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Biased Selection within the Social Health Insurance Market in Colombia

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Biased selection within the social health insurance market in Colombia[*]

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Abstract

Reducing the impact of insurance market failures with regulations such as community-rated premiums, standardized benefit packages and open enrolment, yield limited impact because they create room for selection bias. The Colombian social health insurance system started a market approach in 1993 on the expectation to improve performance of preexisting monopolistic insurance funds by exposing them to competition by new entrants. It is hypothesized that market failures would lead to biased selection favoring new entrants. Two household surveys are analyzed using Self-reported health status and the presence of chronic conditions as indicators of prospective risk of enrolees. Biased selection is found to take place, leading to adverse selection among incumbents, and favorable selection among new entrants. This pattern is observed in 1997 and worsens in 2003. Although the two incumbents analyzed are public organizations, and their size dropped substantially between these two years, fiscal implications in terms of government bailouts are analyzed.

Key words: Social Health Insurance, Biased selection, Market-based reforms, Colombia

JEL Classification: I11, I18, H51, D41

Resumen

Las regulaciones como primaje comunitario, paquetes estandarizados y afiliación abierta, orientadas a reducir el impacto de las fallas en los mercados de seguros, tienen un efecto limitado puesto que abren espacio a la selección sesgada. A partir de 1993, el sistema de seguridad social en salud en Colombia fue reformado hacia un enfoque de mercado con la expectativa de mejorar el desempeño de los monopolios preexistentes exponiéndolos a la competencia de nuevos entrantes. La hipótesis que se maneja en el trabajo es que las fallas de mercado pueden llevar a selección sesgada favoreciendo a los nuevos entrantes. Se analizaron dos encuestas de hogares utilizando el estado de salud auto reportado y la presencia de enfermedad crónica como indicadores prospectivos del riesgo de los afiliados. Se encuentra que hay selección sesgada, llevando a selección adversa entre los aseguradores preexistentes, y a selección favorable entre los nuevos entrantes. Este patrón se observa en 1997 y se incrementa en el 2003. Aunque las entidades preexistentes son entidades públicas, y su tamaño disminuyó sustancialmente entre estos años, se analizan sus implicaciones fiscales en términos de financiación adicional por parte del gobierno.

Palabras claves: Seguridad Social en Salud, Selección Sesgada, Reformas basadas en Mercados, Colombia

Clasificación JEL: I11, I18, H51, D41

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1. INTRODUCTION

Competitive approaches to social health insurance face the limitations of the well-known market failures of health insurance. Whereas freedom of choice leads to better quality and lower prices in many markets, health insurance markets exhibit wide information asymmetries which are at the root of market failures in this industry. An unregulated market approach allows insurance carriers to adjust benefits and premiums to individuals' risk (the so-called experience rating), which is a source of market failure because precisely those in the highest need of insurance, i.e., the high-risk individuals, are excluded by the insurers due to the very high experience-rated premiums they would face (Cutler, 2002). The poor are also excluded because their willingness to pay for a comprehensive package of benefits is very limited (Hsiao, 2002).

Market failures are typically addressed by regulations, taxes and subsidies. However, setting regulations to avoid the exclusion of the poor and the high-risk individuals from health insurance, falls short of expectations. One common regulation is to prohibit experience rating and to impose a premium that is estimated on the basis of a large group of individuals (the so-called community rating). This is expected to allow high-risk individuals to purchase insurance at an affordable rate. Another common regulation is to create a standard benefit package to prevent insurers' engaging into market segmentation. Additional constraints include the prohibition to reject applicants (so-called open enrolment), the prohibition of excluding preexisting conditions, and standardized limits to waiting times for full insurance coverage.

However, regulations and subsidies give rise to new challenges derived from the failures of insurance markets (Pauly, 1984). On the one hand, community rating and standard benefit packages create incentives for competing insurance carriers to select the good risks and reject the bad risks. Although open enrolment is supposed to reduce this negative effect, insurance carriers still have a number of strategies at hand to avoid high-risks, e.g., targeted marketing, network design, and "incentives" to prompt high-risks to switch to competing insurance carriers.

Thus, biased selection seems to be a pervading problem of insurance markets, which has to be weighted against competitive-based incentives for efficiency. Too much risk exposure on the side of insurers (which promotes efficiency), is counterbalanced by insurers' selective behavior (which reduces efficiency). Hence a selection-efficiency tradeoff that has proven difficult to solve (Barneveld, 2000)

On the side of the enrolee, open enrolment creates the threat of adverse selection, i.e., high-risk individuals are more likely to enrol than low-risk individuals. This can be dealt with, at least in theory, by compulsory enrolment of all workers. But adverse selection can also take place among competing insurance carriers: some carriers would appear more attractive to high-risk individuals than others, causing the former to end up with a larger share of high-risks, and higher chances of financial failure.

Some social health insurance schemes in developing countries have turned to market approaches on the expectation of improving efficiency and quality (Londoño and Frenk, 1997). But the regulatory frameworks to deal with the market failures created by such approaches face the above mentioned drawbacks. For example, the Mexican Institute of Social Security (IMSS)

has been reformed to allow individuals to opt-out to private insurance carriers, taking their contributions to private funds in exchange of a benefit package at least as comprehensive as that of IMSS. This is expected to cause migration of the better-off and the low-risks to the private funds, leaving the IMSS with an adverse selection and an increased risk of financial failure (Gomez-Dantés, 2001).

The Chilean health system allows households in the upper income quintiles to purchase health insurance from private carriers called ISAPREs, which compete among themselves for enrolees. Benefits are tailored to the applicant's risk and contribution (a statutory 7% of salary), but if contribution is not enough to cover the risk-adjusted benefits, the applicant has the alternative to enrol in FONASA, a public fund that covers the remaining 70% of the population. FONASA is a monopoly within this segment. It has been argued that this design creates incentives for ISAPREs to cream skim the market and leaves FONASA with the high-risk individuals (Baeza and Copetta, 1999).

Industrialized countries have also experienced with some of these market approaches, either with specific populations or on a countrywide basis. In the United States, state-level reforms to the individual insurance market have created regulatory frameworks that include some or all of the regulations mentioned above. These schemes have shown that although average premiums increased, those for the low-risks increased, whereas those to the high-risk decreased. This combination of changes has made low-risks less likely to enrol in these insurance schemes as compared to high-risks (Fuchs, 2004). However, these experiences have not been analyzed in terms of how biased selection takes place among competing insurers. An interesting experience is that of Medicare, whereby enrolees are prompted to switch to private HMOs. The evidence has shown that low-risks are more likely to switch to HMOs, and that their average risk is lower than the expected per-capita premium set by Medicare (Mello et al, 2003). This experience is similar to that of ISAPREs and IMSS, in the sense that private carriers are competing to attract individuals from a public monopolistic fund that existed previous to enacting the reforms.

Countrywide experiences of competitive insurance approaches are well illustrated with the case of the Netherlands. A core insurance scheme –the WTZ standard insurance- that covers most events except catastrophic coverage and complementary services (like better amenities), is financed through payroll taxes which are pooled in an equalization fund. The equalization fund pays a risk-adjusted community-rated premium to insurers for each enrolee, and insurers have to compete for enrolees. This creates incentives for insurance carriers to cream skim, i.e., avoiding high-risks and attracting low-risks. In order to avoid such consequence, alternatives of risk sharing have been considered, such as a prospective pool for high risks, or a retrospective sharing of high costs (Barneveld, 2000).

2. THE COLOMBIAN HEALTH SYSTEM REFORM

Colombia reformed its health system in 1993 in a number of key areas. Regarding the employment-based social health insurance scheme, which covers about one third of the population, the most relevant reform was to open monopolistic insurance funds to a sort of managed competition.

Before 1993, workers in the formal sector paid mandatory contributions to closed pools, to which they were compulsorily enrolled. The largest monopolistic fund, the ISS, covered private-sector workers, whereas public-sector workers were enrolled in funds exclusive for state-owned enterprises or for public universities or government units. The two largest funds within this segment of public-sector workers were Cajanal (which enrolled workers in the national-level government), and Caprecom (which enrolled workers in the state-owned telecommunications, television and postal enterprises). Besides these two large funds, there were more than 1,000 small funds.

None of the existing employment-based funds (the ISS, Cajanal, Caprecom, and the other 1,000-plus funds) allowed enrolees to opt-out to other fund. In addition, there was no pooling of contributions among these funds. No private funds participated in this compulsory social health insurance system.

The 1993 reform created the Contributory Scheme for workers in the formal sector, either public or private. Under this scheme, these monopolistic funds (hereafter the incumbents) were exposed to competition, by allowing new entrants to enter the market and by allowing workers to select the insurer of their preference. The expectation was that incumbents would have to improve quality and efficiency in order to survive, or otherwise leave the market.

According to government statistics, the Contributory scheme covered 14.9 million enrolees in 1997, which was 37.2% of total country population (Ministry of Health of Colombia, 1998). In 2003, the scheme covered 13.8 million lives, which was 31% of the total population (Ministry of Social Protection of Colombia, 2004).

In order to avoid market failures and inefficient competitive behavior by new entrants (most of them private, some of them for profit), key regulations were included in the law: risk-adjusted community-rated capitation payments to insurers, standardized benefit package (covered interventions, exclusions, waiting times for full coverage and co-insurance) open enrolment (guaranteed issuing), full portability and compulsory enrolment.

However, as shown above, these regulations do not fully correct the market failures of insurance markets. In fact, notwithstanding the per-capita premium is risk adjusted, it only includes age, gender and geographic area as adjusters. These adjusters explains less than 1% of variance in medical expenses at the individual level, thus leaving wide room for insurers to select, particularly against high-cost enrolees (Newhouse, 1994). In addition, risk-adjustment does not prevent insurers from targeting their marketing efforts towards low-risk individuals or large groups like those of large firms.

On the side of enrolees, they can cause biased selection by themselves, as the high-risks (specifically, the elderly and the chronically ill) are more likely to have close ties with providers and doctors, and therefore less likely to switch to new funds whose provider networks do not include their doctor or health care facility (Mello, 2003). Some authors have called this biased persistence of sicker enrolees "adverse retention" (Swartz and Garnick, 1999) which reflects the fact that migration to new plans is mostly exerted by healthier individuals.

Adverse selection has been previously analyzed in the social health insurance system in Colombia. Panopoulou, (2002) reports that when workers or their dependants have chronic

conditions or report poor or fair health status, they are more likely to be enrolled in the Contributory Scheme. Vasquez and Gomez (2004) show that public insurers have a larger-than-proportional share of elderly as compared to their private counterparts. However, none of these reports analyze biased selection among incumbents and new entrants in the Contributory Scheme.

The policy debate on adverse selection in Colombia, has focused mainly on high-cost conditions, and specifically on HIV/AIDS and end-stage renal disease. In fact, a series of regulations have been passed between 2001 and 2004 to compensate the incumbents for their adverse selection problem regarding these two clinical entities, with limited degree of success. However, beyond high-cost conditions, the largest share of medical expenses is caused by individuals that are not costly enough to be labelled as high-cost but can still be disproportionately concentrated among some insurers, causing their financial failure.

In these lines, this paper analyzes biased selection in the Contributory Scheme, in order to detect if new entrants are more likely to attract low-risk individuals, causing adverse selection towards incumbents. The next section describes the methods, then the results are shown. A brief discussion of findings and their policy implications is presented, and some policy recommendations are suggested.

3. METHODS

The central hypothesis of this analysis is that incumbents, i.e., public insurers existing prior to the health reform of 1993, are more likely to suffer adverse selection, and new entrants are more likely to enjoy favorable selection, both as a consequence of market failures in the health insurance market.

For this purpose, two national-level LSMS household surveys carried out in Colombia in 1997 and 2003 respectively, were analyzed. These surveys include a set of questions related to self-reported health status (SRHS), presence of chronic conditions (CC), and socio-demographic characteristics of respondents. The unit of analysis is the individual, and it included all the observations, regardless of age, and whether they were workers or dependants. The availability of two cross-sections carried out four and ten years after the health care reform, gives a unique opportunity to test the hypothesis of biased selection between incumbents and new entrants to the social health insurance market in Colombia.

The dependent variable for this analysis is the type of insurer to which the individual is enrolled. Insurers were classified as incumbents and new entrants. If the individual is enrolled in the ISS and Cajanal the corresponding type of insurer is "incumbent"; otherwise, it is "new entrant". A more detailed separation of insurers into these two categories is possible only in the 1997 survey, whereas the 2003 survey only allows for the separation of ISS and Cajanal as incumbents, because the codification of the rest of insurers is kept confidential. It is important to emphasize that these two insurers had the largest share of enrolment among incumbents. In 1997, their share was 94% (Ministry of Health, 1998) and in 2003 it was 97% (Ministry of Social Protection, 2004), so the bias towards zero difference, caused by lack of separation of other incumbents is not large enough to invalidate the analysis.

SRHS and the presence of chronic conditions (CC) were chosen as indicators of high- or low-risk. It has been shown that SRHS is a good predictor of mortality (Burstrom and Fredlund, 2001) and future use of health care resources (Thomas and Lichtenstein, 1986). Even among individuals with chronic conditions, this variable is a good predictor of use (Walen et al (2001), Long and Marshall (1999)). It has been argued that SRHS, as a simple four- or five-category variable, has limited predictive power (Mello et al, 2003), and that stronger predictive power can only be achieved by using more complex self-reported measures of health status (Manning et al, 1988). However, the fact that such complex measures are not available from routine household surveys, makes SRHS a second-best alternative.

It can be thus assumed that high-risk individuals are inherently more likely to use health care services than low-risk individuals, and thus to cause larger expenses to insurers (hence their avoidance by insurers engaged in cream skimming, or insurer's attempts to experience-rate premiums in an unregulated market). Consequently, it can be argued that individuals who report their health status as fair or poor are high-risk in actuarial terms, whereas those reporting excellent or good health status are low-risk individuals. Accordingly, SRHS was treated as a dichotomous variable, whereby those reporting excellent or good status (SRHS good) were classified as low-risks and those reporting fair or poor health status (SRHS bad) were classified as high-risks.

Regarding CC, although this variable is also a strong predictor of use, the analyzed surveys include a single question with a vague wording, and do not include a specific list of conditions. They only mention diabetes and high-blood pressure, which makes it less likely that individuals with other conditions actually report them.

SRHS and CC were compared according to type of insurer (incumbents vs. new entrants), for each survey. Proportions were then compared between both surveys to check for changes, by the estimation of a pooled standard error[1] to test the null hypothesis of no difference between 1997 and 2003. It is hypothesized that new entrants enjoy favorable selection and incumbents suffer adverse selection in 1997, and that both phenomena are kept in 2003.

Multivariate logistic regression analyses were run to control for the effect of covariates. It is hypothesized that age has a strong correlation with both SRHS and CC; this variable was introduced separately as a continuous and as a categorical variable reflecting the seven age-gender risk-adjustment groups of the per-capita premium. Regarding income, it is hypothesized that the better-off are more likely to switch to new entrants because at the time of opening the insurance market, they were low users of the compulsory social health insurance funds to which they were enrolled. At the same time, these enrolees are more likely to have complementary private insurance and their ties to doctors and providers are more likely to be kept within the

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[1]   The pooled standard error (PSE) is estimated as follows:

$$\text{PSE} = \sqrt{(s.e.P_{t1})^2 + (s.e.P_{t2})^2}$$

where:

s.e.P_{t1} is the standard error of the Proportion in 1997

s.e.P_{t2} is the standard error of the Proportion in 2003

The null hypothesis of no difference between P_{t1} and P_{t2} is rejected if $| P_{t1} - P_{t2} | > z\,\text{PSE}$, where z is the corresponding value to an a of 0.05 or 0.01 in a normal distribution.

provider networks of new entrants. A control variable for income was included in the logistic regression models, which was built based on information on household consumption. It is expressed in Colombian pesos and divided by 100,000.

In order to control for regional differences within the country, a set of dummy variables for nine regions and another variable for rural/urban location of household were included. Another control variable was included for the size of the firm where the head of household works. This is based on the assumption that new entrants focus their marketing efforts on large groups instead of small groups or self-employed workers, in order to reduce the threat of adverse selection.

Statistical analysis was run using STATA version 8.0; sample design was taken into account for the estimation of standard errors.

4. RESULTS

In 1997, out of the 14.9 million enrolees in the Contributory Scheme, incumbents' (i.e., ISS and Cajanal) share of enrolment was 66.9%. In 2003, Incumbent's share of the 13.8 enrolees was 29.3%. Thus, incumbents reduced their share from two thirds to one third between 1997 and 2003.

Bi-variate analyses of proportions for each cross section show that incumbents are more likely to have high-risk enrolees, in terms of SRHS for both surveys ($p < 0.01$). Regarding CC, differences in proportions between incumbents and new entrants are nonsignificant in 1997, but they turn significant in 2003 ($p < 0.01$). When proportions are compared between 1997 and 2003 within each type of insurer, incumbents show a statistically significant increase ($p < 0.01$) in high-risks, in terms of individuals reporting both SHRS-bad and CC. New entrants, on the other hand, show non-significant differences in proportions. Table 1 shows the bivariate analysis of proportions and the comparisons between the two surveys. It is evident from this table that the risk structure of new entrants is preserved, whereas incumbents' risk structure is worsened because the proportion of high-risks increases. Risk structure can be better illustrated by estimating the ratio of high-risks to low-risks for each type of insurer. Table 2 shows that this ratio increases between 1997 and 2003 for incumbents, but it remains fairly stable for new entrants.

Multivariate logistic regression analyses show that the effect of SRHS on type of insurer (incumbent vs new entrant) remains statistically significant in 1997 after controlling for income and regional variables. That is to say, individuals reporting fair or poor health status (SHRS bad) are more likely to be enrolled in the ISS or Cajanal. Introducing age as a continuous variable caused no changes and showed non-significant effects on the dependent variable. When age-gender categories were introduced, the coefficient of SRHS dropped to non-significant levels. It was expected from the high correlation between these two variables, as can be seen in table 3. Introducing a set of dummies to control for number of workers at the firm where the head of household is employed, resulted in non-significant effects and no alteration of the coefficients of SRHS.

The control variables showed the same effects in the logistic regression models for 2003 on the SRHS dependent variable.

Regarding CC, logistic regressions show a positive but non-statistically significant effect on type of insurer in 1997, whereas it becomes statistically significant in 2003 after controlling for income and regional variables. That is to say, individuals reporting chronic conditions were more likely to be enrolled in the ISS or Cajanal in 2003. It was also found that introducing age-gender categories reduced the effect of CC in 2003 to non-significant levels.

Tables 4 shows the logistic regression results for 1997 and 2003 respectively.

5. Discussion

Health care systems in many developing countries are characterized by having a large social insurance fund or a set of funds that cover workers in the formal sector with a large degree of vertical segmentation (Londoño and Frenk, 1997). Their monopoly power over captive populations has raised concerns for quality and efficiency, so exposing them to competition seems an adequate strategy to force these funds to improve their performance.

However, the market failures of insurance reduce the effectiveness of this strategy. Selective behavior on both the insurer and the individual side, cause inefficiencies that reduce the expected benefits of competition as compared to other sectors where competitive approaches lead to lower prices and better quality.

This study shows that there has been such biased selection in the competitive approach of the Contributory Scheme: between 1997 and 2003, incumbents increased their ratio of hig-risk to low-risk enrolees, whereas new entrants showed a more favorable ratio in 1997 that was preserved in 2003.

As a step ahead in the debate on adverse selection in Colombia, this study adds the fact that the problem involves not only those high-cost patients in the far-right tail of the cost distribution, but also a group of not-so-costly patients that represent a much larger share of expenses. This implies that even if the unequal distribution of high-cost patients were equalized, a large part of the biased selection problem would still persist.

As mentioned before, biased selection arises as a consequence of selective behavior on both the insurer and the individual sides. Unfortunately, this study cannot separate these two effects. On the side of insurers, cream skimming is a plausible explanation, because no matter the per-capita premium they receive is risk adjusted, the wide space of unexplained variance leaves room for insurers to select. For example, a report in 1997 suggested that the group of women aged 15 to 44, whose premium is rated above average (because of the risks associated to reproductive health), gave insurers an incentive to attract those women between 40 and 44 years old, who are less likely to have reproductive health events, and therefore show lower expected loss ratios (Harvard, 1996). In addition, it is well known that the distribution of individual health expenditures is highly skewed. A study of this phenomenon in two private insurers in the Contributory Scheme in Colombia, it was shown that 10% of enrolees generated 72% of medical expenditures in 1998 (Castano, 2001). Thus, once an insurer detects a high spender, the gains from inducing a switch to other insurer are enormous (Newhouse, 1994). This switch can be induced by putting barriers to access to necessary care or by suggesting the

individual to "exert choice" by selecting another insurer that better meets his/her needs. In fact, Luft and Miller (1988) argue that the effect of health status measures is stronger to explain HMOs disenrolment: high-risk individuals are more likely to be disenrolled.

Cream skimming can also take place through targeted marketing. In this sense, new entrants may have focused their marketing efforts on large firms on the expectation of attracting a mix of workers and dependants that reflects average risk. Nevertheless, the findings of this study suggest that this was not an effective mechanism for cream skimming.

But carefully crafted mass media campaigns can also attract healthy or rich individuals though not necessarily deter the ill and the poor. However, the ISS, who was the largest player at the beginning of the Contributory Scheme in 1993, decided to advertise itself in the opposite direction, as the leader in high-cost technology (e.g., the first insurer to cover heart-lung transplantation in 1997) and the only insurer that did not charge co-payments and did not apply waiting periods. It is very likely that these three strategies discouraged high-risk and poor enrolees to switch to the new entrants, and encouraged high-risk and poor individuals to switch from other insurers which certainly contributed to its adverse selection problem.

On the side of enrolees, adverse selection can be strongly explained by the fact that new entrants are not attractive to the elderly and the chronically ill, or in general to those whose health status is less than good, because these individuals are more likely to have close ties with their doctors and providers. This effect could have been explained by age alone, but the multivariate regression models showed a strong collinearity with health status measures, so the relevant variable is health status and not age. Keeping SRHS or CC instead of age takes into account the fact that even within age groups, individuals with poor health are more likely to remain enrolled in the ISS or Cajanal. In addition, age explains the higher risk of individuals in the older two risk groups, i.e., 45 to 60 years and older than 60; these groups are proportionally larger among incumbents than among new entrants. However, incumbent's proportion of enrolees in the younger age groups (< 1, 1 to 4, 5 to 14) is lower than that of new entrants, but those younger than 1 year of age show an above-average risk.

Regarding the validity of SRHS, it is obvious that this variable cannot be used as a prospective risk adjuster because of its vulnerability to gaming in an underwriting process. However, it is useful as an indicator of risk when individuals candidly report their health status in a general-purpose survey where no gains are expected from giving biased answers. Thus, measurement bias is not considered a major issue in this case. It has also been shown that SRHS has limited reliability, as respondents frequently change their answer if a more detailed set of questions is raised (Crossley and Kennedy, 2002).

Nevertheless, this variable is used here with these limitations, because of comparability advantages: on the one hand, it was included in both 1997 and 2003 surveys with exactly the same wording. On the other hand, both surveys have the same sample design, improving confidence of inter-survey comparisons. In addition, as said before, the lack of a more reliable measure and the availability of SHRS, makes it a second-best alternative.

It is important to point that this study treats insurance status as the result of one single decision at the individual level. Most of the literature on insurance treats this status as the

result of two decisions: the individual's decision to apply and the insurer's decision to accept the applicant. Thus, insurance status is the result of two decisions that most of the times cannot be observed separately from survey data. This requires a different econometric approach, like joint partial observability models (see for example, Trujillo and McCalla (2004) and Shmueli (2001)). However, it is clear that insurers in the Contributory Scheme in Colombia are prohibited from rejecting applicants, and the effect of cream-skimming strategies is less likely to lead to outright rejection of applicants.

Why should one be worried about biased selection in a competitive insurance market like the Colombian Contributory Scheme? The first point of concern is that the competitive approach has been embraced as a strategy to improve overall efficiency and quality of the health system, so if biased selection causes inefficiency and can even reduce quality (by skimping on care for high-spenders), the market approach seems to have a limited effect. This is even more worrisome when the market share of incumbents is large enough to cause disbalances in public finances. In the Colombia case, incumbents were ill-prepared for competition, lacking the necessary flexibility to face the challenges of new entrants and on top of that were hit by adverse selection. This has led these organizations to financial difficulties that have had to be bailed out by the central government.

Then, if new entrants enjoyed favorable selection, would it mean that the government paid them more than the actuarially fair premiums that would correspond to the actual risk of their enrolees (allowing them to capture rents), and in addition it had to bail out the incumbents to compensate them for adverse selection? It seems that the answer is not necessarily yes, because new entrants have also faced increasingly high loss ratios. The association of private health insurers reports that loss ratios have increased from 81% to 84% between 2000 and 2003 (Castano, 2004), so the overall balance seems to be a growth in loss ratios with a higher growth among incumbents. Given that the per-capita premium has not kept pace with growing loss ratios, biased selection has caused higher losses among incumbents than capture of rents among new entrants.

Another point that has been raised in the literature about biased selection is the phenomenon known as regression to the mean (RTM), by which high-spenders will eventually die or return to low-spending patterns, whereas low-spenders will eventually become high-spenders (Wilensky and Rositter, 1986). It could be argued that the growing loss ratios that new entrants face during the last four years is a manifestation of such RTM. But this argument is not enough to expect a long-term equilibrium of risks between incumbents and new entrants: on the one hand, incumbents also face growing loss ratios, and on the other hand, RTM would take longer to materialize, because young-healthy individuals are less likely to become ill as compared to elder- healthy ones. So, it would take longer for incumbents to even out their risks with new entrants than it takes for incumbents to fall into financial failure.

In the same lines of RTM, Mello et al (2003) argue that as new entrants' market share increases, the room for biased selection is reduced, because the insurer has a wider provider network and it is more likely that the ill and the elderly find their provider and doctor in the new entrants' network. The issue for the Colombia case is to what extent the trend shown between

1997 and 2003 will persist and the incumbents will worsen their adverse retention problem, or to what extent the risk-mix will even out.

In the end, the fate of incumbents in the Colombia case is to improve performance or leave the market. Given their severe rigidities that made organizational changes unlikely in the short run, and their exposure to adverse selection, the question is how much political will the government has to strengthen these organizations and turn them into capable competitors. As of mid 2005, the government shut down Cajanal and Caprecom, and the ISS is facing severe financial difficulties. But their decreasing share of enrolment makes their financial woes less pressing as compared to the early years after the reform.

But a key question is: was it an inescapable outcome of the market approach or was it avoidable by strengthening these organizations without necessarily giving up to their demands for bail outs? After all, it is strategically important for the government to have a strong public player in the field, not only to shape the market with a pro-competitive behavior instead of more regulations, but also to keep a good bargaining position vis a vis their private counterparts.

6. CONCLUSIONS AND RECOMMENDATIONS

This study shows that biased selection has taken place during the first decade of health care reform in the Contributory Scheme in Colombia. Insurers existing prior to the reform were affected by adverse selection, whereas new entrants enjoyed favorable selection. This bias widened between 1997 and 2003, with a concomitant migration of enrolees from incumbents towards new entrants, but a disproportionate retention of high risks among incumbents.

Market approaches to social health insurance in developing countries, with large-scale pooling of contributions and per-capita payments, are expected to generate incentives for efficiency but also for biased selection. It is recommended that governments keep this in mind, as the disproportionate concentration of high-risks within previously existing social insurance funds are likely to force governments to bail out them for excess losses, whereas new entrants enjoying favorable selection will be able to reap excess profits.

Correcting market failures with more regulations seems a sensible course of action. However, regulations also have limited impact due to the same market failures underlying insurance markets. Promoting more transparent competition through a strong public player that shapes the market and gives the government the necessary bargaining power vis a vis the new entrants, seems a reasonable strategy. But this requires a set of measures to avoid adverse selection, as shown in this study.

7. REFERENCES

Baeza C, Copetta C (1999). Análisis conceptual de la necesidad y factibilidad de introducir mecanismos de ajuste de riesgo en el contexto de portabilidad de los subsidios públicos en el sistema de seguros de salud en Chile. CLAISS.

Barneveld E (2000) Risk sharing as a supplement to imperfect capitation in health insurance: a tradeoff between selection and efficiency. Ridderprint, Ridderkerk.

Burstrom B, Fredlund P (2001). Self-rated health: is it a good predictor subsequent mortality among adults in lower as well as higher social classes? *Journal of Epidemiology and Community Heatht.* 55:836-840.

Castano RA (2001). Economías de escala en dispersión de riesgos en el aseguramiento del Régimen Contributivo en Colombia. Report to ACEMI.

Castano RA (2004). Elementos fundamentales del equilibrio financiero del Sistema General de Seguridad Social en Salud, que inciden en las decisiones de ajuste del POS y/o de la UPC. Report to Fundación Corona.

Crossley TF, Kennedy S (2002). The reliability of self-assessed health status. *Journal of Health Economics*. 21:643-58

Cutler D. 2002. Health care and the public sector. NBER Working paper No. 8802.

Fuchs BC (2004). Expanding the individual health insurance market: lessons from the state reforms of the 1990s. The Robert Wood Johnson Foundation. Research Synthesis Report No. 4.

Gomez-Dantés O (2001) Prospects of Mexican Health Reform. Report to LAC Health Accounts. Available at: http://lacnhadev.forumone.com

Harvard University School of Public Health (1996). Report on Colombia health sector reform and proposed master implementation plan. Final report to the Ministry of Health.

Hsiao WC (2002). Experience of community health financing in the Asian Region. In: Health care financing for rural and low-income populations. Comission on Macroeconomics and Health. WHO.

Londoño JL, Frenk J (1997). Structured pluralism: towards an innovative model for heatlh system reform in Latin America. *Health Policy*. 41:1-36.

Long MJ, Marshall BS. (1999) The relationship between self-assessed health status, mortality, service use, and cost in a managed care setting. *Health Care Manage Rev*. 1999 Fall;24(4):20-7.

Luft HS, Miller RH (1988). Patient selection in a competitive health care system. *Health Affairs*. 7(2):97-119.

Manning WG, Newhouse JP, Duan N, Keeler E, Benjamin B, Leibowitz A, Marquis MS, Zwanziger J (1988) Health insurance and the demand for medical care. Evidence from a randomized experiment. The RAND Corporation.

Mello MM, Stearns SC, Norton EC, Ricketts TC (2003). Understanding biased selection in Medicare HMOs. *Health Serv Res*. Jun;38(3):961-92.

Ministry of Health of Colombia (1998). Informe de actividades al honorable Congreso de la República 1997-1998.

Ministry of Social Protection of Colombia (2004). Informe de actividades al honorable Congreso de la República 2003-2004.

Newhouse JP (1994). Patients at risk: health reform and risk adjustment. *Health Affairs*. Spring (1). 132-146.

Panopoulou P. (2002). Health Insurance and the Utilization of Health Care Services: The Case of Colombia after the Reform of 1993. Unpublished doctoral dissertation, University of Sussex, England.

Pauly MV (1984). Is cream-skimming a problem for the competitive medical market? *Journal of Health Economics*. 3:87-95.

Shmueli A (2001). The effect of health on acute care supplemental insurance ownership: an empirical analysis. *Health Economics*. 10:341-350.

Swartz K, Garnick DW (1999). Can adverse selection be avoided in a market for individual health insurance? *Medical Care Research and Review*. 56(3):373-388.

Thomas JW, Lichtenstein R (1986). Including health status in Medicare's Adusted Average Per Capita Cost capitation formula. *Medical Care*. 24:259-75.

Trujillo AJ, McCalla DC (2004). Are Colombian sickness funds cream-skimming enrollees? An analysis with suggestions for policy improvement. *Journal of Policy Analysis and Management*. 23 (4):873-88.

Vasquez J, Gómez K (2004). Selección adversa en el Régimen Contributivo de salud: el caso de la EPS de Susalud. Borradores del CIE, No. 10. Centro de Investigaciones Económicas Universidad de Antioquia.

Walen HR, Cronan A, Bigatti SM (2001). Factors associated with health care costs in women with fibromyalgia. *The American Journal of Managed Care*. 7:SP39-SP47.

Wilensky GR, Rositter LF (1986). Patient self-selection in HMOs. *Health Affairs* 5(1):66-80.

TABLE 1

BIVARIATE ANALYSIS OF PROPORTIONS AND COMPARISONS BETWEEN THE TWO SURVEYS

	1997		2003		p value
	SRHS good	SRHS bad	SRHS good	SRHS bad	
Incumbent	77.68%	22.32%	72.26%	27.74%	$p < 0.01$
New entrant	81.75%	18.25%	81.71%	18.29%	N.S.
	No Chronic Condition	Chronic Condition	No Chronic Condition	Chronic Condition	
Incumbent	85.97%	14.03%	77.13%	22.87%	$p < 0.01$
New entrant	86.63%	13.37%	85.48%	14.52%	N.S.

TABLE 2

RATIO OF HIGH-RISKS TO LOW-RISKS FOR THE TWO SURVEYS

	1,997	2,003
	SRHS good	**SRHS bad**
Incumbent	0.287	0.384
New entrant	0.223	0.224
	No Chronic Condition	**Chronic Condition**
Incumbent	0.163	0.297
New entrant	0.154	0.170

TABLE 3

PROPORTIONS OF HIGH-RISK (SRHSBAD) VS LOW-RISK ENROLEES (SRHSGOOD), ACCORDING TO AGE-GENDER CATEGORIES OF THE RISK-ADJUSTED PER-CAPITA PREMIUM. (PEARSON CORRELATION TESTS: 1997: 420.56, $P<0.01$; 2003: 691.27, $P<0.01$)

	1997		2003	
Age-gender categories	SRHSbad	SRHSgood	SRHSbad	SRHSgood
< 1	18.01%	81.99%	14.01%	85.99%
1 to 4	20.90%	79.10%	17.79%	82.21%
5 to 14	20.42%	79.58%	16.98%	83.02%
15 to 44 male	21.47%	78.53%	19.17%	80.83%
15 to 44 female	30.01%	69.99%	26.65%	73.35%
45 to 59	47.45%	52.55%	43.98%	56.02%
> 60	67.50%	32.50%	66.06%	33.94%

TABLE 4

MULTIVARIATE LOGISTIC REGRESSION COEFFICIENTS FOR THE TWO SURVEYS.

	SRHS 1997		Chronic condition 1997		SRHS 2003		Chronic condition 2003	
	Coefficient	z	Coefficient	z	Coefficient	z	Coefficient	Z
SRHS bad	0.1975	3.21***	0.0889	1.22	0.5325	11.22***	0.5668	10.9***
CC								
Income	-0.0133	-1.99**	-0.0144	-2.1**	-0.0043	-1.23	-0.0084	-2.25**
Region 1	0.7570	7.83***	0.7572	7.8***	0.6353	9.99***	0.6335	9.99***
Region 2	0.5909	6.58***	0.5979	6.64***	0.3630	5.71***	0.3641	5.77***
Region 3	0.9388	6.79***	0.9400	6.81***	0.7350	10.56***	0.7599	10.91***
Region 4	0.5047	5.5***	0.5082	5.51***	0.5227	7.72***	0.5068	7.43***
Region 5	-0.0097	-0.13	-0.0122	-0.16	0.2273	3.06***	0.1978	2.65***
Region 6	1.2298	8.3***	1.2446	8.42***	0.4962	4.76***	0.5310	5.08***
Region 7	1.6161	12.02***	1.6047	11.95***	1.4338	18.65***	1.3978	18.16***
Region 8	-0.0938	-1.11	-0.0985	-1.16	0.2552	4.26***	0.2328	3.87***
Urban	-0.2363	-3.57***	-0.2160	-3.27***	-0.1882	-3***	-0.1343	-2.16**
Constant	0.4809	5.88***	0.5138	6.33***	-1.2839	-40.98***	-1.2446	39.79***
N	11,208		11,208		36,157		36,157	
Wald chi square	374.63		367.9		675.26		656.15	
P (chi squared)	0		0		0		0	
Pseudo R2	0.028		0.0271		0.0186		0.0185	

Regions: 1 Atlantico; 2 Oriental; 3 Pacific; 4 Central; 5 Antioquia; 6 Orinoquia; 7 San Andres; 8 Valle; Omitted: Bogota.

SRHS: Self-Reported Health Status

CC: Presence of Chronic Conditions

** $p < 0.05$

*** $p < 0.01$