A STUDY ON THE FEASIBILITY OF HEALTH INSURANCE SCHEMES FOR COMMUNITY BASED GROUPS' IN ADDIS ABABA CITY: A Case Study on Iddirs'.

Israel Fekade[1]

Abstract

This study analyses the feasibility of CBHIs provision for a community based organizations called iddirs by determining the member households' willingness to pay for the proposed scheme. Three iddirs are purposively selected from areas that are believed to constitute largely of the low income earning and also informally employed groups of the society in the capital city, Addis Ababa. From the three iddirs 210 households were systematically sampled for an interview. A closed ended WTA question followed by an open ended WTP question under hypothetical CBHIs was presented for the respondents to elicit their maximum willingness to pay amounts. The value member households 'attach to the proposed health insurance is estimated using the contingent valuation method (CVM).

The results show that the mean willingness to pay amount for the open ended question under the proposed CBHIs scheme is 11.56 birr per month. This amount of WTP even from the low income earning groups of the society shows that CBHIS can help to generate sufficient amount of resource that can finance the deficit of the health sector of the country without evicting the poor and those informally employed section of the population from the health care market. According to the results from the Tobit model income, secondary and tertiary education dummies, status of the respondent in the household, case of chronic disease in the household, occupation of the head and size of the household have a positive and significant effect on the amount of WTP. The Probit model shows that age, marital status, respondents status, income of the household, health care need, size of the household and occupation of the head (all of them with a positive sign) and the bid price with a negative sign, have a significant effect on the probability of accepting the bid. The setting of premium prices should consider the ability of payment and the willingness to pay of households so as to assure the sustainable provision of the scheme. Public awareness should be adequately enhanced on the functioning of the schemes and also the benefits that can be gained from it so that the service can insure a wider coverage.

[1] israelfekade@gmail.com

1.   Introduction

In a world of plenty, it becomes increasingly unacceptable that people die or suffer because they have no access to even the most basic of medical care. What is equally distressing is that, when poverty is the result of large or catastrophic health expenditures (Asfaw and Braun, 2005). With the view to cease such events, many developing countries governments' promise free health care for all, but fail in the delivery. This long lasted policy failure in this area persuades us to rethink the reliance on government as the sole financier or provider of health care (Gaag, 2009). In richer economies, insurance achieved through broad public action and appropriately developed private mechanisms has fundamentally changed the lives of poor people. This indicates that the provision of insurance for the poor, covering a variety of risks, could well be a key milestone throughout the process of bringing equity in health care and also the fight against poverty.

The health situation in Ethiopia is one of the worst in the world. The per capita health expenditure, the health professionals, and health facilities population ratios, etc. are very low even by the standard of Sub-Sahara African (SSA) countries (Asfaw and Braun, 2005; FMOH, Health Care Financing Team, 2006). In response to the prevailing and newly emerging health problems the Ethiopian government has developed a Health Sector Development Program (HSDP) which proposes long term goals for the sector and the means to attain them by way of a series of phases. Despite this effort, the national health expenditure per capita in 1996 and 2000 were US$ 4.5 and US$ 5.6 and for that of 2004/05, it was US $7.14 (which is half less than the Sub- Saharan African per capita average of US$13 for the same period) and it even went down to US$2.23 for the year 2007/08 (FMOH, Planning and Programming Department, 2007/08).

This indicates that the government is off track towards its HSDP III target of a per capita expenditure of US$9.60 by 2008/09 and also that a considerable additional resource mobilization is required to reach the MDG targets or the US$34 per capita recommended by the World Health Organization's (WHO'S) Commission for Macroeconomics and Health to deliver essential Health services in developing countries (MOH, 2007/08; FMOH, 2006). This financial deficit has a direct implication on the health care financing system of the country.

Until recently the health financing practice in Ethiopia demanded that part of the cost be covered through out of pocket user fees at the time of sickness (FMOH, 2008). The exact coverage of the population with in a health insurance scheme is not exactly known due to its insignificance from the overall insurance coverage (NBE, 2007/8). It is such contexts that point towards the need to undergo a health sector reform (HSR) in the area of health care financing; designed to improve the functioning and performance of the health sector financing system and ultimately, the health status of the poor.

The government of Ethiopia has currently set a strategy to design and implement social health insurance (SHI) and is pilot testing community – based health insurance (CBHI) in order to address the demand side thereby removing the financial barriers to access health services. While the Parilament of the Federal Democratic Republic of Ethiopia unanimously ratified the SHI proclamation in EFY 2003, the FMOH has endorsed the CBHI prototype directive in this same fiscal year. Four pilot regions (Tigray, Oromia, Amhara and SNNP) are selected and have adapted the CBHI directive into their regional context. Further, community sensitization and awareness creation activities at the community level and various training/orientation events at CBHI implementation were facilitated by the government. After the establishment of CBHI schemes in all the 13 woredas of the four regions has been heralded, the CBHI by-law was endorsed and the board of directors was established. Presently income is being generated from the schemes in the thirteen CBHI pilot woredas (FMOH, 2010/11).

This strategy by the government should be highly advocated as (CBHI) has represented a response to the problem of access to care and financial protection faced by those excluded from formal insurance systems, mainly poor people working in the informal sector across many low income countries. This bridges the gap in access and social protection between people covered by formal schemes and those left to pay for care out of their own pocket. However, since the monetary contribution of policy holders is the main engine of such schemes the analysis of clients' willingness to pay, especially in poor countries such as Ethiopia, is necessary for the sustainable provision of the scheme.

To our knowledge, there are only few studies made in Ethiopia on how to finance the health care sector of the country and focus mainly on the rural areas and regional towns of Ethiopia only and did not focus on the low income earning groups which are most vulnerable to risky situations and inefficient health care services. Therefore, this study focuses on estimating households' willingness to pay for a community based health

insurance scheme in three selected traditional associations (Iddirs') found in the capital, Addis Ababa, where most of the Iddir members are informally employed and with a low standard of living.

The general objective of the study is to determine the household's willingness to pay for the proposed health insurance scheme which covers a fixed amount of their health expenditure under a hypothetical voluntary scheme. The study also tries to identify the major determinants of household's willingness to pay for the proposed scheme and it further compares the WTP amount with the actuarially set premium prices in the insurance market. Thus this study is significant in that it analyzes the willingness to pay for CBHIs of low income earning and informally employed households which will in turn help to establish prices, and set potential subsidy levels.

2. Literature Review

2.1 Theoretical Review of Literature

2.1.1 Health Risks

In low income countries, life is more precarious. Beyond the obvious risks, for example, poor sanitation creates a greater risk of contracting infectious diseases (Mosley, 2001). A typical feature of medical treatments is that their consequences are not known with certainty in advance. They rather shift the probability that an individual will experience from one health state to another health state (Johansson, 1995). People seem to dislike risk and often are willing to pay insurance companies far more than the average loss they confront in order to eliminate the chance of really risky losses. We describe people who behave this way as risk adverse. Risk aversion arises from a simple additional assumption, namely that the marginal utility of income, while positive, gets smaller and smaller as a person's income gets larger (Phelps, 2002). To analyze the behavior of such individuals, a brief discussion on the concept of health in a risky world, following the work of Johansson (1995), will be considered next.

Let us consider an individual who maximizes his/her expected utility. The individual's health status is assumed to be given. Similarly, income, net of any taxes, is taken to be fixed. The problem of utility maximization for the individual can there for be written as follows:

Max U(x, z)

$$S.t. \quad y - P x = 0 \tag{2.1}$$

Where *x* is consumption good and *z* is the health status, *y* is the fixed income; p is a price vector of order 1Xn. Setting the first order conditions for the utility maximization problem in (2.1) and solving these conditions for x in terms of prices income and health yields demand functions for goods:

$$x = x \ (p, \ y, \ z) \tag{2.2}$$

substituting (2.2) into (2.1) yields the indirect utility function.

$$v = v \ (p, \ y, \ z) = u[x \ (p, \ y, \ z) \ z] \tag{2.3}$$

In order to illustrate the meaning of risk attitudes it is useful to consider an individual who faces an uncertain income. There are just two states of the world: the individuals' income is either high or low. Let p1 denote the subjective probability that the high income state occurs. The probability that the low income state occurs is therefore p2=1-p1. The individual is assumed to be equipped with an indirect utility function: $V \ (p, \ y_i, \ z)$ for each possible state of the world where i =1, 2, y_1 is a high income and y_2 is a low income state. The expected utility of the individual is:

$$E \ (V) = \Sigma_i p_i \ V \ (p, \ y_i, \ z) \tag{2.4}$$

Where E is the expectation operator. Expected utility is thus a weighted average of the utility attained in the different states of the world with the probabilities used as the weights. Taking partial derivatives of the utility function V *(p, yi , z)* with respect to income yields:

$$\partial v \ (.) \ / \partial y = v_y$$
$$\partial^2 v \ (.) \ / \partial^2 y = v_{yy}$$

An individual is said to be risk averse with respect to income risk if $v_{yy} < 0$ i.e. utility is depicted as an increasing function of income while all prices and health status are held

constant. Assuming that p1 =p2= 0.5 such an individual clearly prefers to get the expected income $y_E = 0.5\ (y_1 + y_2)$ rather than the 'gamble' since:

$$V\ (p,\ y_E,\ z) > E\ (V) = \Sigma_i p_i\ V\ (p,\ y_i,\ z)$$

Such behavior preferring the expected value of the gamble rather than the gamble is called risk aversion. The utility function of a risk averter is strictly concave in income. Conversely, an individual is a risk lover if V*yy* > 0. In this case the individual may prefer a risky prospect to a certain one even if the former gives a lower expected income. The risk lover has a utility function which is strictly convex in income while the risk neutral individual (V*yy*= 0) has a utility function which is linear in income. The cost of risk bearing is the amount of money a risk adverse individual is willing to forego in order to turn a risky prospect into a certain one.

The fundamental uncertainty driving the demand for health insurance arises not because of any financial events but rather because of the random nature of health and illness. The rational response of a consumer who becomes sick (to seek a cure for the illness with appropriate medical care) creates a financial risk, health insurance protects against this derived risk (Phelps, 2002). The problem of moral hazard and adverse selection are among those that affect the sustainability of a scheme. Moral hazard arises when there is a tendency to over utilize services as the policy holder has already pre-paid for the health services (Brenzel, 1999) and as it is difficult to observe the exact risk profile of each member of the population, insurance may attract those facing relatively higher risks on average leading to adverse selection problems (Brenzel, 1999).

2.1.2   Valuing health risks

The survey technique (the contingent valuation method) is the most widely used for the estimation of environmental benefits in particular, and recently this technique is also used in a number of health care studies. Contingent valuation is a survey method to elicit the maximum WTP for a good. First, the good and a hypothetical market in which the good can be bought are described to the respondent (the contingency). The respondent is then asked to state the maximum amount s/he would be willing to pay for the good (the valuation) (Bärnighausen et al., 2007).

A variety of different elicitation methods to measure WTP by CVM surveys exists, i.e. open-ended questions, payment cards, bidding games, and the discrete choice approach (take-it – or-leave-it), each having strength and weaknesses (Heinzen & Bridges, 2008). The central problem in a CVM study is to make the scenario sufficiently understandable plausible and meaningful to respondents (Asfaw & Braun, 2005). Johansson (1995) discusses the most well known problems and pitfalls in using the CVM and many of the principal biases that may appear in a CVM as follows. The first is *Free rider problem (strategic bias):* If consumers have to pay according to their stated WTP, either they may try to conceal their true WTP or may have an incentive to overstate their WTP in order to qualify for a lower price or secure a large supply of the (public) good. The second bias i.e. incentives to misrepresent responses may occur if the respondent reacts positively or negatively to the fact that a particular institution is sponsoring the study or avoids reporting his/her true WTP in order to please the interviewer. In this study, following Johansson (1995) a question which asks what expenses the respondents are planning to reduce in order to be able to pay the amount of money they specified to pay is also included so that respondents will take a caution not to overstate their willingness to pay.

The third type of bias which is implied value cues *(Starting bid bias)* is the case where a respondent may try to use some pieces of information provided by the researcher as cues to the projects correct value. This can lead to the occurrence of a starting bid bias. But; this can also be controlled if care is taken at the time of the interview to let the respondents give their own maximum WTP.

2.2   Empirical review of literature

In the absence of real world experience, economists gauge the WTP for health insurance by means of contingent valuation method (CVM). The number of studies in this area is rapidly growing and provides a consistent picture. A study by Dror et al. (2006), conducted in India using a CVM provides evidence on WTP, gathered through a unidirectional (descending) bidding game among 3024 households. In this study, it has been established that WTP is positively correlated with income. The same positive correlation has been established with nominal WTP but with a negative correlation when WTP is expressed as percentage of income.

Measure of willingness to prepay for community health insurance were conducted by Binam et al. (2004) using a bidding game techniques on 471 rural households in the central region of Cameroon. The econometric results based on ordered probit model of willingness to prepay determinants suggest that the level of revenue, gender, the habit of frequenting the health service center, the associative experience (being a membership to a community club or association which corresponds to the iddir variable of our study), the household health status, availability of the basic drugs and regular or periodical attendance of the physician at the health service center have a significant impact on the willingness to prepay value.

A study conducted in Adama Hospital and town, in Oromiya region, Arbaminich and Yirgalem hospitals and towns in SNNPR, on the feasibility of community based health insurance in Ethiopia by Damen and Brenzel (1999) revealed a willingness to join and participate in health insurance schemes by "iddir" members. As the study shows 86.4% of households and 74.8% of exit interview patients were willing to join an "Iddir" based health insurance scheme. An exploratory study by (Damen, 2003) was conducted in 40 villages found in the Amhara and Oromia regions of Ethiopia to assess the possible roles iddirs might play in providing insurance for health financing. The results from a logistic regression indicated that education was not associated with willingness to join possible iddir based health insurance schemes. On the other hand respondents with higher income than the median were willing to join a possible iddir based scheme than those with less income.

A study by Asfaw and Braun (2005) which assesses the prospect of CBHIs in the rural areas (Amhara, Oromiya, SNNP and Dire Dawa) of Ethiopia selecting 550 households was conducted using a double bounded dichotomous contingent valuation method. The results from the bivariate probit model shows that sex of the household head (being male), family size, membership in 'iddirs', and log income affects willingness to pay positively and significantly.

However as it is demonstrated by Hanemann (1984), estimating *ad hoc* expressions, such as replacing explanatory variables by their logarithms may result in a utility function which will not generate the model estimated and the calculation of mean WTP from such complicated models is also difficult in cases where the data used cannot measure the continuous risk attitude of the respondent.

3.   Methodology

WTP provides information on the efficiency of health care services which cannot be provided comprehensively by other measures used in economic evaluations and hence a growing interest is being shown in willingness to pay (WTP) as a measure of benefits in economic evaluations of health care. Usually, WTP is measured with the contingent valuation method (CVM). CVM is a survey-based, hypothetical and direct method, i.e. respondents are faced with the effects of a health care improvements as well as payment and provision mechanisms and are asked to state their hypothetical WTP.

3.1   Description of the survey area

There are endogenous funeral associations in Ethiopia which are known as 'iddir'. These traditional associations use indigenous voluntary assurance schemes to cope with the urgent and large financial shocks represented by funerals. Many of these institutions tend to coexist within the same community and have well-defined rules and regulations. Payments are made when members incur costs related to funerals, following the death of a relative covered by the policy (Dercon et al., 2004). The financial logic of the iddir is not different from any insurance system. These associations have an obvious potential for serving as social financing mechanisms. Since these are already functioning groups the administrative costs for the extra health related activities are not as inhibiting as when forming a new insurance entity (Mariam, 2002).

In this study three iddirs from Addis Ababa are purposively selected from areas which are believed to constitute the low income earning groups of the society. These selected areas are, Cherkos market area in Kirkos sub- district, Piassa area in Arada sub district and Arat kilo area also in Arada sub district. The name of the first iddir found at Kirkos sub district is "Hibrete selam yemeradaja iddir" and is located in kebele 11 and respondents were from kebele 11/12. Presently it has 204 members. The second iddir found at Piassa kebele 10, Arada sub-district is called "Adewa Godana Afewerk menged yemot meredaja iddir" and 99 households are members of this iddir. The third one at Arat kilo is called "Wereda 14 kebele 07" iddir and is the largest of the three with 400 members. The three iddirs in total have 703 members. Using a systematic sampling procedure, 30% (210) respondents out of the total population of 703 household members were selected proportionately using the members' list obtained from each iddir leaders.

Survey Design and Administration

The data type used in the study mainly includes primary and cross sectional for the time period of 2010. The contingent valuation survey conducted was the main data source for the study. The main survey questioner which was used to collect the primary data has three parts. The first part deals with respondent's behavior at the time of sickness and their experience as members of the iddir. The second part constitutes questions regarding respondents' willingness to join and pay for the proposed health insurance scheme. Questions on the socioeconomic characteristics' of respondents constituted the third part of the questioner. The willingness to pay question is specified under a hypothetical scenario as follows:

The CBHIs Hypothetical scenario

Let us assume that there is an insurance company which can cover the health care expenses of each family member in a household whenever one or more family members are faced with sickness. The annual insurance coverage of health care expense of a member amounts up to 1500 birr. And the provision of such a scheme would require a monthly fee (premium) that should be contributed per house hold.

Before developing the main survey questioner a pre test questioner was designed to test the questionnaire, in particular the premiums. A pilot of 30 in-depth interviews with heads of households outside the study sample and iddir leaders were undertaken by the researcher. Consequently the starting bids for the main survey were set accordingly. The unit of analysis was the household for that CBHI schemes are provided on a household basis.

3.4 The Empirical Model Specification

In this study a single bound close ended discrete choice "yes" or "no" questions followed by open ended questions were presented for the respondents to elicit households willingness to pay for the proposed health insurance scheme. Both the single bound and the open ended survey responses were analyzed by specifying the appropriate econometric models for each which are the probit and the Tobit model respectively.

The Tobit model

The survey responses of 197 respondents out of the 210 sample units are estimated using the Tobit model. From the excluded thirteen, six of them were invalid responses and the

rest seven were incomplete responses. Willingness to pay amount is estimated under the proposed CBHIs using the Tobit model. The formulation of the model is as follows:

$$MWTP* = \beta 0 + \beta jX i+ \varepsilon i, \text{ where } \varepsilon i \sim N (0, \sigma 2) \qquad (3.1)$$

$$MWTP = 0 \text{ if } MWTP* \leq 0 \qquad (3.2)$$

$$MWTP = MWTP* \text{ if } MWTP* > 0 \qquad (3.3)$$

Where MWTP* is a latent variable which is observed when it is greater than zero and unobserved if less than or equal to zero.

MWTP = the maximum willingness to pay under the proposed scheme

X_i = a vector of explanatory variables

B' = a vector of coefficients

ε_i, = the disturbance term

Where $\varepsilon i \sim N (0, \sigma^2)$

β_j = coefficients where j = 0….15

All variables are defined in section 3.5

The Probit Model

The 'closed ended' or 'discrete' (TIOL) approach, confronts each respondent with a single bid which s/he has to accept or reject. Insurance works like a 'yes/no' question (Johansson, 1995). The respondent either agrees or declines to pay the specified insurance premium. We use this 'yes/no' data to arrive at a WTP measure for the proposed health insurance scheme. The typical formulation of the underlying choice problem as first presented by Hanemann (1984) which was drawn on McFadden's (1973) random utility model ignores risk faced by the respondent. A slightly modified version incorporating risk is presented here following Johansson (1995). The indirect utility function of the respondent is assumed to be of the form:

$$v = v (p,y,z,e) \qquad .(3.5)$$

Where p is the exogenous survival probability, y is income and z is the health state of the respondent and e is a random variable whose expected value is equal to zero. This equation is the same as the one specified in equation (2.3). The particular assumption behind this formulation is that the respondent knows his or her utility function with certainty, but from the point of view of the investigator it contains some unobservable

elements. Say the respondent is offered a measure which changes the survival probability from p_0 to p_1 in exchange for a payment of 'A' amount of birr (the premium).

$v_i = v_i(p_0, y_i, z_i, e_{i0})$, the ith respondent's indirect utility before the provision of insurance

$v_i = v_i(p_1, y-A_i, z_i, e_{i1})$ the ith respondent's indirect utility after the provision of insurance.

Where e_{i0} and e_{i1} are random components of the indirect utility of individual i before and after the provision of a health insurance respectively.

The proposal is accepted if:

$v_i(p_1, y-A_i, z_i, e_{i1}) > v_i(p_0, y_i, z_i, e_{i0})$ (3.6)

Or $v_i(p_1, y-A_i, z_i) + e_{i1} > v_i(p_0, y_i, z_i) + e_{i0}$

$\Delta v = v_i(p_1, y-A_i, z_i) - v_i(p_0, y_i, z_i) + \eta > 0$ (3.7)

Where $\eta = e_{i1} - e_{i0}$ assuming that utility function is additively separable in deterministic and stochastic preferences. The investigator can only make the probability statement of yes or no responses based on the bid gets accepted or not but cannot know the random components of preferences. The probability of saying yes for the proposed scheme for the respondent is:

$Pr(yes) = [v_i(p_1, y-A_i, z_i) + e_{i1} > v_i(p_0, y_i, z_i) + e_{i0}]$ (3.8)

Or $Pr(yes) = [v_i(p_1, y-A_i, z_i) - v_i(p_0, y_i, z_i) + \eta > 0$ (3.9)

It is based on these probability statements that the binary responses are analyzed. Let us denote all the household characteristics and attributes of a given choice by X. Thus the natural regression model which is the index function model is the following:

$WTP^* = \beta_0 + \beta'X_i + e_i$ (3.10)

Where β' is vector of parameters of the model
   X_i is vector of explanatory variables
   $_i$ is the random variable with a normal distribution of mean zero and common variance $\sigma2$
   WTP^* = unobservable respondent's actual WTP for the proposed health insurance scheme

Since we cannot observe the actual willingness to pay value of the respondent we cannot estimate this model, instead the investigator can observe:

$$\text{WTP} = 1 \text{ if WTP*} \geq A \tag{3.11}$$

$$\text{WTP} = 0 \text{ if WTP*} < A \tag{3.12}$$

The response probabilities related to the underlying WTP distribution are:

$$\text{Pr (WTP = 1)} = \text{pr (WTP*} \geq A) = \text{pr}(\beta x + e \geq A) = \text{pr} (-e \leq \beta x - A) = G(A, \theta) \tag{3.13}$$

$$\text{Pr (WTP = 0)} = \text{pr (WTP*} < A) = 1 - G(A, \theta) \tag{3.14}$$

Where Pr (WTP = 1) is the probability of saying yes to the initial bid and Pr (WTP = 0) is the probability of saying no to the initial bid.

$$\text{Mean WTP} = \frac{Interceppt}{Bid\ coefficient}$$

3.5 Variable Description of the Model

The choice of background variables, which were collected through the interview, follows the literature and our hypotheses about the determinants for WTP. Health insurance demand is a function of, the price of the insurance, the respondent's degree of risk aversion, perceived risk of injury/illness, perceived extent of the loss caused by illness/injury, and income (Santerre and Neun, 1996). In addition to the socio-demographic factors that affect once attitude towards risk, the predisposition factors generally arise from the socio-cultural environment of the respondent which is concerned with the local mutual help tradition (associative experience) (Binam et al.,2004). Using insurance theory, assuming a decreasing marginal utility of income, it follows that the higher the degree of risk aversion, the higher WTP will be when all else is equal. This is also the case for the perceived extent of the loss incurred by illness or injury. Some of the factors that are expected to determine the willingness to pay amount and the effect on the degree of risk aversion and the perceived extent of the loss incurred by illness with the other predisposition factors are explained below.

Monthly Income of the Household (INCOME): It is hypothesized that, the higher the income of a household is, the higher will be the households' willingness to pay for the proposed health insurance scheme.

Sex of the Respondent (SEX): Females are regarded to be more vulnerable to diseases than men, as burdens such as child bearing and more other related health care needing activities lie on them and thus, female household heads are expected to pay more than their male counterparts. To capture this relation a dummy variable is used which takes the value 1 if the household head is female and 0 other wise.

Age of the Respondent (AGE): Age is one of the variables that will affect risk aversion. It is assumed that the degree of risk aversion increases with age, as does the perceived extent of the loss. Thus, the older the respondent is, the higher the perceived risk will be for him/her. For this reason willingness to pay is expected to increase with age.

Education of the Respondent: Education is the other variable that will affect risk aversion. The more people are educated; the value that they will assign for their and their family's health will increase. The education dummy is categorized into four parts. The first category represents those who can only read and write with the illiterates and the second represents those who had a primary education, which is grade (1- 8) and is categorized under primary education (PRIMEDU). Those with education of grade 9-12 are categorized under secondary education (SECEDU) and above that are categorized under tertiary education (TEREDU).

Respondent's status in the household (HHEAD): The decision of the household's willingness to pay is affected by the one who is regarded as the household head. The household head is the breadwinner in the family and with a higher decision making power. Thus household heads are expected to be more willing to pay than the other members. This variable is a dummy variable taking the value 1 if the respondent is a household head and 0 otherwise.

Household size (MEMBERSHIP): The proposed scheme is the one which covers the health care cost of each and every member in the household. Thus, households with a larger size are expected to be more willing to pay for the proposed scheme since the scheme will insure larger members in the household.

Case of chronic diseases in the household (CHRONIC): The presence of one or more family members in the household with chronic diseases is assumed to increase the perceived extent of the loss, as well as the perceived risk of sickness in the household. This variable is a dummy variable taking the value 1 if there are one or more members in the household with chronic disease and 0 other wise.

Health care need within the last one year (HCNEED): Utilization of health care within the last one year can be an indicator of greater awareness of what might happen in case of illness/injury. This variable is a dummy variable which will take the value 1 if the household needed a health care service within the last one year and zero if not.

Starting bid (BID): The starting bid is the monthly fee proposed for the respondents to accept it as a premium price. This variable is included in the regression to check if a starting bid bias exists.

Marital status of respondent (MARRIED): People are likely to be more risk averters by the time they start a family than they were single and thus are expected to be more willing to pay for the proposed scheme than unmarried people. This variable will take the value 1 if the respondent is married and 0 otherwise.

Any type of insurance coverage in the household (INSURAN): It is expected that household heads with any insurance coverage will have a better awareness about the benefits of the scheme and thus will be willing to pay higher amounts. This variable takes the value 1 if the household is covered with some sort of insurance and 0 otherwise.

Occupation of the head (OCCUP): As informally employed heads usually earn unstable income than formally employed groups, thus the higher the probability that they will be reluctant to be involved in such schemes that requires fixed and continuous payments. The variable will take the value 1 if the respondent is formally employed and 0 otherwise.

4.   Empirical Findings: Results and Discussion
4.1   Descriptive Analysis of the Survey Data

Out of the total 210 sampled households who were asked whether they would be willing to participate in the study, 197 of them consented to participate. The number of

questionnaires that were incomplete and unacceptable for data analysis was 13. Where 7 of these were classified as incomplete responses, the rest 6 were protest zeros due to mostly respondents giving up in the middle of the survey. This left us with a response rate of 93.8%.

The respondents from the three iddirs have a total of 855 household members. The average household size is 4.3 (1 being the minimum and 12 being the maximum size). Of the total respondents 130 (66 %) were female respondents while the rest 67 (34%) were males and they were either the household heads or representatives of the heads. The mean age of the respondents was 56.7 years, 28 being the youngest where as 90 is the oldest. Interviewers restricted themselves to interviewing the head of the household at the time of the interview and the spouse if the later was not at home. From the surveyed households (56.4%) were male headed and the remaining (43.6%) were female headed. The majority of the respondents 114 (57.8%) were household heads.

From the interviewed households 97.9% of them were willing to join the proposed health insurance scheme. Those unwilling to join the scheme preferred to face health risks than to be insured. Given the hypothetical market scenario, the households on average are WTP 11.56 birr.

Regarding occupation 74.6% of the heads were informally employed while the rest 25.4% were formally employed. Although CBHI solves the problem of access to care and financial protection faced by those who are informally employed, the ability of these informally employed clients to pay premiums in a regular interval is limited as most informal engagements and thus the earnings are casual. This in turn hinders the sustainable and efficient provision of the scheme. The mean monthly income for the sampled households was 634 birr. In cases where respondents were reluctant to reveal their monthly income their expenditures on major items were used as a proxy to monthly income.

4.1.2   Health status and health care needs of households

From the survey the majority of the respondents (45.2%) preferred to go to health stations whenever they needed a health care service the other 25.4% preferred to go to private clinics. Those who preferred public hospitals and traditional healers such as religious places constituted 14.7% each. Most of the respondents who opted for a high

cost health care service from private clinics gave: occurrences of accidental sicknesses, lack of satisfaction with the quality of service and longer waiting time at public hospitals as justifications for their choice. Of the sampled households 54.31% of them had one or more members who needed a health care service within the last one year and 57.36% of the respondents reported either one or more family members with chronic diseases. The chronic diseases reported by respondents mainly include heart related problems, diabetes, blood pressure, mental problems and the like. Regarding the management of health care financing the majority (66.50%) of the households asserted that they had borrowed the last two or three times they needed a health care service while 29.95% of them used their own income. The remaining 3.55% claimed free health care provision. Unsurprisingly, it was only 9 of the household heads (4.57%) that had health insurance coverage (provided by employer companies) and no other types of insurance coverage's were detected.

4.1.3 Households' willingness to pay for a Community Based Health Insurance Scheme (CBHI).

At the time of the survey the idea of CBHIs was highly favored by the respondents and it is only three respondents who preferred out of pocket payments and face the health related uncertainties than being covered with the insurance. However, in addition to these respondents 13 informally employed household heads were not willing to join the scheme and stated that they are not in a position to qualify for any regular payments given their nature of employment. That is the respondents gave the higher variance in their income as an excuse for their zero WTP amount.

The mean willingness to pay figure under the proposed CBHIs scheme is 11.5 birr per month. The maximum willingness to pay is 40 birr while the minimum is zero birr. Aggregating this mean for the whole population of households in the three iddirs which is 703 will give us an amount which equals to 8126.68 birr per month. Computing the per capita contribution of each family member in a household under the scheme, the payment amounts to be 2.68 birr per month and 32.1 birr per annum. This figure is greater than the public per capita health expenditure of the country (23.1 birr) for the year 2007/08. This means these households can at least contribute an amount which equals to the country's per capita annual health care budget. This amount of WTP even from the low income earning groups of the society shows that CBHIs can help to generate sufficient amount of resource that can finance the health sector deficit of the

country without evicting the poor and those informally employed section of the population from the health care market.

4.2 Econometric Analysis

As the presence of hetroskedasticity is a common problem in survey and cross-sectional data a test for the presence of heteroscedasticity problem in the model was done and the test result showed that this problem does exist. Hence, robust standard errors are estimated. A multicollinierity test was also made and the results revealed that there was not a serious problem of multicolliniarity among the explanatory variables. The starting bid was also included as an explanatory variable in the model to check if there exists a starting bid bias. In addition to the bid price, a dummy variable (household head) taking 1 if the respondent is the household head and 0 if otherwise is also included as an explanatory variable to check if asking representatives of household heads rather than household heads has an effect on the willingness to pay amount.

4.2.1 The Results of the estimated Tobit Model

The estimated results of the Tobit model is presented in Table 4.2 and as shown from the results the household average monthly income approximated by household expenditure has a significant positive impact on the willingness to pay amount and thus the provision of such schemes by any insurance companies should consider the payment ability of the low income earning households while setting premiums. Education has a significant effect on the understanding of the safety and security that insurance brings in to one's life as households with a better educational status were willing to pay more as compared to those with no or little education and this is indicated by the secondary and tertiary education dummies. Being the head of the household has also a significant and positive impact on WTP amount. This may be because household heads are more concerned about their families health status as much of the responsibility falls on them when a member of the family gets sick.

Willingness to pay is higher for households that have at least one member with a chronic disease and this positive relation is significant. This might be due to the fact that these households have a greater perception of the extent of the loss whenever a health care service is needed by the member with a chronic disease and thus their higher willingness to pay for the proposed CBHIs. This result may indicate the existence of adverse

selection in the surveyed area i.e. a higher probability that riskier people will join the scheme. However, if the risk can be pooled or in other words, if the service will be provided for a larger part of the population, adverse selection would not be as such a severe problem.

Table 4.2: Maximum Likelihood Estimates of the Determinants of WTP (Tobit Model)

Explain. Variable	Coefficient	Stand.erro	P-value
SEX	0.2901643	0.7377	0.695
AGE	0.0048	0.02995	0.872
BID	0.123594	0.09018	0.172
PRIMEDU	1.565948	0.99582	0.118
SECEDU	2.398193**	1.25143	0.057
TEREDU	3.766015**	1.73353	0.031
MARRIED	1.100423	0.729086	0.133
HHEAD	1.515736**	0.760975	0.048
INCOME	0.007602***	0.001768	0.000
HCNEED	0.7142254	0.795511	0.370
CHRONIC	1.545296*	0.84813	0.070
INSURANC	0.101465	1.32637	0.939
MEMBERSHI	0.594064***	0.18170	0.001
OCCUP	1.851789**	0.82829	0.027
IDDIR	-0.6950974	0.69768	0.320
CONST	-2.997346	2.46639	0.226

Source: Own survey, 2010 ***Significant at 1% **Significant at 5% *Significant at 10%

The size of the household is positively and significantly related to willingness to pay amount. The proposed scheme covers the health related expenses of each and every member within a household, which means households with large size have larger number of members to be covered within the scheme. Thus, the bigger size of the service may be the reason for the higher WTP. Occupation of the head has a significant direct relation with the WTP amount. This may be because household heads who are formally employed have a better probability of earning a sustainable and higher income than those who are informally employed and earn unsustainable and lower income and hence WTP more. Having unsustainable income was one of the reasons given by respondents for their lower amount of willingness to pay during the survey. The bid variable is positively related with the households' willingness to pay but insignificant at 10%. Thus the bid price is not a major determinant of household's willingness to pay

amount and a starting bid bias is not a problem. This could be due to the caution given at the time of the interview to let the respondents give unbiased answers.

4.2.2   The Results of the estimated Probit Model

The goodness of fit for models with qualitative dependent variable is measured by the Likelihood Ratio Index (LRI) .The computed value of the LRI shows that 75.74 percent of the variation in the dependent variable is explained by the variation in the explanatory variables of the model. The estimated results of the Probit model is presented in Table 4.3.

Table 4.3: Maximum Likelihood estimates of the determinants of probability of accepting the bid (Probit Model)

Explan.Variables	Coefficient	Marginal effects	Stand.error	P-value
Sex	0.5246768	0. 206787	0.13596	0.128
Age	0.0444649	0.017720***	0.00633	0.005
Bid	-0.3548711	-0.141429***	0.02866	0.000
Primedu	0.0492607	0.019627	0.23097	0.932
Secedu	0.5258907	0.203554	0.2222	0.360
Teredu	0.2071244	0.081891	0.30756	0.790
Married	0.7956055	0.309118**	0.16645	0.053
Hhead	0.6719737	0.263111*	0.15942	0.099
income	0.0038894	0.001550***	0.00043	0.000
Hcneed	0.887355	0.342216***	0.14155	0.016
Chronic	0.4367495	0.172848	0.14697	0.240
Insuran	0.6843046	0.251938	0.24113	0.296
Membership	0.2113061	0.0842133***	0.02972	0.005
Occup	1.421279	0.489424***	0.12542	0.000
Iddir	-0.1742 827	-0.0650484	0.14797	0.639
Const	-2.95622			

Source: Own survey   ***significant at 1% **significant at 5% *significant at 10%

As expected, income of the house hold has a strong positive effect, increasing the probability of accepting the bid. The coefficient shows that, as income increases by 1 birr, the probability of accepting the bid increases by 0.15 while all other variables remain unchanged. This variable is significant at 1%. Being one year older increases the probability of accepting the given bid by 1.7 and this increment is also highly significant. Being married increases the probability of accepting the proposed bid by 30.9 and the

variable is significant at 10% which means that being married strongly determines the probability of accepting the bid. The status of the household has a positive significant influence in increasing the probability of accepting the bid by 26.3 and thus being a household head strongly affects the probability of positive willingness to pay. Health care need of the household is positively related to the probability of willingness to accept and is highly significant. The coefficient shows that needing a health care within the last one year either by one or more members of the household increases the probability of accepting the bid by 34.22, keeping all other variables constant. The existence

of one additional member in the household increases the probability of accepting the bid by 8.4, and this increment is highly significant. The occupation of the household head is positively and significantly related with the probability of accepting the bid indicating that having a permanent employment increases the probability of positive willingness to pay by 48.9. This result is also supported by the responses from the interview as many of the informally employed respondents stated that they cannot qualify for higher bids as their casual and by chance employments could not assure them with sustainable source of income. Consistent with the theory of demand, the response of households is sensitive to the bid levels as shown by the negative and significant coefficient of the bid. This variable decreased the probability of respondents' willingness to accept the bid i.e. a one birr increment in the value of the bid will decrease households' probability of accepting it by 14.14, keeping all the other variables constant.

4.4   Feasibility of the Scheme

As it has been discussed throughout the first two chapters' one of the ways that poor communities manage health risks, in combination with publicly financed health care services, are community based health insurance schemes (CBHIs). These schemes can bring an equitable and efficient health care service provision for those who are informally employed and mainly low income earning groups of the society. However, the effective introduction and implementation of this scheme cannot be achieved if the current pricing system is going to be employed without considering the affording power of these low income and informally employed groups of the society. In Table 4.5 total willingness to pay amount from the survey is compared with the total amount of revenue that should be collected if the scheme is to be provided based on the average premium prices that currently prevails in the insurance market.

In the Table, total payment amount 8,126.6 Birr is obtained from the survey results of willingness to pay amount. Calculation of total amount of revenue that should be collected if health insurance is to be provided based on the current average market premium price was gained by multiplying individual premium price (which is 18 birr) by the average number of members in a household (4.3 members) and then by the total number of households in the three iddirs (703 members).

Table 4.5: Comparison of total willingness to pay amounts from the survey and total amount of revenue based on the average premium in the market

	Premium Price in Birr	Total amount of revenue (in Birr)	
		Per month	Per annum
WTP from the survey	11.56	8,126.68	97,520.2
Revenue based on the average premium in the market.	77.4	54,918.36	659,016

Source: Survey data and data from insurance companies, 2010.

The difference between the total revenue that should be collected using the market premium price and the total amount that the households are willing to pay is 46,791.7 birr per month and 561,495.8 birr per annum. This means that 561,495.8 birr should be subsidized every year either by the government or donors if the provision of CBHIs is to be introduced and implemented for these low income earning groups under the current premium price; which is a huge amount. Tabor (2005) underlines that government, and its development partners, should support the growth of CBHIs by ensuring that there is a satisfactory supply of appropriate health services, by subsidizing start-up costs and the premium costs of the poor. This can be done by assisting CBHIs to build technical and managerial competence, by helping to foster development of CBHI networks, and by assisting CBHIs establish and strengthen links with formal financial institutions and health care providers to better manage covariate shocks and catastrophic health risks. However the actuarial premium price of insurance companies also needs a revision since subsidy by itself cannot provide long lasting support for the CBHIs.

5.   Conclusion and Policy Implication
5.1   Conclusion of the study

The purpose of this study is to analyse the feasibility of CBHIs provision for these community based organizations called iddirs by analyzing the member households' willingness to pay for the proposed scheme. The value member households 'attach to

the proposed health insurance was estimated using the contingent valuation method (CVM). For this purpose three iddirs were purposively selected from areas that are believed to constitute largely of the low income earning and also informally employed groups of the society in the capital city, Addis Ababa.

The majority of the respondents (45%) preferred to go to health stations whenever they needed a health care service the other 25.38% preferred to go to private clinics and the rest preferred public hospitals and traditional healers each constituting 14.72%. Among the reasons given by the respondents to choose private clinics were occurrences of accidental sicknesses and dissatisfaction with the quality of the service.

Regarding the management of health care financing (66.50%) of the households asserted that they had borrowed the last two or three times they needed a health care service while 29.8% of them used their own income. The remaining 3.55% claimed free health care provision. It was only 9 of the household heads (4.57%) that had health insurance coverage. Given this hypothetical market, the households on average are WTP 11.56 birr.

The total WTP amount under the proposed scheme is 8126.68 birr. This means on average each individual member of a household can contribute 2.68 birr per month and 32.2 birr per annum under the proposed scheme, which is greater than the public per capita health expenditure of the country (23.11birr) in 2007/08. This amount of WTP even from these low income earning groups of the society shows that CBHIS can help to generate large and substantial amount of resource that can finance the health sector deficit of the country without evicting the poor and those informally employed section of the population from the health care market

According to the results, income, secondary and tertiary education dummies, status of the respondent in the household, case of chronic disease in the household, occupation of the head and size of the household have a positive and significant effect on the amount of WTP. Age of the respondent, sex, primary education dummy, having any type of insurance, being married and the health care need of the household within the last one year have a positive but insignificant effect. Having more than one iddir has an insignificant negative effect on WTP amount. Looking at the variables that affect the probability of accepting the bid, age, marital status, respondents status, income of the household, health care need, size of the household and occupation of the head (all of

them with a positive sign) have a significant effect on the probability of positive willingness to pay. The bid price with a negative sign, significantly affects the probability of positive WTP. The mean willingness to pay value, as calculated from the probit model is 15 birr.

The promotion of CBHI promotes the access to equitable and sustainable quality health care, increased financial protection and effective social inclusion in the health sector for the majority of Ethiopian families. The current premium price in the insurance market is high above the ability of these low income earning households, which makes a health insurance hardly affordable by them.

5.2   Policy Implication of the study

The various interventions in the health sector such as the health extension program have promoted health service seeking behavior among communities. However, the current health financing practice demands that part of the cost be covered through out-of-pocket payments and user fees at the time of sickness. The poor who are constrained by their level of earnings and the nature of lifestyle cannot afford to make such payments at the point of utilization. Users' access to health services is restricted as user fee is often beyond the ability to pay of most households'. On the other hand, these user fees are extremely low relative to what the services actually cost and the quality of health services is also constrained by these low user fees that cannot adequately support the system. There is a huge financing gap compared with the amount required to deliver essential health services. Such contexts point towards the need to undergo a health sector financing reform, which is a sustained process of fundamental changes in national health policy and institutional arrangements, designed to improve the functioning and performance of the health sector financing and ultimately, the health status of the poor . The consequences of raising user fees to provide an improved quality of service will most likely be unbearable especially by the poor. Therefore to sustain a reasonable quality of health service it may be necessary to introduce a system that will spread the financial burden arising from higher health services costs. Such a risk sharing system is expected to make health service affordable at the time of sickness thereby reducing the financial barrier associated with higher user fees. The provision of community based health insurance should be considered for the majority of urban people in the informal sector as well as the majority of Ethiopians in the rural farming and livestock rearing economy. In the mean time, the setting of premium prices should

consider the ability of payment and the willingness to pay of households so as to assure the sustainable provision of the scheme. The current premium price that prevails in the insurance market is beyond the ability to pay of the poor. The majority of the respondents (78%) did not have the knowledge on how a health insurance scheme functions. Thus public awareness should be adequately enhanced on the functioning of the schemes and also the benefits that can be gained from it so that the service can insure a wider coverage. As it can be seen from the regression results the secondary and tertiary education dummies were significant in determining the willingness to pay amounts which also reflects the need to create awareness on the use of insurance to protect against expenditure fluctuations.

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