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ExPost

# Assessing the Effects of Health Insurance: The SKY Micro-Insurance Program in Rural Cambodia

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# CONTENTS

# Introduction[1]

When people experience a major health shock, their medical expenses typically rise and their contribution to household income and production (cooking, childcare, etc.) declines (Wagstaff and Doorslaer, 2003; Gertler, Levine & Moretti, 2003; Gertler and Gruber, 2002). According to the WHO, "Each year, approximately 150 million people experience financial catastrophe, meaning they are obliged to spend on health care more than 40% of the income available to them after meeting their basic needs." (WHO Factsheet No. 320, 2007)

Low household income combined with high medical expenses can also lead to debt, the sale of assets, and the removal of children from school, especially in poor nations. A short-term health shock can thus contribute to long-term poverty (Van Damme, *et al*., 2004; Annear, *et al.*, 2006). At the same time, because households often cannot borrow easily, they may instead forgo high-value care. When they do access care, it is often of low quality (Das, Hammer and Leonard, 2008), which can lead to poor health outcomes.

Theory suggests that health insurance can address some of these problems. By covering the cost of care due to a health shock, insurance can help to smooth consumption, reduce asset sales and new debt, increase the quantity and quality of care sought, and improve health outcomes.

Unfortunately, rigorous evidence on the impact of insurance is scarce, and there are even fewer studies on the effects of insurance in developing countries. One reason for the lack of evidence is that it is difficult to find a valid control group for the insured. We cannot simply compare the outcomes of insured and uninsured households, since health insurance status is typically strongly correlated with other household characteristics. For example, rich and well-educated households typically have both better health (Asfaw, 2003) and better health insurance coverage (Jütting, 2004; Cameron and Trivedi, 1991), but the positive correlation between health and insurance status tells us nothing about the impact of insurance. On the other hand, those in poor health may be more likely to pay for health insurance (Cutler and Reber, 1998; Ellis, 1989), but a finding that the insured tend to be less healthy does not of course imply that insurance causes illness.

On the following pages, we review past evidence on the impact of health insurance, focusing on studies in which the health insurance status of the subjects is plausibly exogenous, as well as studies that have attempted to eliminate the bias associated with self-selection. A majority of the rigorous studies are based on data from the United States. We follow Levy and Meltzer (2004, 2008) in both our choice of U.S. studies and in our main conclusions.

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# 1. The effects of health insurance: review of past studies

The literature describing the causal effects of health insurance on health outcomes derives almost entirely from the United States. We first review studies that use policy changes (including one in Canada) as an exogenous source of change in health insurance status, and then we describe the single randomized trial to date: the RAND Health Insurance Experiment.

## 1.1 "Quasi-random" experiments

Several studies take advantage of changes in government health insurance policy to measure how the resulting change in people's health insurance status affects health outcomes. A change in insurance status due to a policy shift can be considered exogenous to an individual, since the individual's actions do not affect policy. Other studies take advantage of well-defined eligibility rules to compare health outcomes for individuals who are barely eligible to those who are just barely ineligible, since whether an individual falls just above, or just below, an eligibility cutoff is somewhat arbitrary. By examining health outcomes for people whose insurance status is the result of policy changes or due to eligibility cutoffs, these studies produce credible impact estimates.

Fihn and Wicher (1988) and Lurie, et al. (1984, 1986) studied insurance impact based on the cancellation of certain insurance benefits for former U.S. veterans in Seattle and for some poor households in Los Angeles. In both cases, the health status of the insured was not strongly correlated with the choice by the Seattle VA Medical Center and the State of California, respectively, to withdraw insurance coverage. For both groups of people, the authors found that the cancellation of their insurance coverage was associated with reduced use of medical care and increases in blood pressure.

Several studies have examined the effects of two very large health insurance programs in the United States: Medicare (for those over 65) and Medicaid (for the poor and near-poor). Currie and Gruber (1996a, 1996b and 1997) studied how the variable timing of the expansion of Medicaid across states affected children and pregnant women. In states where Medicaid was first to expand, both groups (children and pregnant women) increased their doctor and hospital usage, as compared with states where the program was enacted later. The authors estimated that the higher utilization of care led to a decline of 1.3 deaths per 10,000 children, relative to a baseline mortality rate of 3.1 deaths/10,000 children. They also found an 8.5% decline in the infant mortality rate. In contrast, in a smaller study, Haas (1993a and b) studied the expansion of the Healthy Start program for low-income pregnant women in Massachusetts and found that making more people eligible for participation (by raising the cut-off to 185% of the poverty line vs. 100% previously) had no effect on birth outcomes.

Lichtenberg (2002) and Card, Dobkin and Maestas (2007) studied the effect of Medicare by comparing the health and health care outcomes for people just under age 65 (many of whom typically lack health insurance) to outcomes for those just over 65 (all of whom are covered by Medicare). Both papers found that the group with more insurance received more care and had better health outcomes (although the reductions in mortality were often not statistically significant in the study by Card, *et al.*). Finkelstein (2005) found that health care utilization increased fastest in areas where Medicare had caused the largest increase in health insurance coverage; Finkelstein and McKnight (2005), however, did not find that such areas experienced a faster decline in mortality.

Hanratty (2005) compared health outcomes across the Canadian provinces that were early adopters of universal health insurance (1962) to outcomes in provinces that were later adopters (up to 1972). Her results suggest that there was a significant 4% reduction in the infant mortality rate as a result of this government health insurance program, and a smaller 1.3% reduction in the occurrence of low birth weight.

## 1.2 The RAND Health Insurance Experiment

The RAND Health Insurance Experiment (from 1974 to 1982) in the United States is the only randomized experiment to date examining the effects of health insurance on health outcomes. This experiment tracked almost 4,000 people in 2,000 families. Some families were randomly assigned to a free health care plan while others were assigned to one of several plans that required varying co-payments.

The study found that those assigned to a cost-sharing plan sought less treatment than those with full coverage (Lohr, *et al.*, 1986; Manning, *et al.*, 1987). For those with cost-sharing, the forgone treatment was primarily for preventive visits to doctors and “elective” care, such as mental health treatment, as opposed to emergency care (Keeler, 1992).

For most health outcomes, there was no general health benefit to having more complete insurance, i.e. full coverage (Brook, *et al.* 1983). Specific health benefits were found, however, for individuals with poor vision and for those with elevated blood pressure. Importantly, the improvement in blood pressure rates led to a statistically significant 10% reduction in mortality risk, apparently due to increased detection and treatment of high blood pressure among low-income households with access to free health care (Keeler, 1992).

## 1.3 Evidence from poor nations

To our knowledge, no study of insurance in developing countries presents a rigorous causal relationship between household insurance status and health spending, health utilization or health outcomes.

For example, Wagstaff and Pradhan (2003) overcame some of the selection bias plaguing most such studies in their work on Vietnam’s health insurance (VHI) program. This program was much more likely to cover those enrolled in high school and college or those working for the government or state-owned employers. To reduce selection bias, the authors “matched” insured households to uninsured households with

similar characteristics, and compared outcomes of the insured to those of the uninsured with similar profiles. They also used a double-difference estimator, comparing the change in outcomes over time between the insured and uninsured. This technique reduces selection bias since it does not assume that the insured and uninsured households are identical on unobservable characteristics.

However, as the authors note, their study still had to assume that in the absence of insurance, changes in outcomes over the study period would have been the same for the insured and the uninsured, an assumption that may not hold. With this possible bias in mind, the authors did find positive impacts of insurance. In the insured group, children grew more rapidly and adults had improved BMI (body mass index) scores. The authors also found that the probability of contact with health care providers was higher, out-of-pocket health expenditures were lower, and non-medical household consumption was higher among the insured group.

Though a firm causal relationship between insurance status and outcomes has yet to be established, many studies do present interesting evidence on the correlation between insurance status and outcomes. In all of these studies, the relationship tends to vary across income deciles.

For the most part, other non-causal studies find a positive relationship between insurance coverage and health care utilization (Jütting, 2004; Yip and Berman, 2001) and quality of care (Wagstaff, *et al.*, 2007; Dong, *et al.*, 1999).

Results are more mixed regarding the relationship between insurance status and health expenditures. Most studies find a negative relationship between insurance coverage and health expenditures (Jütting, 2004 in Senegal; Jowett, *et al.*, 2003 in Vietnam; and Yip and Berman, 2001, in Egypt). But some find that out-of-pocket spending is the same or even higher for the insured when compared to the uninsured, as for example, Wagstaff, *et al.* (2007a) and Wagstaff *et al.*, (2007b), in their studies of China. These authors explain this surprising finding as being a result of the institutional structure of health care in China, which favors increased utilization and substitution toward more expensive services and treatments.

Note that insurance status as presented in these studies is almost certainly subject to selection bias, since participation in a health insurance plan—whether through self-selection or selection based on other factors (for example, being a public employee)—is related to many other household characteristics and is thus not exogenous. As a result, the uninsured in these studies are typically not a plausible control group for the insured. Studies using the uninsured as a control group can thus not produce causal impact estimates.

## 1.4 Summary

It is clear that health insurance usually increases access to health care. The causal effect of that access, perhaps not surprisingly, depends on the value of that care. The scattered results from the United States and other wealthy nations suggest that health insurance induces greater utilization of health services and modest improvements in health. It remains an open question whether, and to what extent, insurance in poor nations increases health-care access and utilization, reduces financial vulnerability and improves health outcomes.

## 2. Literature review of selection into insurance

Understanding who chooses to purchase voluntary health insurance is important for ascertaining both how well-targeted the insurance product is, and the financial viability of the insurance program. As explained below, financial viability is particularly sensitive to the existence of adverse (vs. positive) selection.

### Adverse selection vs. positive selection

In insurance, the extent of adverse selection (vs. positive selection) has important repercussions for an insurance provider's ability to cover its costs. Standard insurance theory predicts that insurance markets are vulnerable to adverse selection, which occurs when sickly people, and those who take more risks with their health, are more willing (than healthy people) to purchase health insurance because they know their health care costs are likely to be higher than the premiums charged (Rothschild and Stiglitz, 1976; Akerlof, 1970). If adverse selection is severe, voluntary health insurance cannot be financially sustainable; only the most costly patients would find it worthwhile to purchase insurance, and premium levels would not be able to cover the high costs of care.

On the other hand, another group of potential health insurance buyers are those who are very risk-averse regarding both their health and their finances. These people may buy insurance to protect themselves financially, and they may also be very healthy because they take extra care of their health. This phenomenon, known as positive selection, may balance out adverse selection and allow an insurance company to pool risks and thus remain financially viable without subsidies.

Despite the importance of calculating the extent of adverse selection, to our knowledge there have been no experimental studies of adverse selection in the health insurance markets of poor nations, and the existing studies for developed nations provide mixed results.

Non-experimental studies from developing countries sometimes find enrollment to be more prevalent in households with chronically sick members, which is evidence of adverse selection (Wagstaff, *et al.*, 2007). They also commonly find higher enrollment rates among wealthier households, potentially leading to positive selection, if in fact wealthier people do tend to be healthier (Wagstaff, *et al.*, 2007; Wagstaff and Pradhan, 2005; Jütting, 2004; Lamiraud, *et al.*, 2005).[2]

Some studies in wealthier nations find evidence that people who expect to have higher medical expenditures (measured in a variety of ways across studies) are more likely to buy insurance, or to pay higher premiums for health insurance, than those with lower expected medical expenditures (Cutler and Zeckhaus, 1998). However, the extent of adverse selection in health and other insurance is often found to be minimal (Wolfe and Goddeeris, 1991; Finkelstein and Poterba, 2004) or non-existent (Finkelstein and McGarry, 2006; Cardon and Hendel, 2001; Cawley and Philipson, 1999). There is also some recent evidence of positive selection in health insurance coverage (Fang, *et al.*, 2008).

[2] Evidence from an experimental study of rain insurance conducted in India finds that farmers are more likely to purchase rainfall insurance if they face higher crop risk (evidence of adverse selection) or if they are wealthier (consistent with the health insurance experience in developing countries). Contrary to standard economic models, insurance purchase is also more likely among farmers who more familiar with the insurance provider and those who are less risk averse. The authors hypothesize that lack of familiarity with insurance as a product—a marketing challenge that faces SKY as well—may be the cause of these surprising findings. (Giné *et al.*, 2007)

Recent theoretical work has focused on how the problem of adverse selection may be mitigated by various factors, such as: (1) wealth, which could both increase the probability of insurance purchase and improve health outcomes (Case, *et al*., 2002; Smith, 2005; and Currie, *et al*., 2003); (2) risk aversion, which could increase the probability of insurance purchase and decrease the amount of risk one takes with one's health (Chiappori, *et al.*, 2004; Jullien, *et al.*, 2003); or (3) optimism, which can cause some people to underestimate the probability of accidents, resulting in them not buying enough insurance and also not taking as many precautions, leading to a higher probability of a health shock (Koufopoulus, 2005).

# 3. Applying lessons learned to the SKY program in rural Cambodia

The impact evaluation of the SKY micro health insurance program in rural Cambodia focuses on three major areas:

**(1)** health care utilization (such as the utilization of public health facilities, the substitution of private health centers and traditional medicine with public facilities, preventative care utilization, timely utilization of curative care, and self-medication);

**(2)** health outcomes (such as frequency and duration of illness, subjective self-health assessments, objective health measures); and

**(3)** economic outcomes (such as medical spending, sales of productive assets, household debt and loans).

Results from other impact analyses helped to inform both our choice of which outcomes to measure and how we chose to measure them, as described below. (See Appendix for a more detailed description of the measures used in the baseline evaluation survey.)

## 3.1 Focus on three major types of outcome

The first set of outcomes, on health care utilization, are obvious measures to include in this survey, for two reasons: they are consistently found to be affected by health insurance status; and utilization of health care is the channel through which access to health insurance affects the second set of measures (health outcomes). Since health insurance directly reduces the cost of seeking treatment, it is not surprising that utilization is consistently higher among those with health insurance, in developed and developing countries alike, and that rigorous evaluations consistently find the relationship to be causal. Health care utilization is an important effect to measure in its own right, but it is also important to examine it as the channel through which health insurance affects health outcomes.

The link between health insurance and health outcomes is less consistent across studies. In developed countries, many studies find improvements in health status when insurance status improves, but only on certain health measures (e.g. blood pressure, vision, and in a few cases, BMI and infant mortality rates). The fact that only certain health measures are affected by access to insurance speaks to the importance of choosing our health measures carefully and focusing our survey on health outcomes that could be affected by access to SKY, given the health care context of Cambodia.

The third set of measures (economic outcomes) is also essential to a complete study of the impact of health insurance. Medical expenditures are consistently cited as a major economic burden for poor Cambodian families (Van Damme, *et al.*, 2000; Annear *et al.*, 2006; World Bank, 1999), and health insurance is, at its core, a product meant to reduce the financial risk of health problems. In addition, descriptive evidence suggests that health insurance may really improve economic outcomes in poor countries.

Most of the evidence on the relationship between economic outcomes and insurance status comes from developing

countries. With the exception of evidence from China, there tends to be a positive relationship between access to health insurance and good economic outcomes (namely, lower out-of-pocket health expenditures and higher non-medical consumption). This leads us to be hopeful that access to SKY insurance will improve economic outcomes for Cambodian families. However, as previously discussed, studies in developing countries to date are largely descriptive rather than causal. By including economic outcomes in the survey, this study will help to establish the firm causal link that is missing in other studies.

### 3.2 Addressing the issue of selection

The basic question of whether there is adverse selection in health insurance is fundamental for most insurance providers, since the answer allows them to gauge their ability to be financially sustainable.

At the same time, the literature regarding selection in insurance coverage is moving beyond this question and attempting to understand in more depth how people make decisions to purchase insurance. A more comprehensive understanding of who chooses to purchase SKY should help us understand why many people choose not to purchase insurance, and how to overcome the challenge of low uptake rates. For example, the question of positive selection does not fit in with standard theory, and there is still little empirical research testing to ascertain its existence. The randomized evaluation in Cambodia will offer the opportunity to test several of the competing models of selection.

The major types of questions pertaining to insurance selection are: (1) household characteristics (such as wealth, income, age and sex of household members); (2) questions aimed at predicting health status (such as health problems prior to being introduced to SKY, and the health status of all family members as reported by the survey respondent); and (3) questions aimed at understanding other factors influencing purchase of insurance (namely, risk aversion and discount rates), which are discussed in a more recent theoretical work. Question types 1 and 2 (household characteristics and health status) are used by many other surveys and were adapted to fit the Cambodian context. (See Appendix for further detail on the baseline evaluation survey.)

Because it is difficult, if not impossible, for people to respond to questions about their risk aversion or discount rate, questions on risk aversion and discounting are particularly challenging. While risk aversion and discount rates are often measured using games and questions (involving real money prizes and consequences), a less-costly alternative is to rely on hypothetical questions in the survey itself. It is also important to draw on existing empirical work on the predictive power of these types of hypothetical questions. Often-used measures of risk aversion include hypothetical lotteries and questions regarding behavior that is risky to one's physical or financial well-being (Barsky, *et al.*, 1997; Harrison, *et al.*, 2007; Bellemare and Shearer, 2006; Anderson and Mellor, 2008). We use these types of questions in the SKY evaluation survey (see Appendix for further details).

The attached Appendix provides a full description of how, and why, survey questions were chosen.

## Conclusion

The success of a health micro-insurance program depends on its ability to improve health and economic outcomes while maintaining financial sustainability, or at least assuring donors that their money is being spent in the most efficient way possible. Because health insurance is relatively new in many developing countries, little is known about the risks and benefits of offering micro-insurance in developing countries, and how to best design an insurance program to meet the needs of the poor. Randomized experiments like the SKY evaluation should contribute to the literature by providing rigorous answers to many of these questions.

# Appendix: Instruments of the SKY impact evaluation

## 1. The Baseline Survey

The following is a general summary of the intent behind the questions included in the final Baseline Survey.

The Baseline Survey collects data in order to address the first two (of the four) SKY Impact Evaluation (IE) objectives.

**Objective #1:** To estimate the causal effect of health insurance on households via:

- Economic outcomes (e.g., medical spending; sales of productive assets household debt and loans);
- Health outcomes (e.g., frequency and duration of illness; subjective self-health assessments; objective health measures);
- Health utilization (e.g. public health facility utilization; substitution to public facilities from private health centers and traditional medicine; preventative care utilization; timely utilization of curative care; self-medication).

**Objective #2:** To understand the determinants of the take-up of health insurance; the extent of adverse and positive selection; and the potential for risk–pooling based on:

- Household characteristics (e.g., wealth and income; age and sex composition; past health utilization; health status; perceptions of public facilities; expected utilization of public facilities; access to alternate sources of health financing; risk aversion);
- Public health facility characteristics (e.g., objective measures of quality; convenience of access).

The Baseline Survey questionnaire is designed to collect data on:

1. Household demographics;
2. Household assets and debt, with a focus on health-related debt;
3. Incidence of health shocks and health-seeking behavior (last year);
4. Health indicators (immunization, anthropometrics, preventive health);
5. Trust in and perceptions of SKY and health providers;
6. Selection, risk aversion.

The baseline instrument also includes:

- An invitation to bring children to the weighing station;
- Anthropometric form (one per weighing station);
- Referral slips for seriously ill or injured children;
- Extra forms to complete the household list;
- Extra forms for listing health shocks;
- Interviewer's authorization letter;
- Khmer calendar-age converter;
- Health log books with instructions.

We made the instrument as simple to administer as possible, so as to increase understanding among respondents and reduce errors.

**Respondents**

Trained Domrei interviewers administered the questionnaire to one eligible respondent in each sample household. Eligible respondents are (by order of preference);

- Adult woman, mother of children in the household
- Household head
- Any other adult woman
- Any other adult male.

We expect most of our female respondents to be functionally illiterate and to have an incomplete primary school education. The instrument was designed specifically for these types of respondents.

**Wording and flow of questions**

We applied the following questionnaire design principles:

- We designed the questionnaire directly in Khmer, and provided English translations for non-Khmer speakers.
- All questions are worded so that a person with only 2 or 3 years of primary education can understand them. Questions are short, concrete and use simple words.
- The interview was designed to be as short as possible in order to minimize the burden of the interview for the sample families. Best practice is a 30-40 minute interview, on average (40 minutes is close to the maximum time humans can concentrate). Simple, skip-forward instructions speed up the interview.
- We aim to collect health and economic data with sufficient precision and detail to capture even small changes between survey rounds.
- We avoid open-ended questions as much as possible because they slow down the interview, data entry and analysis.
- We avoid abstract and theoretical questions.
- We propose scenarios that relate to the lives of rural Cambodia.
- We excluded questions that captured imprecise, biased or random data during the pre-test.
- Filters and skip codes instruct the interviewer when to move forward in the questionnaire.
- Interviewer will record nicknames on the household roster and refer to the roster to avoid omissions.

**Question selection**

Questions were assessed and prioritized according to the following criteria:

- relevance to the survey objectives: impact measurements;
- relevance to baseline: we expect change over time;
- measurement precision, robustness, and sensitivity, to "real" change over time;
- sample size requirement: the same measurement cannot be achieved in a smaller survey or interview sample.

**Questionnaire content**

**Cover page**

The cover page records general household information, such as location and household identification code, as well as interviewer and administrative information. In addition, the interviewer records the housing materials and appraises the household's wealth rank. This subjective measure has been found to be a simple yet reliable way to measure household wealth.

**Section 1: Respondent's background**

This section aims to collect general information on the respondent. Simple questions are asked that allow the interviewer to gain the respondent's trust. The following data are collected:

- Ethnicity (self-reported cultural identity validated by mother tongue and religion)

• Religion (to distinguish the Cham from the Buddhists)
• Number of toilets (a measure of wealth)
• Health care decision-maker (to assess whether the respondent makes decisions on these matters)
• Education data on the respondent and the household decision-maker (to judge if education is a factor in insurance take-up).

**Section 2: Household members**

Section 2 is the household roster. A de facto household member is defined as anyone who has slept in the house at least 5 nights out of the 7 days before the interview. This section aims to:
• collect sample household demographic data (age and sex);
• identify children under five for the immunization and anthropometric modules;
• collect a subjective measure of member health (as an outcome measure, and to understand whether households with sick members buy insurance more often) collect information on school attendance (to understand whether health shocks induce dropout from school).

**Section 3: Household assets**

In section 3, the interviewer records the household's assets and debt.
The goal is to allow for:
• A comprehensive inventory of all easily disposable household assets with a value of over 20,000 Riel. This will allow us to follow these assets over time and systematically investigate asset losses without relying on recall.
• Creation of a proxy for total household asset value in Riel. This will allow us to quantify any change in assets over time. It will also allow us to establish more precise wealth categories for households in our sample.
• Collection of information on household debt, to understand whether households take out high-interest loans to pay for health care. Note that household debt will probably be one of the first things to change after a major health expense. It may also be high at baseline due to a previous health shock.

Data are collected on general household assets, number and type of farm animals, village land ownership, house type and area, farmland, farm tools, business stock, gold/cash savings, loan capital and loans.

**Section 4: Health shocks**

A health shock is defined as a health problem that prevents a household member from working or going to school for more than one week. In Khmer, "work" includes household chores. In addition, a household is considered to have suffered from a health shock if a household member died, or if anyone in the household spent over 400,000 Riel (100USD) on a single health problem. It is expected that SKY will have the greatest impact on households that are faced with a major health shock.

At baseline, we are ideally measuring the impact of health shocks in the absence of SKY. However, because the survey was administered several months after the start of SKY, some households have already had several months experience with SKY. Thus, we ask for health shocks for the previous 12 months, and ask households to indicate the month of the health shock. In this way, we can distinguish between shocks that occurred before or after a household was a member of SKY. The fact that we only ask for large health shocks make us more confident that households will recall these problems even as far as 12 months prior to the survey.

The time gap between a household's enrollment in SKY and the implementation of this survey has the benefit of allowing us to compare a single household's behavior both before and

after they were SKY members. In addition, through subsequent surveys, we can compare outcomes between SKY and non-SKY members who had health shocks.

The first three questions in Section 4 identify the health problem: month, type of problem (left open; to be post-coded), the household member and his/her survival status.

We also ask for the number of days lost due to the health shock, for both the patient and other household members. We expect that other household members will lose workdays to care for the patient, accompany the patient to the hospital and stay with him/her, etc. These questions can be used as an impact measure, since SKY-induced treatment may decrease the severity and thus the length of the illness. Time lost due to illness is also an economic impact measure, since working members lose valuable income while caring for the sick.

We include several questions on health-seeking behavior. SKY members may be more likely to seek treatment from a public health care facility, and may seek treatment sooner. Thus, the type of facility visited and the length of time before treatment are both important impact measures. In addition, SKY members should have fewer out of pocket expenses, especially if they are more likely to seek treatment at public health care facilities, where SKY covers the cost of treatment and drugs. Cost of treatment is broken down into transport and cost of treatment. The cost of drugs and consultation fees are often lumped together, so many respondents cannot make the distinction between the two.

We also ask how the patient paid for these expenses. SKY members may be less likely to sell an asset or take out a loan to pay for health care expenses, thus this is an important impact measure.

**Section 5: Maternal and child health**

This section focuses on the health indicators on which SKY is likely to have an impact: contraceptive prevalence; delivery at a government facility; delivery attended by a health professional; at least two ANC visits; at least two tetanus injections.

**Section 6: Trust**

This section has two parts. The first is about trust in SKY, and also in government and private insurers. The second part asks about satisfaction with government and private health facilities.

We adapted the questions on trust from existing condensed measures for assessing patient trust in a physician, a health insurer, and the medical profession, available at: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1262715

The original health-insurer scale contained only 11 items and used very simple language. It was thus simple to translate into Khmer. The concepts measured appear generic enough to translate well across cultures - although to date this has not been done. We contacted Professor Mark Hall, who was kind enough to send us copies of all the scales he and his team have developed, and he gave us permission to adapt them - with attribution. The Documentation was sent to CEGA in January. We translated the scale and tested it (n=40 families). The translated instrument worked well. However, we shortened it because the questionnaire was found to be too long.

Our aim is to compare the trust that the respondents have in (a) SKY; (b) private practitioners; and (c) government health

staff (they are not necessarily doctors).

We hypothesize that:

• People who buy into SKY have greater trust in government health staff than those who do not buy SKY;

• SKY will improve the trust people have in the government staff over time (an impact of SKY on health centers).[3]

In the second part of this section, we ask respondents about perception of, and satisfaction with, health facilities. We ask them if they have been to a government health facility. If they have, we ask if it was clean, if staff were polite, if the service was affordable, and in cases when the respondent received treatment, if the treatment was effective. The questions are neutral statements and the answers are prompted. We tested these questions in previous surveys in Cambodia and the respondents understood them well.

**Section 7: Selection into insurance**

Section 7 aims to better understand what motivates households to join insurance plans. The SKY program historically has had very low up-take, especially considering the subsidized price. One important policy question is what type of household is buying insurance, and whether targeted households are being served. Theory tells us that some households may join insurance because they have high expected health care costs; others may join because they want to avoid large expenses in the event of an unexpected health shock. Households may not buy insurance because it is a new product that they do not understand, or because they do not want to pay the premium, even if it means potentially saving a lot in the future.

Section 7 contains the following questions:

• A hypothetical question about working in a factory where there is a history of injuries. This question was used in a similar study of health insurance impact and take-up in the Philippines[4]. The purpose is to understand whether households that are willing to take risks with their health are more likely to buy insurance, since these households may be more prone to injury.

• Do you know anyone who has spent 400,000 Riel on a health expense in the last year? (Neighbor, Friend, Family, Other). Theory would predict that a household is more likely to buy insurance if they know someone who has recently had a large health expense. If this is the case, health insurers can use this as a marketing tool to help potential buyers understand the benefits of insurance.

• Do you, or your spouse, play games of chance for entertainment? How much is gambled per month? On one hand, theory predicts that households more likely to take risks with their money would be less likely to buy insurance. On the other hand, households who take risks with their money may be more willing to spend money on an unknown product such as SKY. Sorting out these possible influences on take-up is important for understanding how to increase take-up of insurance products in developing countries.

• Would you prefer a payment now, or a larger payment in 12 months? Theory predicts that households that are unwilling to delay payment would also be less willing to part with income to pay the SKY premium. Again, this finding would be important in understanding the low take-up of SKY.

Selected questions were extensively tested, and many questions had to be deleted because: (a) few people understood them; (b) answers were random; and (c) they took too long to administer.

[3] Note that causation will be difficult to disentangle, since some households will buy SKY because of trust in health facilities, and some SKY members will learn to trust government health facilities only after buying SKY. Examining trends over time will help us to analyze the two theories.

[4] Source: Conversations with Professor Dean Karlan at Yale University.

One additional question asks how a household would pay for a hypothetical 400,000 Riel health expense. This question aims to understand whether households that have more self-insurance options (e.g., ability to borrow from family or use savings) are more or less likely to buy insurance. If households with many self-insurance options buy insurance, SKY may not increase health care utilization, but instead would change the way that households pay for this health care[5]. Thus, this question teaches us about both impact and selection.

**Section 8: Immunization**

This section collects immunization data by recopying the data from the yellow immunization card given to families at the time of immunization. We expect SKY to impact immunizations through both the incidence of immunization and the timeliness of the vaccinations. Thus, we record the date of each vaccination.

**Section 9: Anthropometrics**

This is the standard form used by Domrei Research and Consulting, and it has been tested hundreds of times.

## 2. The Clinic Survey

The Clinic Survey is administered in all health centers within operational districts in which SKY is running Lucky Draw meetings.

The objective of the Clinic Survey is to collect data on health center quality in order to:

- Assess if, and how, quality of service improves over time;
- Compare perceptions of quality from the household survey with indicators of quality reported by MF;
- Determine if perceptions of HC quality and SKY uptake and renewal are correlated.

Ideally, the Clinic Survey could be used to detect a causal impact for SKY on the health facilities. However, because SKY chooses health facilities based on quality, and because we do not have a valid control group with which to compare these facilities, it would not be possible to establish a causal link between SKY and health-facility changes. Since the results of this survey would then not be conclusive, we cut back the scale of this survey and reallocated the funds to increasing the sample size in the Household Survey.

**Data-collection Method**

- Domrei designed and provided a short and simple checklist questionnaire with simple instructions to all MFs.
- Domrei trained MFs (three hours, after a SKY coordination meeting).
- MFs completed the questionnaires at the HC and returned them to Domrei via the SKY office in Phnom Penh.
- Domrei checked the questionnaires, entered and cleaned the data and sent them to CEGA for analysis.
- Procedure will be repeated approximately 24 months later.

**Limitations**

- MF cannot provide data on the skills of the clinical staff.
- MF cannot observe client-patient interactions (observer bias and confidentiality) and side payments.
- MF can change between two rounds. MF opinion and perception can also change, so changes over time in MF opinions are not very reliable proxies for changes in HC quality.

[5] The success of this question requires that households list each option that is available to them, and that SKY households not list “SKY would pay” as the only option.

**Measures of quality**

| Data | Method | Measurement |
|---|---|---|
| Sufficiency of drugs | MF fills inventory checklist of essential drugs | % of drugs not available |
| Cleanliness | MF completes checklist | five indicators (0-5) |
| Share of scheduled hours the center is open | MF observes and reports on daily schedule grid | day, time and total number of hours per week when no staff was present for consultation (count period > 30 minutes) |
| Side payments typically paid by SKY and non-SKY members | MF opinion | Prevalence of "thank you" payments |
| Changes in health center quality since MF started working at this health center | MF opinion collected through questionnaire (4 questions) | cleaner, staff less often absent, HC open hours, staff more respectful of all clients |

The instrument is composed of one cover page and five sections:

- Section 1: MF's opinion on if, and how, the health centre has changed since he/she started working there.
- Section 2: MF records operating hours for seven consecutive days.
- Section 3: MF records stock depletions for a selection of essential drugs and supplies.
- Section 4: MF observes and records five indicators of cleanliness.
- Section 5: MF records presence of selected equipment.

## 3. Village Monographs

The Village Monographs are intended to answer one fundamental question: why do people pay for SKY insurance?

The above question will be addressed through different angles:

- Why do people buy SKY, despite the poor reputation of government health services?
- Why do people stay with SKY even though they continue to go to private providers?
- Why do they NOT drop out when SKY does not meet expectations?
- Various other questions.

**Rationale**

We know a significant amount about why people do not like SKY. The reasons why people do not buy SKY, or why they drop out, have been amply documented in the IA/MF survey report and numerous GRET surveys. GRET is also fully aware of the issues people have with SKY and the public health system. There is therefore more programmatic value in studying the reasons why SKY is popular, among some people and in some communities. Reasons for SKY's popularity can also inform its marketing strategy by providing relevant real-life examples and positive messages about SKY.

**Research Objective:** To understand the reasons why people become, and remain, SKY clients.

**Methods:** We use a mix of qualitative research methods.

1) Village maps: graphic representation of social networks, and how they influence SKY membership.

2) Narrative: interviews with key informants about the history of SKY in the village and their ideas on the future of SKY in the village.

3) Case studies: discussions with current and past SKY members on their experience with SKY: why they bought SKY, why they stayed, why they dropped out, what changes they recommend to improve uptake and lower dropout rates.

4) If resources permit, we will also study how well rural Cambodians understand the concept of "health insurance." We will attempt to shed light on this issue via interviews with both non-members and members.

**Selection of villages:** We purposely select six villages in Ang Roka and Kandal from the SKY village lists, using the following criteria:

1) SKY membership patterns (see Table 1).

2) Health catchment area: Villages must come from several different HC catchment areas.

3) Non-study villages: None of the villages were exposed to the high-coupon randomisation scheme, since this influences membership uptake and is an abnormal business model.

4) Date of SKY implementation: SKY implementation will have started no later than 2006.

**Table 1: Characteristics grid for the six villages with SKY membership (chosen for in-depth study)**

| | A. Many members | B. Few members |
|---|---|---|
| 1. Low dropout rage | 2 | 1 |
| 2. High dropout rate | 2 | 1 |

**Cell A1** contains the "best" villages: high number of long-term members with few dropouts. This is the ideal scenario for sustainability and long-term impact on health and household economics.

**Cell A2** contains villages in which membership turnover is high, and late adopters are not deterred by early adopters dropping out. This is less ideal for sustainability since turnover might indicate strong adverse selection and low impact on health and household economics.

**Cell B1** contains villages in which membership does not increase, despite apparent satisfaction by early adopters. This would indicate, for example, that SKY is relevant for a very specific and small target group who benefit from the scheme.

**Cell B2** contains apparently "failed" villages, in which a small number of SKY members persist with SKY, despite a high dropout rate in general.

We will also have some questions for SKY and health-center staff about how SKY has affected the health centers.

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