

The potential of community based insurance towards health finance in Madagascar

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Abstract⁵

Financing health care in developing countries often relies on different methods, with each having benefits and drawbacks. In this study, we try to evaluate the potential of a community based insurance scheme. A contingent valuation method was used to evaluate the willingness to pay for such type of health insurance in Madagascar. The results show the potential for this type of insurance as a significant number of people are willing to participate in such a scheme. Regression analysis indicates however that the extreme poor are less willing or able to contribute. Other special targeted interventions are therefore needed to help to make health care accessible to them.

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1. Introduction

By the year 2015, all member countries of the United Nations have pledged to meet the eight “Millenium Development Goals” agreed upon at the United Nations Millenium Summit held in September 2000. One of the goals is to dramatically improve access to health care services and improve the health status of people. However, it is unclear how this will be achieved practically. We study in this paper the potential contribution of a community health insurance system towards increased access to health services. To evaluate the potential of such a system, we rely on the analysis of a contingent valuation question that was posed during a large-scale household survey aimed to better understand health practices in Madagascar (for more details, see INSTAT, 2004).

Financing health care in developing countries often relies on different methods, with each having benefits and drawbacks (Hsiao, 2000; Schieber, 1997; Van Doorslaeg et al., 1993; Gertler and Van der Gaag, 1990). These methods include government revenue, social and private insurance, user fees, and community finance. Hsiao (2000) shows that private financing accounts for almost half of total health expenditures in most developing countries. This holds for East Asia, South Asia as well as Sub-Saharan Africa. Private finance is often overlooked in policy discussion as public policy makers focus only on government spending for health care as these finances are directly under their responsibility. However, to establish a reasonable health policy that achieves equity, efficiency and sustainability in any country, it seems necessary to have insights in the whole picture, including private and public finance.

One of the potential ways to improve the use of health services is through better insurance. The insurance method is currently only successfully used by mostly middle- and high-income nations to finance large portions of their nation's health expenditures (Hsiao, 2000). However, examples exist of well-functioning insurance schemes in developing countries (Gertler and Van der Gaag, 1990) and their importance is likely to grow over time for those countries that are able to make the demographic transition (Hsiao, 2000). In this paper, we look in particular at community based insurance. The principle behind a community insurance scheme is that community members pool resources to share the financial risks in health care. In such a system, the community itself would collect and manage the premiums. In contrast with private insurance, the same premium would be paid by all members and would not be based on an individual risk assessment. The contribution of this paper is to explore the potential of such a scheme in Madagascar, based on primary data using the contingent valuation technique.

Health care in Madagascar is currently provided by public as well as private sources. However, public health provision is the most important for the largest part of the population, especially so for the poorest ones (Glick et al., 2000). Few people rely on health insurance. The financing of the public health sector in Madagascar has gone through significant changes over the last years. Before the new government came to power in the middle of 2002, it adhered strictly to a user fee policy. After the new government took office, the user fee policy was abolished in an effort to mitigate the effect of the large poverty increase after the political crisis in 2002 on formal health care

use. The government installed a system of free consultation and simple drugs while special drugs and hospital care still had to be paid for. While the policy was unevenly implemented over time and space, the effect on visits as well as on the supply of medicines was dramatic (Fafchamps and Minten, 2004): visits soared, due to increased access of the poorer part of the population, while the supply of medicines declines. As it was announced that this would be a temporary policy and as this policy was financially unsustainable for public resources (it was largely paid for through financing of a World Bank loan), the government has currently implemented a new – though less strict than in 2001 – user fee policy.

The structure of the paper is as follows. Section 2 presents a literature overview. Section 3 discusses the conceptual model as well as the methodology used. Section 4 gives an overview of descriptive statistics of the households that were interviewed. Section 5 looks at the level and the determinants of the willingness to pay for health insurance. We finish with policy conclusions and recommendations.

2. Literature review

Health insurance is utterly important in the developed world. This is less the case so in developing countries (Hsiao, 2000). However, its importance and potential should not be underestimated as, for example, still 25% and 9% of the population in Brazil and Jamaica respectively rely on private health insurance to cover their medical costs (Gertler and Sturm, 1997; Lewis and Medici, 1995). In any case, research shows it to be a stylized fact

that the importance of health insurance grows as GDP per capita grows (Gertler et al., 2000; Hsiao, 2000). In the case of Madagascar, it has been shown based on data from the national household survey, that richer households rely relatively more on private health care and that public health care services are not well targeted to the poor (Glick et al., 2000). However, little insurance services seem to be present except for a minority of employees in the formal sector, who often happen to live in urban areas.

In this paper, we rely on contingent valuation techniques to evaluate the potential of a community based health insurance scheme in Madagascar. The contingent valuation technique has become to be extensively used in health care research in developed countries. Ryan et al. (2001) give an elaborate description of the types of contingent valuation techniques that are in vogue to reveal public preferences for health care. The use of contingent valuation techniques in health care research has been reviewed recently by several authors. For example, in a review of 48 health care contingent valuation studies in 1998, Diener et al. (1998) found that most of the studies are done towards a Cost-Benefit Analysis (CBA) but that their relationships with the CBA is poor and that it is unclear that guidelines for contingent valuation studies are well followed. In a more recent review, Olsen et al. (2001) analyze 71 Willingness-to-Pay (WTP) based studies on health and health care and find a mismatch between the 'theoretical glory' of WTP and the usefulness for public health policy.

While the contingent valuation techniques are currently widely used in health care studies, there are also a number of authors that are highly critical of the value of these

studies (Diamond and Hausman, 1994; Cookson, 2003). For example, Cookson (2003) advises to treat WTP studies with skepticism. He argues that ‘Willingness to Pay methods’ tend: a. to be undersensitive to the magnitude of the benefits and therefore inflate valuations of interventions that yield relatively small benefits; b. to inflate valuations of the specific intervention that respondents are asked about without taking into consideration their total budget constraint. This would create bias in decisions towards the use of new health care technologies. As in the environmental economics field, analysts in health care research are well aware of these methodological problems and the fields continue to generate new guidelines for better implementation of this type of studies (e.g., Blumenschein et al., 2001; Alberini et al., 1997; Hanley et al., 2003; Cropper et al., 2000; Oliver et al., 2002; Bateman and Willis, 1999).

While the application of WTP methods in developing countries is still rather new, the number of studies that use this technique is growing very fast. Based on his extensive experience with this type of studies, Whittington (1998) proposed some specific guidelines on the implementation of this method in developing countries. Applications in developing countries are currently mostly found in the field of environmental economics (e.g. Dixon et al., 1997; Bateman and Willis, 1999; Shyamsundar and Kramer, 1996; Shultz et al., 1998; Hadker et al., 1997; Navrud and Mungatana, 1994) and water use (e.g. Whittington et al., 1990, 1991; World Bank, 1993; Briscoe et al., 1990; Choe et al., 1996). However, the method has also been used in health care studies. As an example, Cropper et al. (2000), Swallow et al. (1994) and Onwujekwe (2001) use the technique to evaluate the potential of different methods to prevent malaria in Ethiopia while Alberini

et al. (1997) and Ostro (1994) evaluate the health effects of air pollution in developing countries.

On the other hand, the application of the WTP method for health finance in developing countries has been extremely limited. Mwabu and Wang'ombe (1998) try to evaluate to what extent Kenyan households are willing to contribute towards service improvements in government health facilities using WTP methods. Dong et al. (2003), Asenso-Okyere et al. (1997) and Mathiyazhagan (1998) are the rare studies that we found that try to do an evaluation based on WTP methods of the potential of health insurance schemes at the community level in developing countries and this respectively in Burkina-Faso, Ghana, and India. These authors have thus similar objectives than our study.

3. Methodology

3.1. Model

To justify our approach, we start with the development of a household model which allows us to derive a demand function for medical care that can be used to estimate a household's Willingness-to-Pay for health insurance. To this end, we define two functions (we use subscripts to represent the value of each variable to family member, $i = 1, \dots, n$):

1. A household utility function: $U = u(X_1, \dots, X_n, L_1, \dots, L_n, S_1, \dots, S_n, Z)$ where X=consumption; L=leisure time; S=disutility from time spent ill; Z=taste variables.

2. A health production function: $S_i = s(M_i, H_i)$ where M is the amount of medical care (preventive or treatment) that each person receives and H are individual characteristics (including health and genetic predispositions to disease).

The maximization problem of the household can then be written as follows (see f.ex. Grossman, 1972; Liljas, 1998):

$$\text{Max} \quad U = u(X_1, \dots, X_n, L_1, \dots, L_n, S_1, \dots, S_n, Z)$$

$$\text{s.t.} \quad S_i = s(M_i, H_i)$$

$$I + \sum_{i=1}^n w_i (T - L_i - S_i) = \sum_{i=1}^n X_i + p_m \sum_{i=1}^n M_i$$

Thus, the household maximizes utility subject to a health production function and a budget constraint stating that total expenditures can not exceed household's income. We define: I is household non-earned income, w_i 's are the values of income (per unit time) generated by each family member, and $\sum w_i (T - L_i - S_i)$ is household earned income (T is total time available). The first term on the right-hand side of the budget constraint is household expenditure on non-health goods, whose price is set equal to 1. The second term represents expenditures on medical care whose price is p_m .

The head of household selects values of X , L and M to maximize household utility subject to the budget constraint and to a health production function. This yields a household demand function for medical care $M^* = \sum M_i$ that in general depends on non-wage income, wages, prices, household characteristics, and health characteristics of family

members. In a reduced form equation, we can then also write that the disutility of being sick can be expressed as:

$$S^* = f(I, w, p_m, Z, H)$$

A household has now the possibility to buy insurance which would allow it to reduce the disutility of being sick. In a simplified set-up, a household will purchase an insurance policy:

a. in the case of a risk-neutral household:

$$\text{accept policy if cost } (C) \leq \text{expected loss } (EL)$$

b. in the case of a risk-averse household, it would be prepared to pay more than the cost of the policy to avoid the gamble:

$$\text{accept policy if cost } (C) \leq \text{expected loss } (EL) + \pi$$

where π is the risk premium that depends on the household's attitude to risk (R) and wealth (W).

In the empirical model, we assume an underlying model where:

$$\text{Prob}(\text{accept policy}) = g(C, EL, W, R(Z))$$

The expected loss (EL) can be approximated by wS and we then get in a reduced form that:

$$\text{Prob}(\text{accept policy}) = g(C, wS = f(I, w, p_m, Z, H), W, R(Z)) = g(C, I, w, p_m, Z, H, W)$$

This final form will guide our econometric estimation.

3.2. Data⁶

The EEEFS (Etude sur l'Efficienc e et Equité des Formations Sanitaires à Madagascar) survey was fielded in May/June 2003. The sampling frame was the same as used for the nationwide household survey, the Enquête Permanente auprès des Ménages (EPM) in 2002. The primary sampling units of the EPM were zones de denombrement (ZDs) or groups of ZDs; each ZD corresponds generally to the fokontany administrative level which in turn is equivalent to a village. 80 out of 303 of the ZDs in the original EPM survey were randomly chosen to be resurveyed for the EEEFS. 27 (34%) of the 80 ZDs are rural, reflecting the oversampling of urban areas in the EPM (the population of the country as a whole is about 80% rural).

The EEEFS included several integrated survey instruments, more specifically a health district survey, a facility survey, a community survey, a user exit survey and a household survey. For our purposes, we will only rely on the latter two surveys. So, we discuss the set-up of those in more detail. For the user exit surveys, patients were randomly selected to be interviewed upon exiting each facility. They were asked questions about their impressions of the quality of care and the condition of the health care facility, the welcome provided by the facility, the actions taken and information provided to them by the health practitioner during their consultation, and the cost of the consultation and of drugs provided. The user survey also collected information about the characteristics of the respondent and her family (e.g., education, household size, composition household, etc.).

⁶ The description of the survey set-up draws heavily on Glick et al. (2003) and INSTAT (2004)

As noted, the EEEFS was conducted in 80 ZDs randomly selected from the sampling frame of the 2002 EPM household survey. This was done to allow the study to build on the earlier EPM data collection. The objective was to re-interview all the households in these ZDs. This effort was quite successful (1010 of the original 1066 households were re-interviewed), reflecting the fact that the EPM survey had been carried out just several months earlier. Households lost to attrition were replaced by other households in the cluster. Since the usual range of information on household characteristics and activities was collected for the EPM for the re-interviewed households, the new survey was an abbreviated one that focused in detail on health-related behavior.

3.3. WTP question

For the purposes of our study, a Willingness-to-Pay (WTP) question was included in both the user exit survey and the random household survey to be able to value the potential of a community based insurance scheme. Given that there are currently almost no examples on the functioning of such a scheme in Madagascar, we were obliged to rely on the explicit formulation of a hypothetical scenario to the households. The scenario was presented as follows:

“A community based insurance scheme is a formal or informal organization to which members contribute as to benefit of re-imbursments in the case of health care needs. We would like to emphasize that the organization would only be involved in regulating the payments but would not take care of the health care itself. Its presence would in no way have an influence on the quality

of the health care provided by the health centers or by the doctors. In such a scheme, members would contribute each month a fixed amount and in case of sickness when there is justified need for medicines, they can rely on this fund to help to pay for these costs. It is important to know that there is no external help for this system but members from the community itself will help each other as to able to reduce their financial problems. It is important to know that not all members benefit from this organization: a member is only insured in the case of health expenditures and he will then have access to this fund and can be able to pay for health care costs. You also have to know that in the case that you are not sick, you are not able to get the money back that you contributed. The organization will be managed in good governance by a local committee. The accounting of the organization will be written down and will be verified by honest and capable people of the community itself. The revenue and expenses can be verified by all members at all moments.”

Then, two types of insurance schemes were introduced. In a first one, a scheme would be put in place that would re-imburse half of the health costs of all the household members. In a second case, a scheme would be put in place that would re-imburse a fixed amount of 200.000 Fmg in the case of the need of a visit to the hospital.⁷ Respondents were reminded that if they would underestimate what they would be willing to contribute, there would not be enough finance to make this a viable scheme. On the other hand, if they would state an amount that is higher than what they would actually be able to contribute, the scheme could also not survive. Then, a specific amount of contribution per household member was offered which the respondent could accept or refuse.

⁷ During the analysis, we noticed the strong linkages between the answers of the two scenario's. It seemed that we suffered from starting point bias for the second scenario. We therefore decided not to use the results of this scenario.

In line with the environmental economics literature, the recommended Dichotomous Choice (DC) format question was used (Arrow et al., 1993; Mitchell and Carson, 1989).⁸ The respondent was offered the opportunity to buy the insurance at one of ten randomly assigned prices. Prices for insurance ranged from 20 Ariary (0.002\$) to 500 Ariary (0.05\$) per person per month. If the person answered ‘yes’ to the bid, he was asked to specify on how he would pay for these expenditures. Then, an extra question was asked on how sure he was about the functionality of such an insurance scheme in his community. If the person answered ‘no’ to the bid, he was asked to specify the reason why. The format of the WTP question is added in annex 1.

4.4. Estimation and econometric issues

The probability that a household said ‘yes’, denoted as $Y = 1$, is estimated as a probit model.⁹ With $Y = 1$ indicating yes, and $Y = 0$ indicating no, the probability of saying yes is estimated as:

$$P(Y=1) = \Phi(x'b)$$

where Φ is the standard normal distribution, x is a vector of explanatory variables and b are parameters to be estimated. Table 1 below indicates the different variables in the empirical model that were used as proxies for the variables coming out of the theoretical model.

⁸ The benefits and disadvantages of this method are well studied. The advantages of this method are: 1/ reveals more accurate values than in the open-ended format; 2/ Simplifies the task of the respondent; 3/ the DC method resembles better the market place and more truthful answers are therefore expected. The disadvantages are the need for a large sample, the need for good framing of the question to avoid yeaying and starting point bias and assumptions about the error term in regression analysis that might affect the parameter estimates (Arrow et al., 1993; Mitchell and Carson, 1989).

⁹ The question on suitability of logit or probit models is unresolved. However, in most applications, it seems not to make much difference (Greene, p. 815).

To approximate poverty and wealth levels, we rely on a subjective question that was posed to the head of the household. By comparing actual expenditures of the household with self-reported welfare levels in the case of Madagascar, Lokshin et al. (2003) show that this type of subjective assessment are a good alternative indication of the welfare level of households in the absence of expenditure measurements. The measurement and interpretation of the variables used in the analysis is straightforward. Most of the continuous variables were converted to a log form to reduce the effect of extreme values and to facilitate interpretation.

Table 1: Variables used in empirical estimation

Variables theoretical model		Proxies empirical model
WTP	C	Contribution for insurance per household member per month
Income and wealth	I/w/W	Subjective assessment of the household on: <ul style="list-style-type: none"> - level of welfare - capability of savings
Prices health care	Pm	- suspension of the user fee in the health center used by the household <ul style="list-style-type: none"> - type of coverage by household members
Household characteristics	Z/H	- household size <ul style="list-style-type: none"> - age head household - number of active adults in the household - gender head household - education level head household

4. Descriptive statistics

Table 2 presents some simple descriptive statistics on the characteristics of the household, distinguished by the user exit and the random household survey. The average family in the survey counts 5 family members. About 50% of the household is in the economically active age range while the average age of the household head is 42 years. 19% of the households are female headed. Education levels are low. These averages are all consistent with estimates of the national household surveys (Razafindravonona et al., 2001; INSTAT, 2003; Minten et al., 2003). The descriptive statistics illustrate to what extent households were sampled over the different provinces and are therefore reflective of the national situation. There is little difference on household characteristics between the households interviewed at the health center and the randomly selected households.

A subjective question was asked on perceived well-being and on the ability of the household to save some money. The answers show the high poverty level in Madagascar, one of the poorest countries in the world, where around 70% of the population is estimated to be below the poverty line (Razafindravonona et al., 2003; World Bank, 2003). 36% of the households report on their income that they are in problems, 26% say that they have to pay attention, 35% report to live an average life while only 3% say that they live at ease. The same proportions show up for the savings question as only around 25% of the respondents report that they are able to save money. The reported income and ability to save levels are significantly higher for the users of health facilities than for the randomly selected households. This is consistent with other studies in Madagascar and

elsewhere where reports of illness and statistics on health care facility users are shown to be strongly linked with income (Glick and Razakamanantsoa, 2001; Glick et al., 2000; Schultz and Tansel, 1997).

An ordered probit regression was run on the subjective wellbeing and subjective savings statement to evaluate the importance of the different determinants (Table 3). The results show that education of the head of the household and the relative importance of the number of economically active persons in the households are significant predictors of poverty. While bigger households are, in the pooled specification, positively related with higher poverty, its coefficient is not significant at conventional statistical levels. Female-headed households are significantly poorer than male-headed *ceteris paribus*. These results confirm the findings of previous poverty studies in Madagascar (Dorosh et al., 1997; Razafindravonona et al., 2001). It is interesting to note that the provincial dummies of Fianarantsoa and Toliara come out highly significant and positive (compared to the province of Antananarivo, the default) as these provinces are systematically estimated to be the poorest provinces in Madagascar based on detailed poverty measurement (Razafindravonona et al., 2001; Minten et al., 2003). This might be an indication of the validity of subjective welfare statements for poverty analysis.

After this brief overview of the socio-economic situation of the survey households, we turn to health care practices. As is often the case in developing countries, the households in the survey rely overwhelmingly on own funds to cover their health costs. Around 86% of the households state that they rely exclusively on own funds to pay for health care

needs. This percentage does not differ for the randomly selected households compared to the households exiting health facilities. Around 8% of the households are taken care of, usually through an insurance policy paid for by their employer. The percentage of households that are, completely or partly, reimbursed after the visit to the health center or that receive help from friends or family is extremely limited.

Most of the households in Madagascar report to rely on public health care in case of need. Around 50% of the household state that, they visit most often the public health center if they are in need for medical consultation. Around 13% goes to a private doctor.¹⁰ Not reported statistics show that little change is noticed over time and that the public policy changes, i.e. the suspension of the user fee, seem to have led to little shifts in health care provider in the short-run. While at the time of the survey, the user fee policy was abolished, a surprisingly significant number of people were not aware of this policy, even for those people that just visited the health center. Only about half (48%) of the interviewees stated that they were aware that the user fee policy was currently suspended. 26% reported that they did not know that this policy had been abandoned and another 26% thought that the cost recovery policy was still in effect. 10% of the people indicated that they had to pay informal fees in their last visit to the health center to get the services that they wanted, mostly to avoid waiting and to get better services or drugs. These findings are in agreement with the qualitative evidence on public service delivery in Madagascar (Brinkerhof and Keener, 2003) or with surveys in other countries (McPake et al., 1999).

¹⁰ There might be a problem of selection bias as user exit households are included in these statistics. However, there is no large difference between the randomly selected households and the user exit households, possibly indicating the good sampling strategy for the user exit survey.

5. Determinants of the Willingness-to-Pay for insurance

As described above, a Willingness-to-Pay question was formulated to evaluate the potential of a community based insurance scheme. To introduce the scenario, the household was asked if they had ever heard about such an insurance scheme and if somebody in the household was a member of such a scheme. As expected, the majority of the interviewees had never heard of such a scheme (Table 5). Then the scheme was explained and the bid was offered. As a close-out question, it was asked to the interviewees that accepted if they thought such a scheme could work in their community.

A parsimonious and a comprehensive model were estimated to evaluate the importance of covariates for the willingness to contribute to community insurance (reported in Tables 6 and 7). The parsimonious model was estimated as a simple function of an intercept and natural log of the bid level. For the comprehensive model, the x vector included the covariates as discussed in the methodology section. The interviewees that indicated that such a scheme would not work in their community for sure although they accepted the bid, were reassigned to the refusal category. This category concerned 8% of the answers. The regressions were estimated using the Huber/White/sandwich estimator of variance in place of the traditional calculation.

As shown in Figure 1 and Table 5, willingness to pay for community insurance is highly responsive to price. For example, a price increase from 50 to 250 Ariary per member

would reduce the percentage of households willing to pay for the insurance from 75% to about 44%. This is also reflected in the statistical analysis. For both models, the coefficient on $\ln(\text{bid})$ is negative and significant at the 1% level. Using a parsimonious model, median willingness to pay is estimated to be 244 Ariary per household member per month - about 1.5 \$ per household member per year - for re-imbusement of half of the costs of the health care costs. The median can easily be interpreted as the level that would be rejected by 50% of the members of a community in a community vote. These estimates are similar to the amounts found in other developing countries.¹¹

Manski and McFadden (1981) recommend the use of a logit specification in the case of pooling of a choice-based sample as this specification would only affect the estimate of the intercept. The results of a comprehensive logit model are presented in Table 7. The results illustrate the importance of poverty related variables on the probability to accept the insurance scheme. The coefficients on the subjective statements on poverty and the inability to save come out both highly significant at conventional statistical levels in most of the specifications. Based on the magnitude of the coefficient, it is estimated that if the household would move from the lowest poverty category (1) to the highest (4), the probability of accepting the bid would decrease by 13%. The provincial dummies are most significant for the provinces of Mahajanga and Antsiranana, both among the richest of the provinces in Madagascar, again indicating the large influence of poverty on participation.

¹¹ Most the of the packages proposed included comprehensive health care compared to only half of all the health care costs in Madagascar (Dong et al., 2003; Asenso-Okyere et al., 1997; Mathiyazhagan, 1998).

The composition of the household has also a significant impact on the probability to accept the bid. The coefficient on the size of the household is negative in all of the regressions indicating that larger size households are much less likely to contribute to insurance schemes *ceteris paribus*. Given that we control for poverty and that we find no significant link between household size and poverty in our data, it might be that larger households are better able to provide self-insurance through the different activities of different household members. The larger the percentage of economically active persons in the household, the higher the likelihood that they refuse the bid, possibly reflecting the likelihood of economically active adults to be less prone to diseases. The age and the gender of the head of the household do not influence the willingness to contribute.

Current health practices are also significant determinants of acceptance of the bid. As expected, the higher the percentage of members of the households that are currently taken care of by an employer, the less likely they would be to contribute to another insurance scheme (the default value is the percentage of the members of the households that are currently paying themselves for health care costs). There is not a significant difference between the other type of payments: help from others, payment by the household itself and partly or completely reimbursement. Current users of facilities are less likely to accept the bid, maybe because of the free care they just received in the public health center. On the other hand, households that are not aware of the suspension of user fees are surprisingly less likely to contribute to such a scheme. It is unclear why this would be the case.

6. Conclusions

Financing health care in developing countries relies on different methods, with each having benefits and drawbacks. In this study, we try to evaluate the potential of a community based insurance scheme. Based on a large primary dataset, a contingent valuation method was used to evaluate the willingness to pay for such type of health insurance in Madagascar. The results show the potential for this type of insurance as a significant number of people are willing to participate in such a scheme. Regression analysis indicates however that the extreme poor are less willing or able to contribute. Other special targeted interventions are therefore needed to help to make health care accessible to them.

While health insurance schemes have had limited success in poor developing countries, successful ones have however recently been put in place in some of these countries. These experiences and the results of this study does suggest that governments in developing countries should think harder about the roles that could be played by insurance in determining health outcomes.¹² Increased availability of health insurance might allow for a reduction of the subsidies, a better targeting of these subsidies with effects on equity outcomes. Careful empirical research is further needed to evaluate these nascent schemes as to better document the benefits and drawbacks and incorporate the lessons learnt in policy design.

¹² For example, Wagstaff and Pradhan (2005) find in Vietnam that height-for-age and weight-for-age improved of young children and the Body Mass Index of adults improved after the introduction of a health insurance scheme.

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Annex 1 : WTP question format

L'Etat a suspendu depuis maintenant six mois la participation des usagers au paiement des frais médicaux ou pour certains médicaments. Pour des raisons budgétaires, il est toutefois prévu que cette participation des usagers pour les frais de santé sera rétablie d'ici quelques mois. Pour aider les malades dans le paiement de ces frais, l'Etat a décidé de faciliter les procédures de mise en place de projets de "mutuelles de santé", comme il vous sera décrit dans la suite.

Q1. Avez-vous déjà entendu parler d'une mutuelle de santé ? 1. Oui 2. Non.

Q2. Si oui, est-ce que vous ou un autre membre de votre famille êtes membre d'une telle mutuelle ?

1. Oui 2. Non

Une mutuelle de santé est une organisation formelle ou informelle pour laquelle les adhérents cotisent afin de bénéficier d'indemnisation des frais qu'ils engagent en cas de soins de santé. On précise que la mutuelle ne s'occupe QUE de cette indemnisation et non des soins de santé même, et que sa présence n'influencera en aucune manière la qualité des soins dispensés dans les centres de santé ou auprès des médecins.

Chaque mois, les membres versent donc un certain montant pour la cotisation et en cas de maladie ou de recours à un médecin ou d'achat (justifié) de médicaments (achat de médicaments avec justificatifs qu'on a eu besoin de ces médicaments pour des soins médicaux et qu'on est passé par un médecin avant – disponibilité d'une ordonnance et de factures), ils peuvent utiliser cette caisse afin de les aider à payer pour ces frais. Il est important de savoir qu'il n'y a pas d'aide extérieure mais que ce système met en place une caisse au niveau de la communauté pour que les membres s'entraident dans des cas de nécessité pour sortir de leurs problèmes financiers.

Il est aussi important de savoir qu'un membre *n'est assuré qu'en cas de dépenses de santé* c'est-à-dire qu'il peut alors avoir accès à cette caisse et il sera capable de payer pour ces dépenses de santé. Donc il faut noter que dans le cas où vous n'êtes pas malade, vous ne pouvez pas récupérer l'argent que vous avez versé à titre de cotisation.

La mutuelle sera gérée par un comité local dans un esprit de bonne gouvernance. Les entrées et sorties d'argent au niveau de la mutuelle seront bien comptabilisées dans des livres et seront vérifiées par des gens capables et honnêtes de la communauté même. En outre, ces dépenses et cotisations peuvent être vérifiées à tout moment par tous les membres de la mutuelle.

Il existe différents types de mutuelles dont les modalités sont décrites ci-après.

Mutuelle 1. Supposez qu'on décide de mettre en place, dans votre communauté, une mutuelle **qui remboursera la moitié de vos dépenses de santé, quels que soient les types de soins** (frais d'évacuation, achat de médicaments, frais d'hospitalisation, honoraires des médecins...). Nous aimerions savoir combien vous êtes prêt à déboursier pour une telle mutuelle. Sachez qu'il est important que vous donniez une réponse honnête. Si vous avancez un montant inférieur à ce que vous pouvez payer réellement, la mutuelle ne sera peut-être pas établie. D'autre part, si vous donnez un prix supérieur à ce que vous pouvez payer, la mutuelle n'aura pas assez de fonds pour fonctionner. Il n'y a pas de bonne ou mauvaise réponse. Nous voudrions seulement savoir ce que vous en pensez à ce moment-ci.

Q3. Par mois, êtes-vous prêt à cotiser par individu dans votre ménage (comprenant ____ individus) : 20/30/40/50/100/150/200/250/300/500 Ariary par mois par individu ou un total de _____ Ariary pour tous les membres de votre ménage? Si vous acceptez, vous devriez cotiser pour ce montant chaque mois de l'année. Est-ce que vous acceptez ?

1. Oui (Continuez Q4)
2. Non (Continuez avec la question Q6)
3. Je ne sais pas/Pas sûr (continuez 'mutuelle 2')

Q4. Vous avez dit que votre ménage serait prêt à payer _____ Ariary par mois en total pour tous les membres de votre ménage pour adhérer à cette mutuelle, comment allez-vous faire pour vous procurer cet argent ? []

1. Prendre sur l'épargne du ménage
2. Diminution des dépenses d'alimentation
3. Diminution d'autres postes de dépenses du ménage
4. Vente de meubles ou de biens
5. Mise en location de maison ou des terres
6. Vente du cheptel animal
7. Diminution des transferts pour d'autres membres de la famille
8. Autres : _____

Q5. Si vous êtes sûr que vous pouvez vous acquitter de la cotisation, pensez-vous que la mutuelle pourra bien fonctionner au niveau de votre fokontany

1. Oui (passer à "mutuelle 2")
2. Peut-être
3. Non (continuer avec Q6)

Q6. Pourquoi pas ? _____

Mutuelle 2. Supposez que l'on décide de mettre en place un autre type de mutuelle dans votre communauté. Cette mutuelle **remboursera 200.000 Fmg pour chaque opération chirurgicale** sur les membres de votre famille. Nous aimerions savoir combien vous êtes prêt à cotiser pour une telle mutuelle. Sachez qu'il est important que vous nous donniez une réponse honnête. Si vous avancez un montant inférieur à ce que vous pouvez payer réellement, la mutuelle ne sera peut-être pas établie. D'autre part, si vous donnez un prix supérieur à ce que vous pouvez payer, la mutuelle n'aura pas assez de fonds pour fonctionner. Il n'y a pas de bonne ou mauvaise réponse. Nous voudrions seulement savoir ce que vous en pensez à ce moment-ci.

Q8. Par mois, êtes-vous prêt à cotiser par individu dans votre ménage (comprenant ____ individus) : 20/30/40/50/100/150/200/250/300/500 Ariary par mois par individu ou un total de _____ Ariary pour tous les membres de votre ménage? Si vous acceptez, vous devriez cotiser pour ce montant chaque mois de l'année. Est-ce que vous acceptez ?

1. Oui (Continuez Q9)
2. Non (Continuez avec la question Q11)
3. Je ne sais pas/Pas sûr (Fin)

Q9. Vous avez dit que votre ménage serait prêt à payer _____ Ariary en total pour tous les membres de votre ménage pour adhérer à cette mutuelle, comment allez-vous faire pour vous procurer cette somme?

1. Prendre sur l'épargne du ménage
2. Diminution des dépenses d'alimentation
3. Diminution d'autres postes de dépenses du ménage
4. Vente de meubles ou de biens
5. Mise en location de maison ou des terres
6. Vente du cheptel animal
7. Diminution des transferts pour d'autres membres de la famille
8. Autres : _____

Q10. Si vous êtes sûr que vous pouvez vous acquitter de la cotisation, pensez-vous que la mutuelle pourra bien fonctionner au niveau de votre fokontany ?

1. Oui (passer à "mutuelle 2")
2. Peut-être
3. Non (continuer avec Q6)

Q11. Pourquoi pas ? _____

Table 2: Descriptive statistics household characteristics

Variable	Unit	Pooled			User exit			Random households		
		No of obs.	Mean	Std. Dev.	No of obs.	Mean	Std. Dev.	No of obs.	Mean	Std. Dev.
Size household	number	1866	5.20	2.60	799	5.41	2.66	1067	5.05	2.55
Age of the head of household	number of years	1851	42.57	13.72	798	41.10	13.13	1053	43.68	14.04
Economically active members	number	1866	2.42	1.48	799	2.46	1.48	1067	2.39	1.48
Gender of head of household	1=male	1854	0.81	0.39	788	0.86	0.35	1066	0.78	0.41
Education	number of years	796	8.77	4.33	796	8.77	4.33			
Living in Antananarivo	% of sample	516	27.65		220	27.53		296	27.74	
Living in Fianarantsoa	% of sample	325	17.42		139	17.4		186	17.43	
Living in Toamasina	% of sample	280	15.01		120	15.02		160	15	
Living in Mahajanga	% of sample	280	15.01		120	15.02		160	15	
Living in Toliara	% of sample	278	14.9		120	15.02		158	14.81	
Living in Antsiranana	% of sample	187	10.02		80	10.01		107	10.03	
<i>Concerning the income of the household,</i>										
"it lives at ease"	% of reponses	50	2.69		24	3.02		26	2.44	
"it lives an average life"	% of reponses	647	34.77		307	38.57		340	31.92	
"it has to pay attention"	% of reponses	492	26.44		196	24.62		296	27.79	
"it is in problems"	% of reponses	666	35.79		263	33.04		403	37.84	
"do not know"	% of reponses	6	0.32		6	0.75				
<i>Concerning the savings of the household,</i>										
"it can save a lot"	% of reponses	28	1.51		18	2.26		10	0.94	
"it can save a bit"	% of reponses	451	24.26		195	24.47		256	24.11	
"income and expenses are the same"	% of reponses	680	36.58		290	36.39		390	36.72	
"it has to use its savings"	% of reponses	212	11.4		92	11.54		120	11.3	
"it has to borrow"	% of reponses	461	24.8		175	21.96		286	26.93	
"do not know"	% of reponses	27	1.45		27	3.39				

Table 3: Determinants of subjective poverty/inability to save - ordered probit

Variable	Unit	Pooled		User exit survey	
		Coeff.	z-value	Coeff.	z-value
<i>1. Subjective poverty (1-4)</i>					
Gender of head of household	1=male	-0.274	-3.520	-0.240	-1.770
Size household	log(number)	0.086	1.380	-0.093	-0.880
Age of the head of the household	log(number)	0.016	0.180	0.061	0.390
Education of head of household	log (number of yrs)			-0.406	-4.490
Economically active members	prop. of hh size	-0.313	-2.470	-0.644	-3.120
User exit survey	1=yes	-0.135	-2.540		
Fianarantsoa	1=yes	0.452	5.510	0.440	3.370
Toamasina	1=yes	0.247	2.920	0.369	2.860
Mahajanga	1=yes	0.024	0.290	-0.092	-0.710
Toliara	1=yes	0.498	5.810	0.549	4.130
Antsiranana	1=yes	0.117	1.340	0.134	1.030
Number of observations		1831		778	
Wald chi(2)		97.99		57.94	
Prob>chi2		0.00		0.00	
Pseudo R2		0.02		0.04	
<i>2. Subjective inability to save(1-5)</i>					
Gender of head of household	1=male	-0.234	-3.120	-0.204	-1.610
Size household	log(number)	0.071	1.200	-0.086	-0.880
Age of the head of the household	log(number)	0.035	0.410	0.009	0.070
Education of head of household	log (number of yrs)			-0.468	-5.910
Economically active members	prop. of hh size	-0.328	-2.680	-0.518	-2.740
User exit survey	1=yes	-0.109	-2.110		
Fianarantsoa	1=yes	0.127	1.510	0.004	0.030
Toamasina	1=yes	-0.114	-1.570	-0.082	-0.760
Mahajanga	1=yes	-0.211	-2.490	-0.330	-2.570
Toliara	1=yes	0.249	2.950	0.316	2.370
Antsiranana	1=yes	-0.459	-5.290	-0.412	-3.020
Number of observations		1808		758	
Wald chi(2)		93.92		65.76	
Prob>chi2		0.00		0.00	
Pseudo R2		0.02		0.03	

Table 4: Descriptive statistics health care practices

Variable	Unit	Pooled		User exit		Random households	
		No of obs.	Mean	No of obs.	Mean	No of obs.	Mean
<i>Type of insurance</i>							
Members that are taken care of	prop. of hh	1866	0.08	799	0.07	1067	0.09
Members that are completely re-imbursed	prop. of hh	1866	0.01	799	0.02	1067	0.01
Members that are partly re-imbursed	prop. of hh	1866	0.01	799	0.01	1067	0.01
Members that pay themselves	prop. of hh	1866	0.86	799	0.87	1067	0.86
Members that are helped by others	prop. of hh	1866	0.02	799	0.02	1067	0.02
<i>Awareness on user fee policy</i>							
Aware that user fee policy is suspended	prop. of hh	904	48.55	403	50.63	501	47.00
Not aware that user fee policy is suspended	prop. of hh	481	25.83	186	23.37	295	27.67
Do not know user fee policy is suspended	prop. of hh	477	25.62	207	26.01	270	25.33
<i>Informal payments</i>							
Had to pay informally	prop. of hh	1803	0.10	797	0.04	1006	0.14
If paid informally, why?							
a. Avoid queues	prop. of hh	178	0.16	34	0.29	144	0.13
b. Less waiting	prop. of hh	178	0.15	34	0.32	144	0.10
c. For a better consultation	prop. of hh	178	0.24	34	0.26	144	0.24
d. To benefit from more drugs	prop. of hh	178	0.15	34	0.06	144	0.17
e. To pay less formally	prop. of hh	178	0.07	34	0.03	144	0.08
<i>Type of center used at the time of survey</i>							
University hospital	prop. of hh	5	0.27			5	0.47
Regional hospital	prop. of hh	12	0.64	5	0.63	7	0.66
Hospital district 1	prop. of hh	73	3.92	44	5.52	29	2.72
Hospital district 2	prop. of hh	76	4.08	33	4.14	43	4.04
Basic health center 1	prop. of hh	95	5.10	41	5.14	54	5.07
Basic health center 2	prop. of hh	980	52.63	453	56.84	527	49.48
Private non-religious hospital	prop. of hh	24	1.29	14	1.76	10	0.94
Private doctor	prop. of hh	239	12.84	73	9.16	166	15.59
Health center of enterprise (OSTIE, SMIA)	prop. of hh	27	1.45	12	1.51	15	1.41
Pharmacy	prop. of hh	8	0.43	3	0.38	5	0.47
Private informal center	prop. of hh	43	2.31	14	1.76	29	2.72
Local untrained doctor	prop. of hh	15	0.81	8	1.00	7	0.66
ONG/Organisation	prop. of hh	7	0.38	6	0.75	1	0.09
PMI/SMI	prop. of hh	5	0.27	1	0.13	4	0.38
Religious health center	prop. of hh	139	7.47	79	9.91	60	5.63
Other	prop. of hh	114	6.13	11	1.38	103	9.67

Table 5: Descriptive statistics willingness to pay for insurance

Variable	Unit	Pooled		User exit		Random households	
		No of obs.	Mean	No of obs.	Mean	No of obs.	Mean
Has heard about community insurance	prop. of hh	1846	0.09	780	0.09	1066	0.08
<i>Insurance scheme where half the health costs are re-imbursed</i>							
Proportion that accepts the bid at ...							
20 Ariary per month per member	prop. of hh	183	0.85	82	0.84	101	0.86
30 Ariary per month per member	prop. of hh	180	0.74	74	0.69	106	0.77
40 Ariary per month per member	prop. of hh	179	0.78	72	0.75	107	0.80
50 Ariary per month per member	prop. of hh	199	0.75	85	0.72	114	0.77
100 Ariary per month per member	prop. of hh	204	0.63	94	0.62	110	0.64
150 Ariary per month per member	prop. of hh	173	0.61	72	0.60	101	0.61
200 Ariary per month per member	prop. of hh	188	0.55	79	0.48	109	0.60
250 Ariary per month per member	prop. of hh	182	0.44	79	0.38	103	0.49
300 Ariary per month per member	prop. of hh	179	0.51	73	0.45	106	0.56
500 Ariary per month per member	prop. of hh	177	0.37	68	0.40	109	0.35
Proportion that believes such a scheme will work							
Yes	prop. of hh	646	51.80	385	52.10	261	51.38
Maybe	prop. of hh	506	40.58	301	40.73	205	40.35
Non	prop. of hh	95	7.62	53	7.17	42	8.27

Table 6: Determinants of willingness to pay for health insurance

Variable	Unit	Pooled		User exit survey		Random households	
		Coeff.	z-value	Coeff.	z-value	Coeff.	z-value
<i>Probit</i>							
Bid level	Log (Ariary)	-0.393	-12.720	-0.383	-8.100	-0.404	-9.850
Intercept		2.160	14.460	2.029	8.970	2.277	11.380
Number of observations		1844		778		1066	
Wald chi2		161.75		65.69		97.02	
Prob > chi2		0		0		0	
Pseudo R2		0.0694		0.0654		0.0738	
<i>Logit</i>							
Bid level	Log (Ariary)	-0.645	-12.410	-0.625	-7.910	-0.668	-9.660
Intercept		3.544	13.920	3.307	8.670	3.760	10.920
Number of observations		1844		778		1066	
Wald chi2		153.92		62.51		92.21	
Prob > chi2		0		0		0	
Pseudo R2		0.0695		0.0654		0.074	
Median Willingness to pay*	Ariary	243.61		199.21		279.31	

Table 7: Determinants of willingness to pay for health insurance (Logit model)

Variable	Unit	Pooled		User exit survey		Random households	
		Coeff.	z-value	Coeff.	z-value	Coeff.	z-value
Bid level	Log(ariary)	-0.736	-12.400	-0.679	-7.440	-0.769	-9.590
Income and wealth							
Poverty level	Levels 1 - 4	-0.259	-3.120	-0.091	-0.730	-0.373	-3.230
Inability to save	Levels 1 - 5	-0.154	-2.330	-0.197	-1.920	-0.141	-1.590
Prices of health care							
Members taken care of by employer	prop. of hh size	-0.518	-2.340	-0.535	-1.430	-0.593	-2.170
Members that are reimbursed	prop. of hh size	0.353	0.910	0.170	0.320	0.659	1.160
Members that are being helped by others	prop. of hh size	-0.239	-0.460	-0.954	-1.240	0.131	0.180
Are not aware of user fee suspension	1=yes	-0.383	-2.700	-0.021	-0.090	-0.654	-3.430
Do not know about user fee policy	1=yes	0.023	0.160	0.093	0.430	-0.083	-0.420
Household characteristics							
Gender of head of household	1=male	0.190	1.260	-0.290	-1.150	0.405	2.060
Size household	log(number)	-0.629	-4.660	-0.480	-2.090	-0.739	-4.160
Age of the head of the household	log(number)	-0.133	-0.690	-0.353	-1.130	-0.021	-0.080
Education of head of household	log (number of yrs)			0.030	0.170		
Economically active members	prop. of hh size	-0.627	-2.300	-0.200	-0.460	-1.089	-2.990
User exit survey	1=yes	-0.284	-2.550				
Location							
Fianarantsoa	1=yes	0.172	1.020	0.322	1.200	0.058	0.270
Toamasina	1=yes	0.406	2.380	0.095	0.370	0.676	2.880
Mahajanga	1=yes	1.037	5.520	0.638	2.380	1.464	5.610
Toliara	1=yes	-0.387	-2.070	-0.499	-1.700	-0.252	-1.000
Antsiranana	1=yes	0.941	3.850	1.353	3.220	0.779	2.370
Intercept		6.918	8.320	6.719	5.100	7.227	6.340
Number of observations		1780		730		1048	
Wald chi2		241.85		95.04		169.85	
Prob > chi2		0.00		0.00		0.00	
Pseudo R2		0.15		0.13		0.18	

Figure 1: Probability to accept community insurance by bid level

