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**CHILE: EFFECTS OF OLD AGE ON
HEALTH SERVICES UTILIZATION
AND CONSEQUENCES ON SYSTEM
DESIGN**

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ABSTRACT

This paper analyzes the relationship between age and health services utilization in Chile, using the CASEN survey of 1994. Logistic analysis is performed to determine how age utilization profiles differ by income, location and system affiliation (private or public insurance). The results are used to discuss the consequences of population aging on the health system, detect problems and suggest possible solutions.

In Chile, older persons have both a higher probability of being ill, and a higher probability of seeking care if they are ill. Expected utilization is more than three times higher for older persons than for persons 18-34 years old. Most old people currently are affiliates of the public health system. Hence the aging of the population could be expected to be mainly a problem for the public sector. However, this would be so only if the pricing system of both the private and public insurance systems is not reformed. Moreover, without such a change, a large injection of funds into the public sector could result in an unexpected shift of affiliates from the public and into the private sector, generating under capacity in the public sector and over capacity in the private sector.

I. INTRODUCTION

This paper analyzes the relationship between age and health services utilization in Chile, using the CASEN survey of 1994.

Logistic analysis is performed to determine how the age utilization profiles differ by income, location and system affiliation.

The results are used to discuss the consequences of population aging on the health system, detect possible problems and suggest solutions to these problems.

II. MOTIVATION

The Centro Latinoamericano de Demografía (CELADE) projects a substantial increase in the population 65 years or older: it will increase from 6.1% of the total population in 1990 to 11% in 2020 and to approximately 20% by 2050. This implies a shift in demand from younger to older persons; i.e. to population that makes more use of the health system (that both spends more and uses more services). At issue is whether the Chilean system can adapt to such an increase.

The key to the institutional consequences of this problem is the different pricing systems.

Fonasa charges 7% of wages and ISAPREs charge according to risk (age, sex and number of dependent family members), for a given income, once risk raises above a certain threshold, it is convenient to shift from ISAPREs to Fonasa (a person that does this should take, of course, into account the lower quality of care received in Fonasa). This in effect sorts the population according to income and risk, and makes Fonasa more attractive to the poor and high risk population.

The concentration of the poor and risky in Fonasa can be explained by the rational choice of affiliates, given the constraints they face (Sapelli and Torche 1998).

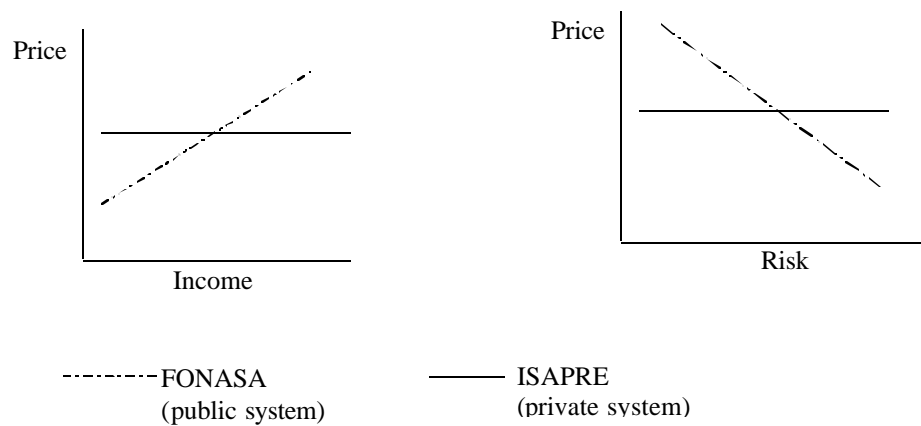
First, for a given risk level, those relatively poor will find the ISAPRE system expensive and the rich will find it cheaper. Second, for a given income level, those with a high risk will find the FONASA system relatively cheap and the ISAPRE system expensive. This is explained below:

- i) As income increases, the premium one has to pay for the package offered by the public system increases. Since the risk of the person has not changed, the expected expenditure has not changed either, implying a higher price for insurance. In the private system, when income increases and the mandated premium increases, one is offered a better plan by the ISAPREs. The price paid does not change.

- ii) As health status (or risk) worsens, FONASA continues to charge only the mandated 7% of income. Since expected expenditure rises, this implies that the price of public insurance falls. However, the ISAPREs will increase the premium (with limits) when expected expenditures increase. Hence the insured has to opt between spending more than their 7% or decreasing coverage. Price remains the same.

These two aspects explain why the persons with the most risk and the least income will (rationally) opt for public rather than private insurance.

FIGURE 11-A 1-B



From this we can conclude that, even if older persons in the private sector do not face a financial constraint that makes it necessary for them to move to Fonasa once they reach old age, the different pricing systems may be a strong enough incentive to make older people chose Fonasa.

Sapelli and Vial (98) perform a study that is principally oriented to identifying differences in utilization according to income (and that concludes that there are no systematic differences in utilization by income, except for the fifth quintile that utilizes 30% more services). The lack of a relationship between utilization and income implies that we should not expect much difference in utilization by age in the public and private systems or much difference in utilization by age according to income.

III. DESCRIPTION OF THE DATA

One third of those 71 or older claimed having suffered an illness or an accident during the past three months. This is up from one quarter in persons 60-70 and less than one fifth in persons 45-59. However, due to the size of the age cohorts, of the total number of persons who declare themselves to have suffered an illness or accident, persons 71 and older are only 13% (and persons 60 and older are not more than one third).

The percentage of persons demanding at least one service is higher in every age bracket than those that are ill, but the percentage increase is higher for those 71 and older. In effect, about one half of those 71 and older demand at least one service.

Average imputed expenditure.

Due to the structure of demands, average expenditure for those that demand at least one service does not differ much by age (it is only 10% higher for those 71 and older than for those 18-34 years old). However, since the probability of demanding at least one service differs sharply by age, probable expenditure increases sharply by age, from 8.9 for those 18-34 to 30.2 for those 71 and older (the progression is: 8.9; 11.5; 15.9; 25.6 and 30.2).

IV. EMPIRICAL RESULTS

Methodology

Estimated probits for the probability of being sick, of seeking care, of seeking different types of care, and of having to pay at least something out of pocket.

Variables used to explain these probabilities are: age bracket, income quintile, genre, family status and location. All are dummy variables.

An OLS regression is performed with the same independent variables to explain utilization valued at private sector prices. We use private sector prices since what is really important in the construction of these indexes are the relative prices and we assume that private sector relative prices are more approximate to real resource use by service.

Results

Determinants of the probability of being sick:

Increases with: age, marriage, being a woman,
No relationship with: income
Decreases with: living in Santiago
Persons that are sick can either seek care or not.

Determinants of the probability of seeking care if sick:

Increases with: age, income, marriage, women, urban location

Hence old people are not only more likely to become sick, but also if they do, it is more probable that they will seek help.

Persons who seek care can see a doctor, require a hospital stay, exams or surgery.

Determinants of the probability of seeing a doctor given that one is ill and seeks care:

The older you are, the more likely you will seek a doctor. People in the rural areas also are more likely to seek a doctor.

Determinants of the probability of a hospital stay if ill and seek care:

It is less likely that you will stay at the hospital if you are old, rich, or a woman.

Poor people are more likely to have a hospital stay.

Young people are more likely to have a hospital stay.

This result may sound strange, however, it is due to the fact that if young people seek care it is likely to be because of an accident and hence much more probable that it will require either surgery or a hospital stay. As shown above

(see table), in the whole population, the percentage of persons of old age having a hospital stay or surgery is higher (three times higher) than for the other age groups. That is, the unconditional probability of requiring surgery is higher for older persons; however, the probability conditional on being ill/having an accident and seeking care is higher for younger people.

Determinants of the probability of paying something if ill and seek care:

It is more probable that care is free if you are old, poor or in the rural areas (not by chance it is where Fonasa affiliates are).

Finally we run an OLS regression between an index of utilization and the same independent variables as the previous analysis.

We find that utilization is unrelated to income (such as in Sapelli and Vial) and that the only major influence on utilization is age.

Remember we are talking here of a sub-sample of the population, those that were sick in the last 3 months and sought care, and not the population as a whole.

Old people are more likely to be sick and more likely to seek care if sick. However, the care they seek is that which is cheaper (doctors and exams). Since younger people are more likely to face surgery or hospitalization, then that makes total cost of utilization more similar among age groups.

We performed the same probit analysis to try and detect different patterns of utilization in the private and public sectors. For this we include in the probits an interaction variable between age bracket and system. IF this variable turns out to be significant it would be evidence that different age brackets are treated differently in the two systems.

We will concentrate only on the significance and signs of the new interaction variable.

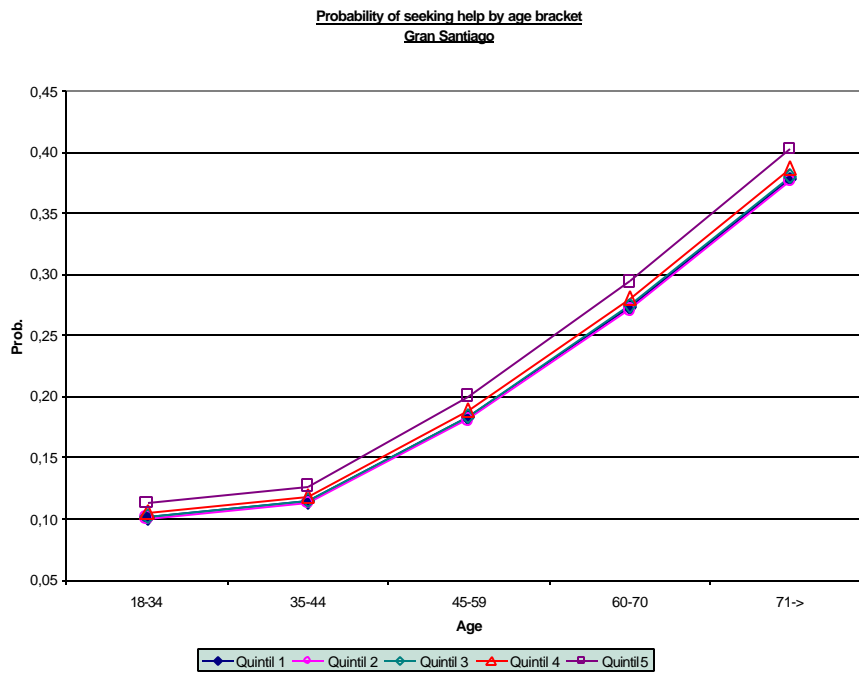
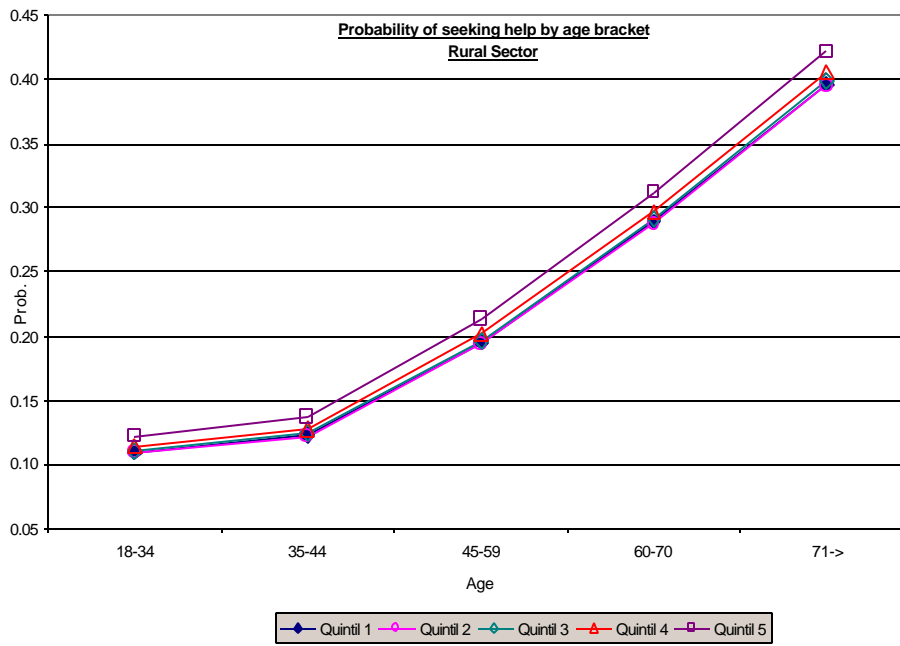
Only 10 of the 32 variables we added turned to be significant. Persons in the ISAPREs system tend to fall sick less often (this is particularly true for those 60 or

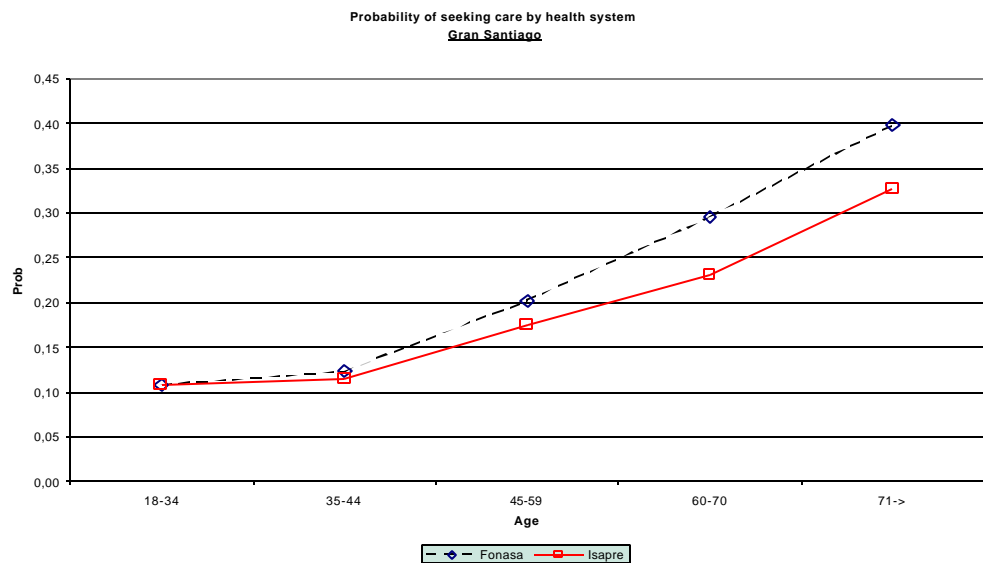
older). This shows that those with the highest risk are effectively choosing Fonasa, as argued above. However, once they are ill, the probability of seeking care does not differ between persons in ISAPREs or Fonasa.

The other interesting result is for the probability of paying something out of pocket. This probability declines with age in Fonasa (controlling for income). In the ISAPREs system the probability is greater for those 35 and older, than for those 35 or less. However, for those 35 and older the probability declines with age.

The figures show that the probability of seeking some service increases sharply with age, but that this probability does not differ much by income or location. The probability is about 10% higher (1 to 2 percentage points higher) for the richest quintile than for the rest of the population. Moreover, the probability of seeking care is slightly higher in the rural areas than in the Greater Santiago, independently of age or income.

One interesting conclusion from the probit explaining who seek help within the whole population is that the probability of seeking help increases sharply with age. In particular, the probability of seeking help increases more sharply with age for those not ill, than for those that are ill.





CONCLUSION

Older persons have a higher probability of being ill and a higher probability of seeking care if they are ill. Expected utilization is more than three times higher for older persons than for persons 18-34. Most old people currently are affiliates of the public health system. Hence the aging of the population could be expected to be mainly a problem in the public sector. This would imply the need for adjusting infrastructure, etc..

However, as is discussed in the text, this would be the way if the pricing systems of both systems are not reformed. Where they to be changed, and the system of Fonasa made similar to that in Isapres (possibly together with subsidies), then the private sector could handle a substantial portion of the problem, making it more manageable, since the private sector usually can make investment decisions quickly and is much more adaptable.

A large injection of funds into the public sector could result in an unexpected shift of affiliates from the private and into the public sector, generating under capacity in the public sector and over capacity in the private sector (since currently Fonasa cannot hire beds in the private sector, another issue that requires change).

