Health and mortality:
a longitudinal analysis of the ECHP data

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Abstract

Individual health status is influenced by different factors, some of them are associated with personal characteristics and behaviours, and others with the impact of collective factors that can either improve or worsen health. With regard to the individual, interactions between physical and psychological aspects and between objective and subjective health are strong, particularly at older ages when health problems are frequently multiple and include physical, psychological and social component (Kaplan et al., 1988).

Concerning self-rated health, many studies show the association between self-rated health status and mortality, even when other objective indicators of health status were considered. Several interpretations of such findings are possible. First, it may be that self-rated health is a more accurate measure because it captures more than is possible by considering typical objective indicators. When rating one's health, a person may consider symptoms that are not yet diagnosed, weigh the severity of symptoms, or consider family history and expected longevity. Second, self-ratings of health may include not only one's current level of health, but also the trajectory of decline or improvement in health. In fact, when researchers have access to an individual's health status at various points in time, a change in health status predicts mortality, explaining part of the predictive power of self-rated health. Third, a person's perception of his or her health may influence or reflect health behaviors. A person with a poor perception of health may not bother with preventive measures such as diet and exercise, while people with good perceptions of health are more likely to engage in healthful behaviors. In this way, self-rated health may be a reflection of lifestyle. Fourth, self-rated health may represent a person's evaluation of resources available to deal with health problems, either from the social environment or from within themselves. An evaluation of poor health may indicate an underlying depression that is detrimental to the immune system (Idler and Mc Laughlin, 2002). Then the reliability of self-assessments of health as predictor of mortality has been found to be as good as or better than measures such as functional ability, chronic diseases and psychological well-being (Shields and Shooshtari, 2001). Moreover, significant associations with physicians' ratings further demonstrate the validity of self-perceived health (Maddox and Douglass, 1973; LaRue et al., 1979).

A previous study carried out on Italian data show that self-perceived health is the strongest indicator of elderly survival, also after controlling by gender, age and objective health (Egidi and Spizzichino, 2006). However, other variables maintain a significant influence on survival: men have a twofold extra risk of dying than women and by ageing a year induces a 10% increased risk. Other variables, such as objective health status, education or region of residence have no significant influence, with the exception of marital status for which being never married is associated with a 77% extra risk of dying compared to being married.

In this study will be applied logistic regressions and proportional hazard models, the firsts to model self-rated health, the seconds for mortality. As know in literature, apart from the covariates that might effect the hazard of experiencing an event, the effect of possible unobserved characteristics has to be studied. Indeed, there might be some individual characteristics that influence the occurrence and timing of the event under study, and that have not been measured in the survey, or

that simply cannot be measured. These characteristics, indeed, might influence decision making process in many life trajectories and cannot be measured through the variables available. For these reasons in the models will be taken into account also the unobserved heterogeneity.

Moreover will be used a multiprocess model, in fact, when a model is processed, it might be that one of the covariates is endogenous to the process under study (in this case, self-rated health is endogenous to the process of mortality). This would imply a correlation between the individual unobserved characteristics and the covariate affecting the process. If such correlation is not taken into account, biased estimates are achieved. In order to control for the existence of correlation, the covariate possibly endogenous to the process (self-rated health) is modelled as well. This implies the use of two equations: the outcome of the first equation is the hazard of experiencing the event of the first process under study (risk to die); the outcome of the second equation is the risk to experiencing the event that might be endogenous to the first process (in this case the probability to have a certain self-rated health); the unobserved characteristics affecting the two processes are jointly distributed.

The data source is the European Community Household Panel (ECHP), a harmonized, cross-national longitudinal survey that focused on household income and living conditions. More than 60,000 households have been interviewed across 14 member states (Austria, Belgium, Denmark, Finland, Germany, Greece, Spain, France, Italy, Ireland, Luxembourg, The Netherlands, Portugal, United-Kingdom) from 1994 (1995 for Austria, 1996 for Finland) to 2001.

The aim of this study is to evaluate the role played by other relevant factors (on self-rated health and on mortality) such as socio-economic conditions of the family (poverty, housing discomfort) and the employment history of the individual on his survival, also checking how the change in health status and socio-economic condition can impact on mortality. Moreover, a comparison between Italy and Spain will be carried out to evaluate if the obtained results for Italy can be generalised to a different country. The inclusion of heterogeneity in the models should allow us to study the effect of several variables on self-rated health and on mortality, adjusting for unobserved factors. Moreover thanks to the multiprocess model it is possible to examine the relationship between self-rated health and mortality considering self-rated health as an endogenous variable for mortality, then estimate jointly self-rated health and mortality and try to unbiased the results.