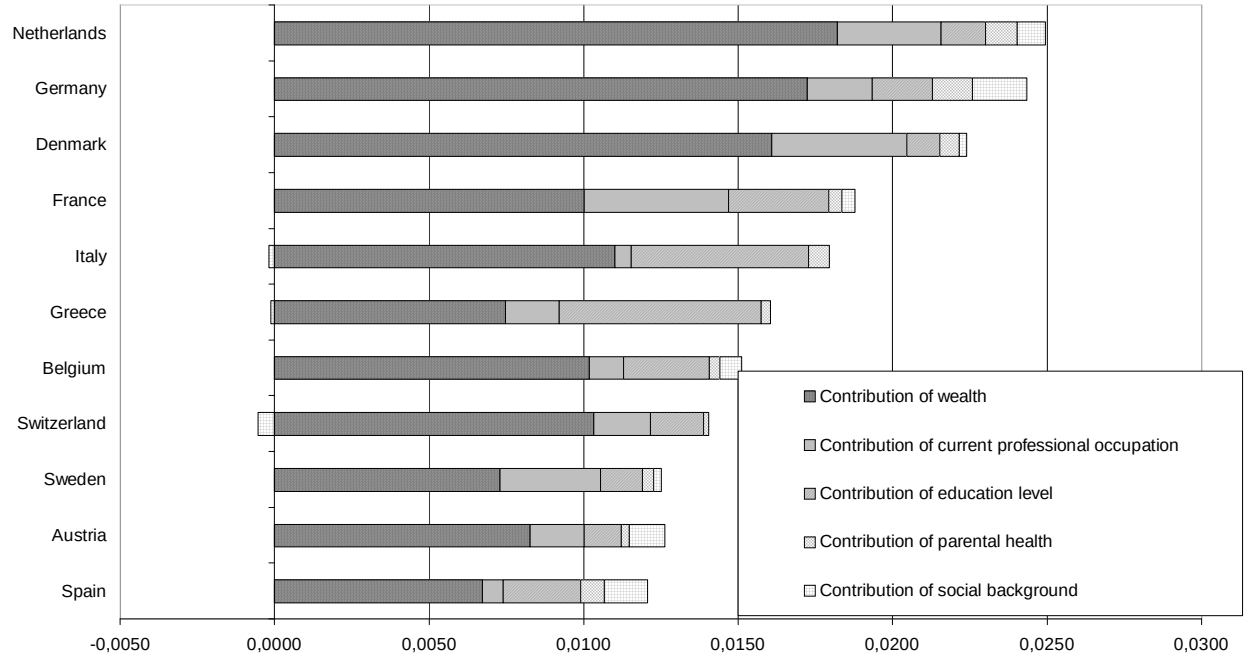


Table 1 : Descriptive statistics

	Austria	Germany	Sweden	Netherlands	Spain	Italy	France	Denmark	Greece	Switzerland	Belgium
Sample	1 828	2 934	2 997	2 863	2 353	2 499	3 052	1 599	2 680	945	3 692
Continuous variables											
Average afe	64,96	63,96	64,78	63,11	66,22	64,35	64,06	63,63	63,24	64,23	64,32
Average household income per CU	27684,93	32270,88	36215,19	36377,11	15125,09	18749,9	34628,72	42358,95	12547,48	52403,28	33353,5
Average household wealth	215739,6	368714,8	299391,3	472238,7	439665,1	485271,4	510272,8	357006,1	230380,9	546554,2	491341,7
Average predicted health	0,79	0,75	0,85	0,80	0,72	0,74	0,76	0,82	0,79	0,84	0,80
Sex											
Male	41,31	45,88	46,32	45,92	41,49	44,24	43,41	45,17	42,93	46,02	45,44
Female	58,69	54,12	53,68	54,08	58,51	55,76	56,59	54,83	57,07	53,98	54,56
Self-assessed health											
Excellent	8,87	4,79	20,47	12,86	3,55	6,37	8,27	20,45	8,66	14,74	9,93
Very good	24,41	17,25	24,99	17,96	14,98	13,36	15	29,17	28,85	26,89	22,26
Good	37,51	40,69	42,32	42,87	37,73	40,09	44,1	25,07	34,02	42,43	42,15
Average	22,61	28,86	8,94	22,16	31,84	30,21	23,99	19,27	21,98	13,05	20,51
Poor	6,6	8,41	3,28	4,16	11,89	9,96	8,64	6,03	6,49	2,89	5,15
Individual's education											
Primary	0,16	0,83	35,01	16,75	66,78	58,46	44,6	0,06	50,1	21,71	27,07
Secondary	76,91	71,88	36	63,71	26,13	34,23	36,83	68,42	33,2	53,49	49,88
A-levels and higher	22,93	27,29	28,99	19,54	7,1	7,31	18,57	31,52	16,7	24,8	23,05
Individual's professional occupation											
Senior managers and professionals	14,16	19,45	29,51	25,01	9,89	8,44	17,57	24,08	8,56	27,19	25,42
Technicians and associate professionals and armed forces	12,15	15,29	15,26	10,71	5,01	4,92	18,1	17,57	2,31	16,83	11,55
Office clerks and service workers and shop and market sales workers	23,61	24,53	28,04	27,43	10,14	10	21,36	22,85	5,56	27,29	18,03
Skilled agricultural and fishery workers	4,97	3,39	3,21	2,32	9,14	6,1	7,08	2,28	8,56	3,49	2,9
Craftsmen and skilled workers	19,86	21,51	16,61	14,54	21,12	21,73	16,47	16,11	11,01	10,36	14,5
Elementary occupations and unskilled workers	13,52	8,88	5,11	10,71	17,28	10,86	9,21	11,42	4,11	8,37	14,37
Unknown	10,67	6,68	2,26	8,83	27,38	37,59	10,21	4,69	59,9	4,68	13,07
Father's professional occupation											
Senior managers and professionals	9,4	11,67	25,16	18,13	8,97	11,68	10,8	23,43	13,11	15,74	16,67
Technicians and associate professionals and armed forces	5,97	9,97	8,16	12,12	2,8	2,7	5,36	5,27	2,59	6,67	5,44
Office clerks and service workers and shop and market sales workers	7,34	7,71	5,24	10,14	5,68	7,78	4,57	5,27	6,35	25,9	10,14
Skilled agricultural and fishery workers	19,28	15,33	17,26	15,34	37,19	28,37	16,29	17,22	39,89	17,53	13,85
Craftsmen and skilled workers	39,36	42,92	35,08	34	26,04	27,63	22,58	29,64	18,18	23,8	35,01
Elementary occupations and unskilled workers	7,29	3,62	5,76	7,12	14,48	18,84	2,85	8,9	3,97	6,77	14,74
Unknown	11,3	8,74	3,34	3,16	4,84	3,01	37,55	10,25	15,91	3,59	4,13
Mother's professional occupation											
Senior managers and professionals	2,75	2,06	5,9	3,83	1,71	3,05	13,69	5,33	1,45	3,59	7,24
Technicians and associate professionals and armed forces	2,48	5,32	2,72	0,57	0,21	0,55	1,79	3,28	0,21	3,88	1,57
Office clerks and service workers and shop and market sales workers	5,92	12,8	22,5	4,63	1,17	2,27	6,45	14,24	0,69	21,71	3,34
Skilled agricultural and fishery workers	11,36	6,68	10,87	1,78	6,22	8,28	8,99	1,05	20,57	7,57	4,89
Craftsmen and skilled workers	5,07	9,21	6,09	1,98	2,38	3,71	5,61	5,68	2,35	4,08	4,08
Elementary occupations and unskilled workers	6,97	6,68	9,63	2,22	4,47	7,35	5,14	11,6	1,86	2,39	8,68
Homemakers	60,43	52,56	.	80,8	80,01	71,82	.	38,72	.	50,1	63,34
Unknown	5,02	4,69	42,29	4,2	3,84	2,97	58,35	20,09	72,88	6,67	6,87
Father's health											
Father alive (%)	7,52	8,46	10,75	10,02	7,58	8,19	13,39	11,50	13,39	13,11	10,41
Mean age at death	68,87	68,05	73,53	72,40	74,01	75,17	70,19	73,49	72,92	72,41	71,64
Mother's health											
Mother alive (%)	19,96	22,92	25,73	23,71	19,06	20,69	30,44	26,44	29,21	25,05	25,32
Mean age at death	73,87	74,84	76,36	75,90	70,94	71,17	75,02	75,03	74,54	76,20	75,20

Table 2. Results of the interval regressions of self-assessed health cardinalised by the Canadian HUI

	Austria			Germany			Sweden			The Netherlands			Spain			Italy		
	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z
Age	-0,004	0,000	0,000	-0,005	0,000	0,000	-0,002	0,000	0,000	-0,002	0,000	0,000	-0,004	0,000	0,000	-0,004	0,000	0,000
Sex																		
Male	0,007	0,008	0,389	0,010	0,007	0,144	0,011	0,005	0,019	0,002	0,006	0,680	0,042	0,009	0,000	0,036	0,007	0,000
Female	ref.																	
Log of the average household wealth moyenne	0,004	0,001	0,000	0,008	0,001	0,000	0,004	0,001	0,000	0,010	0,001	0,000	0,004	0,002	0,005	0,006	0,001	0,000
Individual's professional occupation																		
Senior managers and professionals	0,053	0,016	0,001	0,018	0,014	0,191	0,048	0,011	0,000	0,040	0,011	0,000	0,009	0,017	0,606	0,002	0,017	0,888
Technicians and associate professionals and armed forces	0,059	0,016	0,000	0,012	0,013	0,391	0,043	0,012	0,000	0,029	0,012	0,016	0,048	0,021	0,019	0,010	0,020	0,629
Office clerks and service workers and shop and market sales workers	0,077	0,013	0,000	0,016	0,012	0,196	0,023	0,011	0,033	0,015	0,010	0,139	0,058	0,016	0,000	0,045	0,016	0,006
Skilled agricultural and fishery workers	0,030	0,021	0,144	-0,001	0,020	0,975	0,003	0,016	0,854	0,026	0,020	0,184	0,036	0,016	0,030	-0,007	0,019	0,726
Craftsmen and skilled workers	0,056	0,014	0,000	-0,017	0,013	0,177	0,006	0,011	0,596	-0,002	0,011	0,835	0,021	0,013	0,109	0,017	0,014	0,220
Elementary occupations and unskilled workers	ref.																	
Unknown	0,042	0,016	0,007	0,007	0,016	0,664	-0,009	0,018	0,630	0,014	0,012	0,255	0,025	0,012	0,045	0,019	0,013	0,152
Individual's education																		
Primary	ref.																	
Secondary	0,151	0,097	0,121	0,088	0,035	0,012	0,012	0,006	0,041	0,015	0,008	0,052	0,041	0,010	0,000	0,053	0,009	0,000
A-levels and higher	0,164	0,097	0,091	0,109	0,036	0,002	0,019	0,007	0,007	0,019	0,011	0,071	0,051	0,018	0,004	0,083	0,016	0,000
Father's professional occupation																		
Senior managers and professionals	0,033	0,020	0,096	0,046	0,019	0,014	0,000	0,010	0,966	-0,002	0,012	0,860	0,036	0,017	0,038	-0,011	0,014	0,455
Technicians and associate professionals and armed forces	0,050	0,022	0,021	0,037	0,019	0,054	0,014	0,012	0,251	-0,013	0,012	0,282	0,045	0,026	0,083	0,022	0,023	0,356
Office clerks and service workers and shop and market sales workers	0,037	0,020	0,063	0,012	0,020	0,539	-0,002	0,013	0,907	-0,026	0,013	0,042	0,038	0,019	0,050	0,008	0,016	0,604
Skilled agricultural and fishery workers	0,041	0,018	0,023	0,032	0,018	0,086	0,013	0,011	0,243	0,002	0,012	0,866	0,016	0,012	0,201	0,004	0,011	0,708
Craftsmen and skilled workers	0,030	0,015	0,052	0,007	0,017	0,682	0,000	0,010	0,973	-0,007	0,011	0,512	0,009	0,013	0,474	-0,001	0,011	0,905
Elementary occupations and unskilled workers	ref.																	
Unknown	0,027	0,018	0,145	0,019	0,019	0,331	0,013	0,015	0,384	-0,012	0,018	0,504	0,040	0,021	0,052	-0,014	0,022	0,539
Father's health																		
Father alive	-0,005	0,017	0,779	0,020	0,012	0,103	0,013	0,008	0,097	0,022	0,010	0,033	0,008	0,016	0,642	0,014	0,015	0,323
Father deceased in later ages	0,011	0,008	0,144	0,011	0,006	0,081	0,011	0,005	0,017	0,017	0,006	0,002	-0,013	0,008	0,111	0,009	0,007	0,235
Father prematurely dead	ref.																	
Mother's professional occupation																		
Senior managers and professionals	0,059	0,028	0,034	0,016	0,024	0,498	0,018	0,012	0,121	0,021	0,022	0,346	0,017	0,036	0,628	-0,015	0,025	0,543
Technicians and associate professionals and armed forces	0,033	0,028	0,240	0,007	0,018	0,706	0,002	0,016	0,879	0,047	0,038	0,217	0,047	0,083	0,572	0,018	0,049	0,717
Office clerks and service workers and shop and market sales workers	0,017	0,021	0,431	0,028	0,015	0,058	0,001	0,009	0,919	0,026	0,022	0,234	-0,009	0,040	0,821	-0,032	0,027	0,248
Skilled agricultural and fishery workers	-0,005	0,020	0,809	-0,025	0,017	0,151	0,003	0,011	0,805	0,053	0,028	0,056	0,034	0,025	0,175	-0,005	0,019	0,787
Craftsmen and skilled workers	0,003	0,022	0,901	0,004	0,016	0,787	0,002	0,011	0,893	0,031	0,026	0,221	0,055	0,031	0,079	-0,003	0,023	0,908
Elementary occupations and unskilled workers	ref.																	
Homemakers	0,021	0,015	0,167	0,015	0,013	0,245				0,017	0,018	0,349	0,054	0,019	0,005	-0,009	0,014	0,538
Unknown	0,018	0,022	0,417	0,014	0,019	0,453	0,001	0,008	0,905	0,011	0,022	0,630	0,087	0,028	0,002	0,012	0,025	0,624
Mother's health																		
Mother alive	0,016	0,012	0,158	0,033	0,009	0,000	0,011	0,006	0,095	0,019	0,008	0,013	0,023	0,012	0,064	0,021	0,011	0,054
Mother deceased in later ages	0,019	0,008	0,026	0,009	0,007	0,220	0,007	0,005	0,166	0,004	0,006	0,547	0,011	0,009	0,220	0,011	0,008	0,184
Mother prematurely dead	ref.																	
Constant	0,725	0,103	0,000	0,850	0,047	0,000	0,879	0,024	0,000	0,747	0,033	0,000	0,807	0,040	0,000	0,874	0,040	0,000

Table 2 (continued). Results of the interval regressions of self-assessed health cardinalised by the Canadian HUI

	France			Denmark			Greece			Switzerland			Belgium		
	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z	Coef.	S.E	P>z
Age	-0,004	0,000	0,000	-0,001	0,000	0,002	-0,005	0,000	0,000	-0,001	0,000	0,002	-0,003	0,000	0,000
Sex															
Male	-0,017	0,007	0,013	-0,005	0,009	0,584	0,032	0,006	0,000	0,017	0,008	0,042	0,007	0,005	0,168
Female															
Log of the average household wealth moyenne	0,005	0,001	0,000	0,008	0,001	0,000	0,005	0,001	0,000	0,006	0,001	0,000	0,008	0,001	0,000
Individual's professional occupation															
Senior managers and professionals	0,055	0,014	0,000	0,055	0,016	0,001	0,046	0,018	0,009	0,026	0,017	0,130	0,022	0,009	0,019
Technicians and associate professionals and armed forces	0,051	0,013	0,000	0,043	0,016	0,008	0,023	0,024	0,323	0,015	0,018	0,383	0,021	0,010	0,037
Office clerks and service workers and shop and market sales workers	0,019	0,012	0,126	0,012	0,015	0,408	0,051	0,019	0,007	0,006	0,016	0,696	0,027	0,009	0,003
Skilled agricultural and fishery workers	0,020	0,016	0,213	0,030	0,029	0,309	0,016	0,018	0,375	0,043	0,025	0,081	-0,017	0,017	0,302
Craftsmen and skilled workers	-0,005	0,013	0,686	0,009	0,016	0,574	0,021	0,017	0,197	-0,024	0,019	0,193	0,007	0,009	0,450
Elementary occupations and unskilled workers															
Unknown	0,007	0,014	0,631	0,036	0,022	0,100	0,037	0,015	0,015	-0,005	0,023	0,828	0,015	0,010	0,133
Individual's education															
Primary															
Secondary	0,026	0,008	0,001		0,010	0,220	0,047	0,007	0,000	0,017	0,011	0,122	0,021	0,006	0,001
A-levels and higher	0,038	0,011	0,000	0,013	0,010	0,220	0,062	0,010	0,000	0,035	0,013	0,010	0,039	0,009	0,000
Father's professional occupation															
Senior managers and professionals	0,012	0,020	0,543	0,022	0,017	0,190	0,014	0,017	0,421	-0,008	0,019	0,657	0,020	0,009	0,026
Technicians and associate professionals and armed forces	0,042	0,022	0,058	0,010	0,022	0,654	0,022	0,023	0,342	-0,025	0,022	0,248	0,035	0,012	0,005
Office clerks and service workers and shop and market sales workers	0,030	0,023	0,178	-0,003	0,023	0,894	0,013	0,019	0,498	-0,008	0,019	0,656	0,023	0,010	0,026
Skilled agricultural and fishery workers	0,029	0,020	0,144	0,023	0,017	0,182	0,011	0,016	0,493	-0,006	0,019	0,744	0,025	0,010	0,012
Craftsmen and skilled workers	0,013	0,019	0,497	0,014	0,016	0,365	0,006	0,016	0,723	0,007	0,017	0,676	0,007	0,008	0,325
Elementary occupations and unskilled workers															
Unknown	0,017	0,018	0,352	0,024	0,019	0,198	0,024	0,017	0,153	0,016	0,030	0,604	0,014	0,015	0,341
Father's health															
Father alive	0,017	0,011	0,108	0,024	0,015	0,112	0,022	0,011	0,038	0,023	0,015	0,120	0,011	0,009	0,251
Father deceased in later ages	0,008	0,007	0,250	0,021	0,009	0,019	0,019	0,006	0,002	0,002	0,008	0,817	0,005	0,005	0,363
Father prematurely dead															
Mother's professional occupation															
Senior managers and professionals	0,041	0,016	0,011	-0,040	0,022	0,070	-0,033	0,032	0,299	0,011	0,034	0,740	-0,012	0,012	0,337
Technicians and associate professionals and armed forces	0,028	0,027	0,284	0,003	0,026	0,921	-0,073	0,070	0,298	0,021	0,034	0,542	-0,012	0,021	0,570
Office clerks and service workers and shop and market sales workers	0,012	0,018	0,500	-0,018	0,016	0,281	-0,085	0,047	0,069	0,039	0,029	0,172	0,002	0,016	0,920
Skilled agricultural and fishery workers	0,008	0,019	0,654	-0,020	0,042	0,625	-0,038	0,023	0,108	0,036	0,031	0,253	-0,002	0,015	0,906
Craftsmen and skilled workers	0,022	0,018	0,237	-0,021	0,021	0,317	-0,081	0,029	0,006	0,053	0,033	0,106	-0,009	0,015	0,553
Elementary occupations and unskilled workers															
Homemakers	.	.	.	-0,025	0,014	0,082	.	.	.	0,023	0,027	0,403	-0,011	0,009	0,233
Unknown	0,027	0,014	0,055	-0,035	0,015	0,021	-0,051	0,022	0,022	0,010	0,034	0,764	-0,013	0,013	0,319
Mother's health															
Mother alive	0,008	0,009	0,348	0,019	0,012	0,097	0,006	0,008	0,464	0,012	0,012	0,321	0,007	0,007	0,315
Mother deceased in later ages	0,020	0,007	0,006	0,013	0,010	0,180	0,002	0,007	0,742	0,006	0,009	0,476	0,008	0,006	0,151
Mother prematurely dead															
Constant	0,898	0,035	0,000	0,784	0,041	0,000	1,008	0,039	0,000	0,790	0,045	0,000	0,828	0,027	0,000

Table 3: Concentration indices of the explicative variables

	Austria	Germany	Sweden	Netherlands	Spain	Italy	France	Denmark	Greece	Switzerland	Belgium
Self-assessed health predicted with HUI	0,018	0,030	0,015	0,028	0,017	0,023	0,022	0,025	0,030	0,015	0,019
Age	-0,017	-0,012	-0,013	-0,019	-0,013	-0,011	-0,009	-0,022	-0,029	-0,004	-0,016
Sex											
Male	0,09	0,04	0,04	0,03	0,03	0,05	0,06	0,06	0,09	0,08	0,05
Female	ref.										
Log of the average household wealth moyenne	0,16	0,14	0,13	0,14	0,10	0,12	0,13	0,15	0,10	0,12	0,09
Individual's professional occupation											
Senior managers and professionals	0,19	0,23	0,21	0,21	0,27	0,28	0,24	0,23	0,15	0,22	0,22
Technicians and associate professionals and armed forces	0,13	0,10	0,10	0,16	0,17	0,17	0,15	0,14	0,20	-0,04	0,06
Office clerks and service workers and shop and market sales workers	-0,03	0,01	-0,10	0,00	0,08	0,06	-0,06	-0,12	0,14	-0,07	-0,03
Skilled agricultural and fishery workers	0,10	-0,11	0,00	0,34	-0,09	-0,11	0,00	0,28	-0,31	0,05	0,14
Craftsmen and skilled workers	-0,02	-0,14	-0,21	-0,22	0,02	-0,02	-0,13	-0,16	-0,13	-0,05	-0,11
Elementary occupations and unskilled workers	ref.										
Unknown	-0,07	0,01	-0,03	-0,15	-0,06	0,00	-0,10	-0,04	0,05	-0,11	-0,07
Individual's education											
Primary	ref.										
Secondary	-0,07	-0,06	0,01	0,00	0,06	0,13	0,06		0,14	0,00	0,03
A-levels and higher	0,22	0,17	0,21	0,31	0,32	0,31	0,27	0,01	0,30	0,16	0,22
Father's professional occupation											
Senior managers and professionals	0,19	0,14	0,12	0,17	0,15	0,19	0,10	0,02	0,19	0,14	0,11
Technicians and associate professionals and armed forces	0,09	0,13	0,09	0,09	0,23	0,16	0,09	0,01	0,26	0,12	0,02
Office clerks and service workers and shop and market sales workers	-0,02	0,05	0,01	-0,04	0,05	0,00	0,00	0,00	0,03	-0,07	0,08
Skilled agricultural and fishery workers	0,01	-0,04	-0,03	0,12	-0,01	-0,04	-0,07	0,02	-0,08	-0,05	0,10
Craftsmen and skilled workers	-0,03	-0,03	-0,06	-0,12	0,01	0,03	-0,14	0,01	-0,01	0,01	-0,07
Elementary occupations and unskilled workers	ref.										
Unknown	-0,01	-0,06	-0,11	-0,25	-0,06	0,09	0,08	0,02	0,02	-0,10	-0,14
Father's health											
Father alive	0,21	0,14	0,06	0,12	0,11	0,06	0,08	0,02	0,14	-0,02	0,10
Father deceased in later ages	0,02	0,02	0,01	0,01	-0,03	0,00	0,02	0,02	-0,03	0,04	0,03
Father prematurely dead	ref.										
Mother's professional occupation											
Senior managers and professionals	0,28	0,19	0,22	0,24	0,09	0,12	-0,07	-0,04	0,16	0,15	0,15
Technicians and associate professionals and armed forces	0,06	0,11	0,05	0,29	0,10	0,17	0,09	0,00	-0,06	0,14	0,07
Office clerks and service workers and shop and market sales workers	0,06	-0,02	0,06	0,14	0,19	0,00	-0,02	-0,02	0,13	-0,04	0,01
Skilled agricultural and fishery workers	0,06	-0,08	-0,02	0,23	-0,07	-0,07	-0,05	-0,02	-0,09	-0,07	0,15
Craftsmen and skilled workers	-0,09	-0,12	-0,06	0,08	0,13	0,13	-0,09	-0,02	-0,03	-0,02	-0,11
Elementary occupations and unskilled workers	ref.										
Homemakers	-0,01	0,04	0,00	-0,02	0,01	-0,01	.	-0,02	.	0,02	0,01
Unknown	0,08	-0,01	-0,04	-0,10	-0,02	0,25	0,03	-0,04	-0,05	-0,02	-0,12
Mother's health											
Mother alive	0,12	0,09	0,05	0,14	0,12	0,10	0,01	0,02	0,01	0,04	0,09
Mother deceased in later ages	-0,02	0,00	0,01	-0,01	-0,03	0,00	0,02	0,01	0,00	0,02	-0,01
Mother prematurely dead	ref.										