Health Insurance

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Chapter 1

Introduction

In today's ageing society, increasing health care costs are a major concern. Public health insurance systems are under pressure, as the costs per insuree increase and the working population that pays for the larger part of the costs of public health insurance diminishes. As the ageing of the society and the ratio of inactives per active have not yet reached their peak, the pressure on public health insurance systems will only get stronger. While some countries, like the Netherlands and Switzerland, have already implemented major reforms in their health insurance system, other countries like the US are seriously considering such reforms.

This thesis contains four studies on health insurance, all from a microeconometric point of view. Each of the chapters is based on one of my (working) papers and can be read independently from the other chapters.

The second chapter, based on Bolhaar, Lindeboom and Van der Klaauw (2008), investigates the presence of moral hazard and selection in a market for supplementary private health insurance. Moral hazard refers to a situation in which individuals are more likely to make the costs they are insured for, or on average make higher costs for what they are insured for (in this case health care costs) than they would have if they were not insured. Selection occurs if individuals with a particular risk profile are more likely to insure themselves. The textbook example of selection is *adverse* selection, where the bad risks (those with highest expected costs) are most likely to insure themselves. Recent work by various authors however, brings forward another type of selection, *advantageous* selection. Advantageous selection refers to exactly the opposite of adverse selection: not those with high expected costs are the ones that buy insurance, but those with low expected costs, the good risks. One of the possible explanations for advantageous selection is that individuals may differ in risk aversion and that more risk averse individuals are both more inclined to buy insurance *and* exert more effort to avoid risk, for example by having a healthier lifestyle, leading to better health. The recent empirical evidence for advantageous selection was found in the market for (supplementary) private health insurances for elderly Americans , like Medigap and long-term care insurance. In Europe,

systems with basic public health insurance and private supplementary coverage are not limited to the elderly, but cover the entire population. In terms of health risks and preferences, the elderly may be different from the general population. Results for the elderly therefore do not necessarily hold for the entire population.

For our analysis data from Ireland are used. Ireland is a particularly interesting case to study because of the design of its health insurance system. Ireland has a public health insurance that covers the entire population, but with considerable copayments for the use of health care services, medication, etc. There is a provision for the one-third of the population with lowest incomes that exempts them from these copayments. On the private market supplementary coverage is offered that reduces copayments (usually by 50 %). Thus, there are three separate groups in terms of copayments: no copayments, partial copayments and full copayments. This heterogeneity provides an ideal environment for studying moral hazard. Community rating (i.e. one premium irrespective of age, risk profile, health) and the obligation to accept everyone wanting to buy private supplementary health insurance on the other hand form an excellent setting to study selection effects. Disentangling these moral hazard and selection effects is, however, not straightforward. As health influences the insurance decision and insurance status may in turn affect health, there is a serious endogeneity problem. By making use of panel data we can deal with this endogeneity problem. The dynamic panel data models we use give more insight in the underlying factors of the behavior of individuals.

In the third chapter, based on Bolhaar (2009), I investigate how advantageous selection can occur in a dynamic framework. It is not obvious that the dynamic model works in the same way and needs the same assumptions as its static counterpart. In a framework that allows for investing in health, preferences and risk aversion do not only have a *direct* effect on the choices an individual makes. This period's choices also affect next periods' health, which in turn will influence next periods' choices. I show that due to this kind of *dynamic effects*, the correlation between health and preferences (or risk aversion) arises *automatically*. This is in contrast with the static model that needed to *assume* this correlation to generate advantageous selection. It is also not necessary to assume that individuals in good health have a smaller probability of being hit by a health shock than individuals in bad health. Even if the probability of a health shock is the same for all individuals, irrespective of their health, the correlation between health and preferences (or risk aversion) arises automatically. And with this correlation also advantageous selection.

Selection and moral hazard are effects that directly relate to the way in which the health insurance system is designed. But there can also be more *unexpected* effects of the design of a health insurance system. In the fourth chapter, that mirrors Bolhaar and Van der Klaauw (2009), the effect of the health insurance system on retirement behavior is analyzed. For this purpose, the focus is again on the Irish case and in particular on the *Medical Card* scheme that provides copayment-free health care to low-income households. Eligibility for the Medical Card scheme is based on a sharp income limit:

households with an income below the threshold receive the full benefits of the Medical Card scheme, households above the limit pay full copayments or have to buy private supplementary health insurance to get partial reduction of the copayments. It is known that with age, health care expenditures increase rapidly as health deteriorates and health shocks occur more often. For those not covered by a Medical Card, out-of-pocket medical expenditures can rise sharply when getting older. It may therefore become beneficial for some individuals to leave the labor force, therewith lowering their income to a level below the threshold for a Medical Card, and receiving free health care. In this chapter we investigate whether the provision of Medical Cards to low-income households has an accelerating effect on exit out of the labor force into retirement. To do this, we develop a structural model of health insurance and retirement choices between the ages 50 and 75, in which individuals are uncertain about future health, health shocks and employment opportunities. We allow for heterogeneity in risk aversion and preferences among individuals, as we know from chapters 2 and 3 that this heterogeneity can be important in explaining the patterns observed in the data. The model is estimated for a sample of couples of which only one spouse is/was working, where we take into account that the health of the non-working spouse may influence the (retirement) decisions made by the other (working) spouse. Dynamic programming and numerical methods are used to solve the model. A new simulated maximum likelihood (SML) estimator, proposed by Keane and Sauer (2009), is applied to estimate the model parameters. This estimator uses the rate of correct predictions of a number of key variables the simulated data entails. The obtained estimates can be used to simulate the effect of possible policy changes and interventions in the Medical Card system on retirement behavior.

The new health insurance system that was introduced in The Netherlands in January 2006 is the subject of the fifth chapter, that closely resembles Bolhaar, Lindeboom and Van der Klaauw (2009). Before this reform The Netherlands had a mixed public-private health insurance system. The public system provided compulsory insurance for the lower incomes at a low premium. Those above the income threshold for public insurance were not obliged to purchase health insurance, but if they wanted to they were dependent on the private market. The reform introduced a system of managed competition where insurers compete with each other within the rules of the game that are set by the government. In this new system all individuals are obliged to be insured for at least the standard insurance package, the content of which is decided on by the government. A risk equalization fund compensates insurers in case of a disproportionate concentration of insurees with very high health care expenses. A system of managed competition critically hinges on consumers that search. Only if consumers search, insurers will have an incentive to offer insurance at a low premium and improve efficiency to still be profitable at this low premium. In this chapter we will take a closer look at the search behavior of consumers in the health insurance market. The complete change of system created a situation where all consumers had to chose with which insurer to insure themselves, and simply renewing the contract

one had the year before was not at all the most obvious choice. For the analysis a consumer search model that incorporates the main features of the new health insurance system is used. This type of models has been widely used to describe various markets, but there are only few applications of this type of models in the field of health economics. The theoretical predictions of the model are tested with the data to see how well the consumer search model can explain the observed patterns in the data. Where the data do not confirm the predictions of the model, it will be discussed how the simple model we started with can be extended to be able to capture the patterns in the data more accurately.

Finally, the sixth chapter of this thesis gives a brief summary of the results from the four studies on health insurance the thesis is comprised of.