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Supplemental health insurance in the Colombian managed care system: Adverse or advantageous selection?

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ABSTRACT

The aim of this article is to estimate the type of selection that exists in the supplemental health insurance market in Colombia where compulsory coverage is implemented through managed care competition. We build a panel database that combines individuals' information from the Ministry of Health and a database provided by two private health insurers. We perform the correlation test for consumption of health services frequency and supplemental coverage. Following Fang et al. (2008), we condition the estimation on health controls that are available to the econometrician but not to insurers. In both cases we obtain a positive correlation, suggesting that adverse selection predominates. In order to rule out some moral hazard effects, we estimate the correlation between previous frequency of healthcare service consumption and supplemental insurance purchase. The positive correlation obtained is robust to the inclusion of controls for diagnosis implemented by health insurers, suggesting that despite some risk selection strategies, they are not protected from adverse selection. We conclude that some subsidies to supplemental coverage purchase would lower public expenditure in Colombia.

1. Introduction

Health insurance markets are usually characterized by market failures caused by the presence of information asymmetries. More precisely, the main information asymmetries described are related to the nature of selection on the one hand, and the presence of moral hazard on the other. The first of these occurs when individuals have private information prior to the purchase of insurance, and this information is correlated both with the purchase of insurance and the probability of the occurrence of an event (Rothschild and Stiglitz, 1976; De Meza and Webb, 2001). In contrast, moral hazard is defined as an increase in the magnitude of pooled risk due to insurance (Pauly, 1968; Blomqvist, 1997..

Basically, the types of selection described are divided into two groups: adverse and advantageous.[1] In practice, insurers define risk categories using observable variables and they offer contracts calculated for the average risk within each category. Under an adverse selection scenario, (within each category) individuals with unobservable increased health risk are those who are more willing to buy health insurance coverage. As such, adverse selection leads to equilibria characterized with under-insurance (Einav et al., 2010). Conversely, advantageous selection corresponds to scenarios in which individuals that prefer insurance with greater coverage exhibit a lower health risk (De Meza and Webb, 2001; Hemenway, 1990).[2] Unlike adverse selection, advantageous selection leads to equilibria characterized with over-insurance (Einav and Finkelstein, 2011). As a result, and indeed crucially, optimal regulation in health insurance markets depends on the nature of the selection at work.

This article follows the burgeoning empirical literature on selection in health insurance markets. More precisely, we aim to estimate the type of selection at play in the Colombian health

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[1] Another form of heterogeneity among individuals has been defined through which they can anticipate moral hazard behaviors before purchasing insurance, and this increases the likelihood of purchase. Einav et al. (2013) refer to this phenomenon as selection on moral hazard.

[2] The argument behind advantageous selection is that more risk averse individuals are usually more willing to undertake prevention activities that lower their health risk on the one hand, and more willing to buy generous insurance contracts on the other.

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system that allows for the coexistence in the market of private/supplemental insurance and compulsory insurance provided in a managed care system. This health system has created a series of incentives (subsidies) through tax cuts for individuals who want to have access to better quality health services through supplemental coverage. As we will discuss in the conclusion, the nature of the selection is an important issue to anticipate if a tax-subsidy policy is self-financing.

Using the integrated information system of the Ministry of Health and Social Protection (SISPRO), and information from two health insurers that offer compulsory and supplemental (private) coverage, a panel is constructed for 2010 and 2011 of over 400,000 individuals who are dues-paying members of the system (adult workers).[3] This contains information regarding health services consumption, type of health service, spending and related diagnostics, prevention activities, socioeconomic variables, and affiliation or not to voluntary insurance.

To begin with, we perform the test suggested in Chiappori and Salanié (2000) to determine the correlation between frequency of healthcare services consumption in 2011 and insurance coverage during the same year.[4] We condition on the consumer characteristics that determine the prices offered to each policyholder. We find that the correlation test is positive, that is, the consumption of health services correlates positively with affiliation to supplemental insurance, suggesting the presence of information asymmetries. Nevertheless, as explained by Chiappori and Salanié (2000), from this test we are unable to disentangle adverse selection from moral hazard.

Thus we use the approximation of Fang et al. (2008) and we condition the estimation on health controls – represented in trace pathologies and the frequency of healthcare services consumption during the previous year – which provide a good proxy for the health status of individuals. The frequency of healthcare services consumption during the previous year is available to the econometrician but not to insurers (or, at least, is unused by insurers to determine the premium).[5] As it is eloquently explained in Fang et al., if the sign of the correlation becomes negative, then one can conclude that advantageous selection predominates (despite moral hazard effect on board). In our estimation, in both cases, that is, with and without such controls, we obtain a positive correlation, suggesting that adverse selection may predominate.

It is worth noting that we did not have Fang et al.'s "chance" since our positive correlation may still include effects related to moral hazard behaviors. Thus, controlling by a set of individual characteristics, we take advantage of the consumption of health services in the year immediately preceding (supplemental) health insurance purchase in a different way. More precisely, we estimate the probability of enrollment to supplemental coverage in 2011 as a function of the frequency of healthcare consumption in 2010. This strategy eliminates the moral hazard effect since the correlation is estimated when individuals have not yet purchased the insurance. Our results show that the use of hospital services in the year preceding insurance purchase is positively correlated with the purchase of supplemental health insurance, corroborating that adverse selection is the predominant scenario in the private health insurance market in Colombia. This estimate is robust to the inclusion of controls for diagnosis, which correlate negatively with the purchase of insurance due to some pre-existing medical conditions applied by health insurers. It suggests that despite the strategies of risk selection used by supplemental health insurers these do not protect them from adverse selection.

Finally, the activities of primary and secondary prevention realized by policyholders before the purchase of insurance are also taken into account. More precisely, we measure the consumption of cervical Pap smear, mammogram, PSA measurement and vaccination. The first three of these are related to activities of secondary prevention, while vaccination corresponds to primary prevention activities. It is assumed that primary prevention activities are positively correlated with advantageous selection, and negatively correlated with adverse selection, while secondary prevention activities are negatively correlated with advantageous selection (and positively with adverse selection).[6] We find that there exists a positive correlation between the use of PSA and cervical Pap smear with supplemental health insurance purchase in the following year and that this correlation is robust to socio-demographic, health status and service consumption controls. Moreover, the correlation between vaccination and the purchase of voluntary insurance remains negative for all estimates. Again, all of these results are suggestive of adverse selection. Following this, we discuss the policy implications of our empirical findings in the conclusion.

This paper contributes to the empirical literature on asymmetries of information to identify the predominant selection scenario, taking into account the effects of moral hazard in the health insurance market (Finkelstein and McGarry, 2006; Cohen, 2005; Einav et al., 2010; Einav et al., 2013). Empirical tests for determining the existence and nature of the selection or moral hazard in the insurance market are difficult to develop. The difficulty is that adverse selection has similar consequences to moral hazard in the correlation test; in either of the two scenarios there is an increased use of services offered by insurance, therefore isolating the two effects is not easy and it depends on the data available. Some empirical studies (Fang et al., 2008; Resende and Zeidan, 2010) have been based on the correlation test for asymmetric information developed by Chiappori and Salanié (2000). This test estimates the correlation between the level of insurance coverage and the costs of making a claim.

In performing this correlation test, Fang et al. (2008) identify that there exists asymmetric information in the private insurance market that is linked to Medicare in the United States. They propose an empirical strategy that involves comparing the sign associated with the correlation between coverage and health expenditures, including models without controls for the health status of individuals and models with controls (again only available to the econometrician). They argue that if the positive correlation changes to a negative correlation in the health controls scenario then this is evidence of advantageous selection.

The approach presented herein differs from that proposed by Einav et al. (2010), and although it is close to the proposals made by Chiappori and Salanié (2000) and Fang et al. (2008), it makes a contribution by supplementing these proposals in several aspects. First, we take advantage of the consumption of services prior to health

[3] The compulsory health insurance system distinguishes enrollees on the basis of "members" (contributing) and "insured" (family members that are covered by the members' policy). Our panel database consists of member enrollee exclusively.

[4] We use the frequency of healthcare services such as the health consumption variable instead of health spending, which is related to price and affected by unknown factors.

[5] In contrast, health insurers observe trace pathologies but do not use them for pricing. Nevertheless, some of them are used to establish pre-existing medical conditions that prevent individuals from buying supplemental coverage.

[6] The intuition behind this statement is as follows: in scenarios of advantageous selection, individuals undertake more activities that reduce the risk of disease (or the probability of its occurrence). In this case, the goal of vaccination is to prevent the occurrence of disease. On the contrary, in adverse selection the individual knows their risk of disease and so the use of secondary prevention activities plays two roles: first, the individual (or medical) receives a signal about his or her risk of getting sick, which leads to a greater probability of him or her using these services; second, according to the results, individuals propensity to buy insurance may increase because of knowledge of a more likely adverse outcome. We test this assumption in section 5.3.