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**Dropping out of Ethiopia's Community Based Health  
Insurance scheme**

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## Abstract

Low contract renewal rates have been identified as one of the challenges facing the development of community based health insurance schemes (CBHI). This paper\* uses longitudinal household survey data to examine dropout in the case of Ethiopia's pilot CBHI scheme, which saw enrolment increases from 41 percent one year after inception to 48 percent a year later. An impressive 82 percent of those who enrolled in the first year renew their subscriptions, while 25 percent who had not enrolled join the scheme. The analysis shows that socio-economic status, a greater understanding of health insurance, and experience with and knowledge of the CBHI scheme reduce dropout. While there are concerns about the quality of care and the treatment meted out to the insured by providers, the overall picture is that returns from the scheme are overwhelmingly positive. For the bulk of households, premiums do not seem to be onerous, basic understanding of health insurance is high and almost all those who are currently enrolled signal their desire to renew contracts.

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## 1. Introduction

Since the late 1990s, in a move away from user fees for health care, community-based health insurance schemes (CBHI) which involve potential clients in determining scheme benefits and in scheme management have been implemented in several developing countries.<sup>1</sup> The aim of such schemes is to reach out to underserved low-income groups, especially those engaged in the informal sector, and increase access to health services and provide financial protection from ill-health.

Theoretically, in the absence of formal risk-pooling options and given the financial risks associated with ill-health, such schemes should be successful in achieving high uptake and renewal rates. However, in practice, uptake rates are typically low. Based on a systematic review of 46 micro level studies conducted between 1995 and 2012 in a range of low and middle income countries, Mebratie et al. (2013) report an unweighted average uptake rate of 37 percent.<sup>2</sup> Although information on contract renewal rates is not as widely available as information on initial enrolment, the few studies that contain such data report low renewal rates. For instance, Criel and Walkens (2003) report an initial enrolment rate for a scheme in Guinea-Conakry of 8 percent in 1998 and a drop to 6 percent one year later. In the case of the Nouna district scheme in Burkina Faso enrolment lay between 5.2 percent and 6.3 percent in the years 2004 to 2006 with a drop-out rate of 30.9 percent in 2005 and 45.7 percent in 2006 (Dong et al., 2009). In Senegal, for three schemes set up between 1997 and 2001, Mladovsky (2014) reports that in 2009, scheme drop-out rates ranged between 58 and

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<sup>1</sup> Unlike private insurance, such schemes aim to serve members on a non-profit basis. While there is substantial variation across different schemes, they typically offer a limited range of benefits for an affordable premium, with potential beneficiaries playing a role in determining scheme design.

<sup>2</sup> For instance, in the case of countries located in Sub-Saharan Africa, CBHI uptake in Nigeria was 6 percent after one year (Lammers and Warmerdam, 2010), 35 percent in Rwanda after seven years and 85 percent after nine years (Shimeles, 2010), 4.8 percent after two years in Senegal (Smith and Sulzbach, 2008), 11.4 percent after six years in Mali (Diop et al., 2006), 2.8 percent in Tanzania after six years (Chee et al., 2002).

83 percent. In India the picture is no different. Bhat and Jain (2007) report a drop-out rate of 49 percent for a scheme operating in Gujarat, while Platteau and Ontiveros (2013) report a drop-out rate of 67 percent and an initial scheme enrolment rate of less than 2 percent in schemes operating in Maharashtra. High drop-out rates clearly threaten the sustainability of such schemes, even if initial uptake is high.

While a large literature has examined factors associated with initial uptake, work on factors that determine contract renewal or prevent drop-out is relatively thin. The literature suggests that there are four factors that are most likely to influence renewal rates: the quality of care on offer, health status, affordability of insurance and information failures. The last issue includes a lack of understanding of insurance and insufficient information on how to use the insurance policy. For example, in their paper on the Maliando scheme in Guinea-Conakry, which was based on focus group discussions, Criel and Walkens (2003) concluded that while affordability is an issue, the main reason for the declining enrolment rate was the poor quality of care at the health centres accessible to scheme members. Failure to understand the scheme or lack of understanding of insurance did not seem to play a role, and indeed members and non-members had a very accurate understanding of the principles of health insurance. Dong et al. (2009) identify quality of care as perceived by household heads as an important aspect determining drop-out of Burkina Faso's Nouna district scheme. In addition, households with a larger number of illness episodes in the past three months were more likely to renew their contracts. Mladovsky (2014) also reports that episodes of ill-health increase retention in Senegal while a negative perception of quality of care increases the probability of dropping out. Active participation in this scheme, which is expected to be associated with greater information on the scheme and understanding of insurance, is associated with an increase in retention. However, the study relies on cross

sectional data and the direction of the causal effect is not clear as it is possible that retention enhances active participation. Platteau and Ontiveros (2013) show for Maharashtra that households with greater scheme information and better understanding of insurance were more likely to renew contracts. They also demonstrate that a better understanding of insurance reduces the negative effect of not having received any pay outs through insurance on contract renewal.

In June 2011, the Government of Ethiopia launched a pilot Community Based Health Insurance (CBHI) scheme. The scheme, which caters to rural households and urban informal sector workers, was rolled out in 13 districts located in four main regions (*Tigray, Amhara, Oromiya, and SNNPR*) of the country.<sup>3</sup> Unlike the experience of other schemes in the region, scheme uptake has been impressive and stood at 41 percent one year after scheme inception and at 48 percent after two years (Abt Associates, 2013). While drop-out figures at the national level are not available, the longitudinal data on which this study is based shows that while there has been an overall increase in scheme enrolment over the two years, there is a fair amount of churn with 18 percent of households who had enrolled in the first year discontinuing their subscription in the second year and 25 percent who had not enrolled in the first year joining the scheme in the second year (see Table 1). While a contract renewal rate of 82 percent may seem impressive, especially given the experience of other schemes in the region, it is still a source of concern.

This paper examines the decision to drop-out of the Ethiopian CBHI scheme. While we study the effect of a range of factors in determining drop-outs, we focus on scheme affordability, health status, the role of knowledge and understanding of insurance, and the quality of care. The paper draws on two rounds of longitudinal household data gathered in

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<sup>3</sup> Together, these four main regions account for about 86 percent of the country's population (Population Census Commission, 2008).

2012 and 2013 and key informant interviews and focus group discussions conducted in 2012 and 2013. While straightforward, an assessment of this issue is pertinent due to the limited number of case studies and the increasing number of CBHI schemes. From a policy perspective this study is pertinent as the government of Ethiopia plans a nation-wide roll-out of the scheme.

The remainder of the paper proceeds by providing in the next section a description of the key design features of the pilot scheme. Section three describes the data, section four discusses the research methods, section five contains empirical results and the final section concludes.

## **2. Key features of the Ethiopian CBH scheme**

In June 2011 the Ethiopian CBHI scheme was rolled out in 13 pilot districts. The pilot districts were selected by regional administrative bodies based on directives provided by the Federal Ministry of Health (FMoH). While the chosen districts were expected to fulfill five selection criteria, in practice, selection was based on two conditions: the district should have undertaken health care financing reforms designed to increase cost recovery and retention of locally raised revenues, and health centers in these districts should be geographically accessible (located close to a main road).<sup>4</sup>

The scheme was introduced by Ethiopia's Federal Ministry of Health (FMoH) in collaboration with USAID, Abt Associates Inc. and CARE Ethiopia, and is part of the

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<sup>4</sup> The complete set of selection criteria included (1) Willingness of district authorities to implement the schemes (2) Commitment of districts to support schemes, (3) Geographical accessibility of health centers (4) Quality of health centers, (5) The implementation of cost recovery, local revenue retention, and public pharmacy policies in health centers. This last condition is one component of the health care financing reforms (HCFR) that have been under implementation since 1998. Essentially, districts where the CBHI was offered should have taken measures to increase cost recovery and retain locally raised revenues. This means that health facilities are free to add a mark-up of up to 25 percent on the cost price of the drugs that they sell and a 25 percent mark-up on laboratory and other services. Facilities are expected to retain these revenues and to use them to improve the quality of their services. For more details see USAID (2011).



government's broader health care financing reform strategy which aims to improve quality and coverage of health services by identifying alternative healthcare resources (USAID, 2011). The basic design of the scheme in terms of benefit packages, registration fees, premium payments and co-payments were determined on the basis of feasibility studies and in collaboration with regional governments, and are the same within each of the pilot regions but differ slightly across regions. Scheme implementation and monitoring is conducted by Abt Associates in collaboration with relevant government authorities at the central, regional, district, and village levels.

While the scheme has been introduced by the government, it is 'community based' in the sense that, after being exposed to a range of awareness creation activities, villages (*kebele*) determined whether or not to join the scheme and were subsequently involved in scheme management and supervision.<sup>5</sup> Village participation was based on a simple majority vote at a general assembly, while households could decide individually whether to enroll in the scheme. In practice, no village voted against the scheme and it was rolled out in all villages in the pilot districts. In order to reduce the possibility of adverse selection the unit of membership is the household rather than the individual (FMoH, 2008).

Based on feasibility studies, regional health administration officials determined insurance premiums. Household level monthly premiums for core household members range between Ethiopian Birr (ETB) 10.50 in *SNNPR* to ETB 15 in *Oromiya* (see Table 2).<sup>6</sup> For each non-core household member the monthly premium lies between ETB 2.10 and ETB 3.00. Premiums in *Amhara* region are set at ETB 3.00 per individual per month. The

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<sup>5</sup> In their review of the CBHI literature, Mebratie et al. (2013) classify three distinct scheme types: community prepayment health organizations, health care provider initiated insurance schemes, and government run community involved health insurance schemes. The Ethiopian CBHI scheme falls in the last category.

<sup>6</sup> Core household members include a mother, father, and their children below age 18.

premiums amount to about two to three percent of household monthly income, which tends to be comparable to insurance schemes in other African countries.<sup>7</sup> To enhance affordability the central government subsidizes a quarter of the premium and district and regional governments are expected to cover the costs of providing a fee waiver to the poorest 10 percent of the population or so called “indigent groups”.<sup>8</sup>

Premium collection intervals differ across pilot districts and are sensitive to local conditions. While local level officials and community representatives are able to adjust the interval of premium collection they cannot change the premium itself. In order to enable community engagement every village is expected to select three delegates/CBHI members who will be part of the village CBHI administrative bodies and participate in the general assembly organized at district level. According to information obtained from key informant interviews and focus group discussions, village level government officials and the community at large are involved in identifying the poorest households and implementing the fee waiver arrangement.

The scheme covers both outpatient and inpatient health care services in public facilities. Transportation costs to access health facilities are not covered. Utilization of care from private providers is usually not permitted unless a particular service or drug is unavailable at a public facility. Treatment outside the country is not covered. Scheme participants are expected to access health providers who have signed a contractual agreement

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<sup>7</sup> This is based on an annual per capita income of USD 340 in 2011, an exchange rate of ETB 18 to USD 1 and a household of six core members. Schemes in Uganda (McCord et al., 2000) and Ghana (Mensah et al., 2010), are more expensive (4-6 percent of household monthly income) while schemes in Mali (Franco et al., 2008) are at the same level while those in Burkina Faso (Parmar et al. 2012), Rwanda (Saksena et al., 2011), and Nigeria (Onwujekwe et al., 2009) are less costly (0.4 to 0.6 percent of household monthly income).

<sup>8</sup> The premiums reported in Table 2 are the subsidized premiums. Indigent groups are defined as those households who do not have land, a house or any valuable assets. In December 2012, the share of indigent groups as a proportion of the total eligible households (300,605 households) ranged from a low of 0.9 percent in Deder district in *Oromiya* to 21.1 percent in South Achefer district in *Ambara* region (Abt Associates, 2013).

with district level CBHI administrators. The selection of the facilities takes into account a number of factors such as the quality of care (in terms of human resource and equipment), geographical proximity between the providers and the location of the target households, implementation of the healthcare financing reform, and service charges. There is no upfront payment at the time of service utilization if treatment is obtained from those facilities which have contractual agreements with the scheme. In *Tigray*, *Amhara*, and *Oromiya* regions, CBHI members are allowed to use care from public facilities that do not have formal contractual agreements with the scheme and then claim reimbursement. There is no reimbursement for service utilization outside CBHI linked facilities in *SNNPR*.

Medical treatments which have largely cosmetic value (for example, artificial teeth and plastic surgery) are excluded. There are no copayments as long as members follow the scheme's referral procedure. When they seek care, scheme members are first expected to visit a health center and can subsequently access higher level care at district or regional hospitals as long as they have referral letters from the health center. Members who visit hospitals without referral letters need to cover 50 percent of their costs. Access to tertiary level care differs across regions. In *Amhara* and *Tigray*, CBHI enrollees may visit any public hospital within the region but not outside the region. In *SNNPR*, care is covered only in the nearest public hospital while in *Oromiya* coverage includes hospitals located outside the region.

### **3. Data**

This paper draws on three different types of data – two rounds of a longitudinal household survey, a health facility survey, and qualitative information from key informant interviews and focus group discussions.

Before the launch of the CBHI scheme, a baseline household survey was conducted between March-April 2011 and since then two follow up surveys have been canvassed between March-April 2012 and March-April 2013. The household surveys cover 12 of the 13 CBHI pilot districts and four non-intervention districts located in the four regions.<sup>9</sup> From each of the sixteen sampled districts, six villages (*Kebeles*) were randomly chosen and within each village 17 households were randomly chosen to yield a total of 1,632 households. This paper is based on the surveys conducted in the 12 districts where the CBHI was offered. The surveys rounds used in the paper include 1,203 households who were interviewed in 2012 and 1,186 of the same households who were interviewed in 2013.

In addition to an extensive module on household and individual health conditions, the surveys contain information on a variety of individual and household socio-economic attributes (consumption, education, demographic traits). The health module includes questions regarding self-rated health status and incidence of illnesses for each household member. The two survey rounds that we use contain information on CBHI enrolment status and extensive modules on awareness of health insurance, understanding of the CBHI scheme, scheme participation and experience with the scheme.

The household surveys also contain information on access to health facilities (travel time to reach the nearest health facilities). In order to assess and potentially control for the quality of health care services in determining enrollment, we combine the surveys with information gathered from 30 health care centers (2 to 3 randomly selected health centers from each of the 12 CBHI pilot districts). We focused on health centers as these are usually the main source of curative health care in rural Ethiopia. The health facility survey was canvassed in June 2011, that is, before the introduction of the CBHI scheme and contains

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<sup>9</sup> In each of the four regions there are three CBHI districts and one control district.

information on the educational qualifications and work experience of the head of the facility, and availability of medical equipment. In addition, the survey obtained information from five randomly chosen patients who were exiting from the health center, on the time taken to obtain a patient registration card and time taken between obtaining the registration card and consulting with a health care professional. Based on information provided by the district health offices, households from the 72 sampled villages were matched to the 30 health centers on the basis of household proximity to the health centers.<sup>10</sup>

In order to obtain an understanding of design, operation and implementation issues at different levels of government, between December 2012 and January 2013, 15 key informant interviews were conducted. These interviews include FMOH, Abt Associates, CARE Ethiopia, four regional level CBHI coordinators, four district level CBHI officials and four village level CBHI managers in each of the pilot regions. Eight focus group discussions, two in each of the four villages randomly selected per region, were conducted with groups of seven to twelve individuals. Each FGD had at least three and at most six female participants. For each village, one of the FGDs was conducted with scheme members and focused on their motivation for joining the scheme and their views on scheme operation, while the other was conducted with non-members and focused on why they had chosen not to join the scheme.

#### **4. Dropping out of the CBHI scheme – A framework**

Based on our reading of the theoretical and empirical literature as well as the information obtained from the focus group discussion and key informant interviews we identify two key factors that influence households' decisions to drop out of CBHI: affordability of the premiums and the expected returns from the insurance. The returns may depend on a

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<sup>10</sup> On average about 41 households were matched to one health centre.

number of factors. For instance, the health endowment of a household is likely to influence current and future health care needs. A good understanding of health insurance may lead to a greater appreciation of the potential usefulness of such a scheme and knowledge of the manner in which the scheme operates may make it easier for households to obtain benefits. Knowledge of insurance may also mitigate the tendency to drop out even if a household did not make use of the scheme. Finally, scheme returns are also likely to depend on the quality of the health care services on offer.

We specify the probability that a household ( $h$ ) drops out ( $DO = 1$ ) of the *CBHI* scheme in time period  $t$  (2013) as a function of a set of variables in time periods  $t-1$  and  $t-2$ . A household's ability to afford the scheme is treated as a function of a set of socio-economic characteristics ( $SES$ ) which includes the consumption quintile in which a household falls, educational endowment of the household head and whether the household has been enrolled in or is currently a member of the productive safety net programme for food insecure households.<sup>11</sup> The role of current and expected health care status and use ( $H$ ) is captured by a household's subjective assessment of its health status, episodes of recent illnesses and a variable indicating whether a household used the scheme to access services in the last year. In addition, we control for a set of demographic traits ( $D$ ) such as household size and the gender and age composition of household members. To account for the effect of understanding of health insurance ( $U$ ) we use responses to a set of four questions (see Table 3 for details) to create three dummy variables which indicate whether a household has a high (all four responses are correct), medium (three out of four are correct) or low (less than three) understanding of insurance. Knowledge of the scheme ( $K$ ) is captured by

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<sup>11</sup> Consumption is measured net of health care spending. The productive safety net programme (PSNP) is a government social security programme designed to support chronically food insecure households. Participants engage in public works and receive payments in cash or in kind.

information on whether a household member attended community-level *CBHI* meetings before the scheme was launched, whether a household member has an official government position or is involved in *CBHI* management. Scheme experience ( $E$ ) is based on responses to a set of five questions (see Table 3 for details) on the functioning of the scheme. The responses are classified into three dummy variables which indicate whether a household head expresses a high (4 or 5 positive responses), medium (2 or 3 positive responses) or low (0 or 1 positive responses) level of satisfaction with the scheme.

Two sets of supply side characteristics are included to account for the health services on offer. The first set ( $AS$ ) relates to geographical proximity to healthcare services and includes travel time to the nearest health centre and public hospital using usual means of transport. The second set ( $QS$ ) pertains to the quality of health care services on offer and includes information on the availability of medical equipment, waiting time to see a medical care provider, and perceptions of the quality of care as provided by respondents. Finally, we also include a set of regional fixed effects ( $\theta$ ).

The probability of dropping out of the *CBHI* scheme is estimated as a logit specification

$$p(DO_{ht} = 1) = f(\alpha SES_{ht-1}, \theta H_{ht-1}, \beta D_{ht-1}, \nu U_{ht-1}, \omega K_{ht-1}, \upsilon E_{ht-1}, \delta AS_{ht-1}, \eta QS_{ht-2}, \theta_{rh}, \varepsilon_{ht}) \quad (1)$$

for those households that were enrolled in the scheme in 2012. We regress current drop out status on past values of the various sets of covariates. This allows us to provide estimates that are less likely to be influenced by the endogenous nature of some of the explanatory variables. We estimate several variants of equation (1). We start with a baseline model. Thereafter, to probe the sensitivity of the estimates we sequentially add the understanding

(*U*), knowledge (*K*) and experience (*E*) variables and then estimate a complete specification. Summary statistics are provided in Table 3.<sup>12</sup>

## 5. Results

In April 2012, about a year after scheme inception, 41 percent of eligible households had enrolled. At the time of the 2012 survey, 96 percent of the insured had indicated that they would renew their membership while 57 percent of the uninsured indicated that they planned to enrol in the future (see Dersch et al., 2013). However, actual renewal rates in April 2013 turned out to be 82 percent and 25 percent of those who had not enrolled in the first year did enrol a year later. By April 2013, enrolment stood at 48 percent (Table 1). There are noticeable differences across regions with CBHI uptake rate ranging from 35.4 percent in *SNNPR* to 62.7 percent in the *Amhara* region. Renewal rates also vary, from 93.1 percent in the *Amhara* region to 73.5 percent in *Tigray*.

### 5.1 Scheme affordability

The first concern is the extent to which drop-out is driven by scheme costs. To assess this we draw upon a set of three questions on payment convenience and scheme affordability (see Table 3), the set of estimates presented in Table 4 and the reasons provided by those who dropped out of the scheme (see Table 5). As shown in Table 3, 79 percent of households indicated that the timing of the premium was convenient, 84 percent mentioned that the registration fee was affordable and 76 percent found the premium affordable. There are no statistically significant differences in these affordability questions across households who renew and those who drop-out. These responses are buttressed by comments received from FGD participants who argued that the premium was affordable as compared to what needs to be paid from their pocket in order to access healthcare services. Most uninsured

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<sup>12</sup> Variable definitions are provided in Table A1.



FGD participants also shared the view of the insured that the premium was not onerous. In relation to this an uninsured participant from *Tigray* region commented,

“The CBHI contribution is not expensive since the premium is 132 ETB per annum, which is equal to the price of two chickens. I have not yet joined the scheme because I wanted to ascertain benefits from those who already joined the scheme. So far, I have seen from my neighbours experience that they get medical services almost for free because they are members of the scheme. Thus, I already decided to apply for membership in the near future” [Discussed on December 07, 2012].

While the scheme seems to be affordable for the bulk of households, for 26 percent of those who drop-out, an inability to pay the premium is the main reason for scheme exit (see Table 5). The estimates presented in Table 4 show that it is households in the second consumption quintile who are particularly vulnerable as they are 12 to 14 percentage points more likely to drop out of the scheme as compared to the poorest quintile. Households with higher consumption levels are less likely to drop out but the effects are not statistically significant. There is a clear link between education of the household head and scheme retention. Household heads with primary education and even those with informal education are less likely to leave the scheme.

Participation in the PSNP, which is a program catering to food insecure households is associated with a 9 to 11 percentage point reduction in scheme drop out.<sup>13</sup> The qualitative information suggests two reasons for this PSNP effect. First, government officials have been taking measures to integrate different development interventions such as agricultural extension, education and health programmes. A key informant in the *Tigray* region mentioned that households covered by the PSNP are provided information on the CBHI

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<sup>13</sup> About 33 percent of the PSNP beneficiaries belong to the poorest quintile and 5.2 percent are in the highest quintile.

scheme.<sup>14</sup> This in turn may lead to greater appreciation of the schemes potential benefits and hence an increased propensity to renew contracts. A second reason is that there may be pressure to remain enrolled if a household is receiving benefits from the PSNP scheme. In *Tigray* and *Oromiya* region, a number of the focus group discussion participants who were also covered by the PSNP complained that they had been pressured to join the scheme. As shown in Table 5, about 11 percent of those who have renewed their contracts indicate that they felt pressure from CBHI/kebele officials to do so.<sup>15</sup> A key informant in *Oromiya* argued,

“Membership is based on the willingness of the target households. However, since there is competition among the pilot villages to register higher CBHI coverage, village officials used different promotion techniques including house-to-house membership registration and collection of CBHI contribution from volunteer PSNP members during the distribution of PSNP benefits. Some people may consider this as a kind of enforcement mechanisms. Actually we should not care much about pressure on the households to participate in the scheme because enrolment benefits the community and they would be happy when they actually get medical services without out-of-pocket payment later on” [Interviewed on December 25, 2012].

Overall, it seems that the bulk of households are able to afford the CBHI scheme. The estimates suggest that perhaps due to deliberate government efforts it is not the poorest households that tend to drop out from the scheme but households who are in the 2<sup>nd</sup> and 3<sup>rd</sup> consumption quintiles are more likely to struggle with scheme payment.<sup>16</sup>

## 5.2 Health status and utilization of health care

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<sup>14</sup> A key informant in *Tigray* region stated, “Continuous education on health issues including about the recently introduced community based health insurance scheme is provided to those people who are covered under PSNP. Moreover, during the distribution of PSNP payments, the participants are asked if they would like to register for CBHI and those who volunteer pay immediately and join” [Interviewed on December 07, 2012].

<sup>15</sup> We estimated all the specifications reported in Table 4 after dropping those who indicated that they felt pressured to renew their contracts. The estimates are not sensitive to this exclusion.

<sup>16</sup> The scheme is expected to provide a fee waiver for 10 percent of the poorest households. This may also explain the ability of households in the poorest consumption quintiles to afford the scheme. However, in our sample only 3.5 percent or 17 of the 489 households who were insured in April 2012 received a fee waiver and these households are evenly distributed across the five quintiles.

We now turn to the various factors that may influence scheme returns. There is no evidence that household self-assessed health status is associated with contract renewal. Experiencing a short-term illness increases the chances of dropping out, although the size of the coefficient is small. The clearest effect emanates from recent episodes of chronic illnesses which enhances scheme appeal. Across all specifications, recent experience of a prolonged illness is associated with a 4 to 6 percentage point reduction in scheme drop-out. This pattern does raise concerns about the risk-profile of households who continue in the scheme, an issue to which we return in the next paragraph.

While health status and the incidence of illness are included to assess the role of expected returns in influencing decisions we also have a direct measure of scheme returns. In the first year of the scheme 33 percent of enrollees indicated that they had used the CBHI card to access health services, compared to 36 percent for those who renewed contracts and 19 percent for those who didn't (see Table 3). The logit estimates also display this pattern, and across all specifications having used the CBHI card is associated with an 11 to 12 percentage point reduction in CBHI drop-out. This suggests that a positive scheme pay out which clearly demonstrates the usefulness of the scheme encourages renewal.<sup>17</sup> At the same time it also raises concerns about the health status of those who do remain in the scheme. As may be expected, the incidence of recent illnesses is twice as high amongst those who have used the CBHI card (10.6 versus 5.7 percent) and the share of those with good health status (78 versus 86 percent) is also lower. Despite this pattern, the overall health risk profile of those who are enrolled in the scheme does not seem to be very different from those who

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<sup>17</sup> In 2012, one of the most important reasons for not enrolling in the scheme was “a wait and see the benefits” response. This was provided by 16 percent (117 households) of those who did not enrol in 2012. By 2013, this reason had dropped to about 10 percent. 76 percent of those who provided this reason in 2012 had enrolled in 2013.

have not yet enrolled. There are no statistically significant differences in terms of the incidence of illnesses, and the health status of those who are enrolled appears to be better (see Table 6). Furthermore, only 5.8 percent of households who drop out mention lack of illnesses as the main reason for leaving the scheme while about 10 percent mentioned that frequent illnesses is their main reason for scheme renewal (see Table 5).

### *5.3 Understanding, knowledge and scheme experience*

A greater understanding of health insurance, and in particular knowledge of the CBHI scheme, is expected to support retention. Prior to the pilot, health insurance was uncommon in rural Ethiopia. A campaign to raise awareness was therefore set up, described by a key informant at CARE Ethiopia as follows,

“Village officials, community leaders and health workers provide information about health insurance by moving door to door, at churches and mosques, and during other social gatherings. In addition to these, the scheme used documentary films, local mass media, amplifiers, amateur artists, pamphlets, posters, and T-shirt advertisings for awareness creation and community mobilization” [Interviewed on January 27, 2013].

Our data show that on average a household attended three CBHI-related meetings before scheme launch (Table 3). Based on responses to a set of four questions designed to test basic understanding of insurance, it seems that these efforts have been successful. As shown in Table 3, more than 80 percent of the respondents are aware that the CBHI scheme is not just for the sick, that it is not a savings scheme and that that their premiums will not be returned. 59 percent provide a correct response to all four questions while 83 percent respond correctly to at least three of the four questions. The estimates in Table 4 confirm that a greater understanding of health insurance reduces drop out but the effects are not

precise.<sup>18</sup> This is perhaps not surprising as understanding of insurance appears to be quite high regardless of CBHI membership renewal status.

Of the three variables included to capture scheme-specific knowledge the clearest effect emerges from “official position held”. Holding an official position in local or traditional administrative bodies is associated with an 8 percentage point reduction in dropping out. This effect is consistent with our knowledge of scheme roll-out activities. According to the qualitative data collected in the pilot regions, before scheme introduction, village officials, heads of traditional organizations, religions leaders, and other people of influence were provided information on the concept of health insurance and detailed information on the design features of the pilot CBHI. These leaders were also expected to engage in awareness raising activities. A CBHI coordinator in *Tigray* region elaborated that,

“After attending the training, community leaders participated in mobilization activities held at churches/mosques, gathering places for traditional associations, and village administrative offices. During the training, the leaders also agreed to become models in their community by first purchasing health insurance and actually almost all of them are now members of the pilot scheme” [Interviewed on December 09, 2012].

Despite the number of meetings attended and the high percentage of correct responses, the single most important reason for dropping out was lack of awareness about the details of how the CBHI scheme works (32 percent amongst the dropouts, see Table 5). The qualitative information reveals that while basic understanding of insurance is widespread as is knowledge of the basic features of the scheme, details about the benefit package, referral system, co-payments in case hospital services are used without visiting health centers, and reimbursement of claims is not widely known. A key informant in *Ambara* region illustrates this as follow,

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<sup>18</sup> A joint test for the statistical significance of the two dummy variables records a p-value of 0.26.

“Despite a number of awareness raising activities undertaken, some of the CBHI members in *Ambara* region did not even know that they needed to take their membership card when they visited healthcare providers. Because of such confusion, as they complained later on, they were forced to pay from their pocket to get healthcare services and even buy drugs” [Interviewed on January 10, 2013].

About half the respondents rated their scheme experiences as high while a third indicated a medium level of satisfaction (Table 3). There are no statistical differences in terms of scheme experience between the drop-outs and those who renew and the estimates in Table 4 also show that experience with the CBHI scheme does not play a role in determining retention.<sup>19</sup>

#### *5.4 Supply and quality of health care*

Although health centers and hospitals do not seem to be particularly accessible (64 and 101 minutes to reach these, respectively), geographical proximity to facilities is not an important factor determining renewal. The specification includes a range of variables – both subjective and objective which are designed to capture quality of care. According to the descriptive statistics a majority of households think that the quality of care on offer is not good (62 percent), although this figure does not differ across contract renewal status. While there is some evidence that a positive perception of the quality of care and availability of equipment works towards reducing dropouts, the estimates are not statistically significant.<sup>20</sup> During the focus group discussion a number of respondents mentioned that health workers do not treat insured workers in an equitable manner. For instance, a CBHI member in *Ambara* region argued that,

“Some nurses who are working in our village health center consider patients with CBHI cards as poor who get free medical services by the government subsidy and they do not give equal level of treatment for both insured and non-insured people” [Discussed on January 11, 2013].

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<sup>19</sup> A joint test for the statistical significance of the two dummy variables records a p-value of 0.92.

<sup>20</sup> The regional dummies absorb some of the variation in the quality of health care and the effects of the quality and access variables tends to be larger and in some cases (availability of equipment) statistically significant if the regional dummies are excluded.

Similarly, an FGD participant in Yirgalem town of *SNNPR* explained that,

“The health professionals think that insured individuals came to health centers simply for check up since they do not pay for treatment from their pockets. They give medicine only for non-members of the scheme and they tell members of the scheme to buy from private stores and we are forced to pay from our pockets for drugs whereas we have health insurance card” [Discussed on January 24, 2013].

Notwithstanding these cases, the view that health workers tend to favour uninsured patients does not seem to be widespread. In fact a larger proportion mention that they are favoured rather than not. There is also no evidence that respondents’ perceptions of the treatment they receive from health care providers determines dropout (Table 4). These effects are in marked contrast to the literature which highlights the importance of quality of care in determining retention (Criel and Walkens, 2003; Dong et al. 2009, Mladovsky, 2014). In the case of the current CBHI program the pilot districts were purposively selected, all health facilities have carried out reforms which allow them to retain fees and variations in quality of care are unlikely to be pronounced. Indeed prior to scheme launch a number of efforts were made to enhance the quality of care on offer. A key informant at the Federal Ministry of Health pointed out,

“The district governments made efforts to meet the required human resources in the facilities and the regional government invested to improve access to water and electricity in each of the facilities. The central government, on the other hand, provided medicine subsidy amounted to 40,000 ETB to each health center and hospital in the pilot districts” [Interviewed on January 27, 2013].

As pointed out earlier there are sharp differences in renewal rates across regions. Households in *Oromiya* and especially the *Ambara* region are less likely to withdraw from the CBHI scheme compared to those in *SNNP* and *Tigray* regions. For instance, households in *Ambara* region are between 17 to 18 percentage points less likely to dropout as compared to the reference region (*SNNPR*). Differences in the design features of the scheme could be

one of the reasons for this pattern. As reported in section 2, CBHI members in *Ambara* and *Oromiya* regions can use higher level care from any public hospital within the regions while those in *SNNPR* can visit only the nearest hospital. Moreover, in *Ambara* and *Oromiya* regions, claims are reimbursed if non-CBHI linked facilities are used as long as the referral system has been followed while there is no such possibility in *SNNPR*.

## **6. Concluding remarks**

This paper examines the determinants of drop out from a pilot CBHI scheme introduced by the Ethiopian government in 2011. The analysis is based on household panel data, a health facility survey and qualitative information obtained through focus group discussions and key informant interviews. The paper focused on four issues – whether the scheme is affordable, whether renewal is more likely amongst households with specific health care status and health care use, the role of health insurance and scheme understanding and finally the role of the quality of health care in influencing uptake.

In April 2012, uptake was 41 percent and in April 2013, about two years after scheme introduction, this had risen to 48 percent. An impressive 82 percent of those who enrolled in the first year renewed their subscriptions, while 25 percent who had not enrolled earlier did join the scheme in 2013. This is a relatively high renewal rate as compared to voluntary health insurance schemes in other countries.

While socioeconomic status as measured by education of the household head reduces scheme dropout, the effect of consumption is more nuanced. We found that households belonging to the poorest quintile are as likely to continue in the scheme as compared to those in the richest quintiles (4<sup>th</sup> and 5<sup>th</sup>) while households belonging to the 2<sup>nd</sup> quintile were about 12 percentage points less likely to continue. This is probably due to social support such as benefits from the PSNP and fee waivers that are more readily available to the



poorest and food insecure households. Consistent with this interpretation, we found households who have participated or still participate in the PSNP to be 9 percentage points less likely to drop out. Responses to direct questions about premium costs and information gathered from the focus group discussions revealed that 69 percent of households rate the scheme as highly affordable.

While self-assessed health status did not have a bearing on contract renewal, recent episodes of chronic illness and especially the use of the CBHI card to access health services were found to be strongly linked to contract renewal. Clearly, scheme use leads to scheme use and while this may seem obvious it does highlight the importance of experiencing a positive scheme payout on scheme renewal. Indeed it may be argued that for health insurance schemes which are a relatively new construction in rural Ethiopia, and for that matter in other developing countries, a clear benefit demonstration effect is essential to sustain interest. However, at the same time, it does raise concerns about the health risks of those who continue in the scheme. Despite the greater probability of contract renewal amongst those who have made use of health services, the overall health risks of those who are enrolled is not statistically different as compared to those who have not yet enrolled, most likely due to the entry of additional households.

There is some evidence that households with greater knowledge of health insurance and a greater understanding of the scheme are more likely to remain enrolled. On average at least one member of a household has attended about 3 CBHI-related meetings and basic understanding of insurance is widespread. While there were concerns about the availability and quality of care, such issues were not restricted to those enrolled in the scheme. We did not find any link between the supply side variables, both access and quality, and scheme drop out.

Notwithstanding concerns about the quality of care and the differential treatment provided to the insured, the high rate of contract renewal and the even higher rate of intention to renew contracts, shows that demand for health insurance is not a concern. A number of factors seem to have contributed to this, including the affordable premiums, successful awareness-raising activities, the use of existing social programs to disseminate knowledge and the embedding of the scheme within existing government structures such that scheme performance and uptake is one of the yardsticks on the basis of which the success of a *kebele's* administration is measured.

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**Table 1**  
**CBHI Enrolment and drop-out**

Region	April 2012		April 2013					
	Enrolled		Enrolled		Dropped-out		New members	
	%	N	%	N	%	N	%	N
<i>Tigray</i>	33.9	101	50.2	146	26.5	26	38.3	74
<i>Amhara</i>	49.5	148	62.7	188	6.9	10	33.8	52
<i>Oromiya</i>	44.2	133	44.5	133	21.2	28	17.4	29
<i>SNNPR</i>	35.3	107	35.4	107	21.5	23	11.8	23
<b>Total</b>	<b>40.7</b>	<b>489</b>	<b>48.2</b>	<b>574</b>	<b>18.0</b>	<b>87</b>	<b>25.1</b>	<b>178</b>

**Note:** Among insured households in 2012, one household did not report its enrolment status and five households were not resurveyed in 2013.

**Table 2**  
**CBHI in Ethiopia – Premiums, payment intervals and enrollment**

Region	Unit of contribution	Premium per month		Payment interval
		Core household members	Per extended family member	
<i>Tigray</i>	Household	ETB 11.00	ETB 2.50	Annual
<i>Amhara</i>	Individual	ETB 3.00	ETB 3.00	Biannual
<i>Oromiya</i>	Household	ETB 15.00	ETB 3.00	Gimbichu district - annual Kuyu, Deder, and L. Kossa districts – annual or biannual
<i>SNNPR</i>	Household	ETB 10.50	ETB 2.10	Yirgalem and D. Woyde – quarterly Damboya - three times a year

**Notes:** In addition to the premiums there is a one-time registration fee of ETB 5.00 per household. **Source:** Abt Associates and key informant interviews at the federal, district and regional levels.

**Table 3**  
**Descriptive statistics by CBHI membership renewal status, 2012**

Variable	Dropped - out		Renewed		Mean diff. p-value	Total	
	Mean	SD	Mean	SD		Mean	SD
<b>Socio-economic status</b>							
Poorest consumption quintile	0.23	0.42	0.22	0.42	0.9144	0.22	0.41
2nd consumption quintile	0.27	0.45	0.17	0.37	0.0231	0.18	0.39
3rd consumption quintile	0.21	0.41	0.21	0.41	0.9824	0.21	0.41
4th consumption quintile	0.12	0.33	0.20	0.40	0.0819	0.19	0.39
Richest consumption quintile	0.17	0.37	0.20	0.40	0.5098	0.19	0.39
HH head education - No education at all	0.52	0.50	0.38	0.49	0.0194	0.41	0.49
HH head education - Informal	0.09	0.29	0.19	0.39	0.0259	0.17	0.38
HH head education - Primary or above	0.39	0.49	0.43	0.50	0.5393	0.42	0.49
Participates in PSNP	0.32	0.47	0.31	0.46	0.8022	0.31	0.46
<b>Demographic traits</b>							
Male headed HH	0.86	0.35	0.91	0.29	0.2141	0.90	0.31
Age of HH head	47.10	14.12	48.10	12.33	0.5063	47.91	12.68
Household size	6.21	2.28	6.26	2.21	0.8324	6.21	2.24
Prop. of children aged under 6	0.15	0.16	0.12	0.13	0.0264	0.12	0.13
Prop. of male aged 6 to 15	0.15	0.15	0.17	0.14	0.2288	0.16	0.14
Prop. of female aged 6 to 15	0.14	0.14	0.16	0.15	0.2008	0.16	0.15
Prop. of male aged 16 to 64	0.27	0.16	0.26	0.15	0.3428	0.26	0.15
Prop. of female aged 16 to 64	0.25	0.15	0.27	0.14	0.3895	0.26	0.15
Prop. of elderly aged above 64	0.04	0.13	0.03	0.10	0.6847	0.04	0.11
<b>Health status and health care use</b>							
Prop. of household members with good SAH	0.85	0.26	0.83	0.30	0.5063	0.83	0.29
Past illness event	9.48	20.05	6.78	14.54	0.1462	7.25	15.64
Chronic illness	0.16	0.46	0.20	0.80	0.6723	0.20	0.75
CBHI card used	0.19	0.40	0.36	0.48	0.0028	0.33	0.47
<b>Understanding of health insurance</b>							
Only sick people buy CBHI - Appropriate response	0.83	0.38	0.83	0.37	0.9045	0.83	0.38
CBHI is same as saving scheme - Appropriate response	0.82	0.39	0.87	0.34	0.2023	0.86	0.35
CBHI finances health care - Appropriate response	0.83	0.38	0.84	0.37	0.7676	0.83	0.37
CBHI premium can be returned - Appropriate response	0.80	0.40	0.78	0.41	0.6833	0.79	0.41
Health insurance understanding level - Low	0.21	0.41	0.17	0.37	0.3711	0.18	0.38
Health insurance understanding level - Medium	0.23	0.42	0.24	0.42	0.8819	0.24	0.43
Health insurance understanding level - High	0.56	0.50	0.60	0.49	0.5749	0.59	0.49
<b>Knowledge of &amp; participation in CBHI scheme</b>							
No of CBHI meetings attended before implementation	2.58	1.55	2.88	2.48	0.3327	2.82	2.33
Involved in CBHI management	0.13	0.33	0.21	0.41	0.0748	0.19	0.40
Official position held	0.11	0.32	0.32	0.47	0.0001	0.29	0.45
<b>CBHI experience and design features</b>							
CBHI agents solve problems - Agree	0.51	0.50	0.64	0.48	0.0251	0.62	0.49
Community guides CBHI administration - Agree	0.41	0.49	0.52	0.50	0.0517	0.50	0.50
CBHI management is trust worthy - Agree	0.56	0.50	0.61	0.49	0.4078	0.60	0.49
CBHI registration service – Satisfactory	0.69	0.47	0.72	0.45	0.4877	0.71	0.45
CBHI premium collection service- Satisfactory	0.70	0.46	0.74	0.44	0.4470	0.73	0.45
Overall satisfaction with the scheme - Low	0.24	0.43	0.18	0.38	0.1377	0.19	0.39
Overall satisfaction with the scheme - Medium	0.33	0.47	0.32	0.47	0.8810	0.32	0.47
Overall satisfaction with the scheme - High	0.43	0.49	0.51	0.50	0.1942	0.49	0.50
The timing of premium payment - convenient	0.77	0.42	0.80	0.40	0.6365	0.79	0.41
CBHI registration fee - affordable	0.82	0.39	0.85	0.36	0.5874	0.84	0.37
CBHI premium - affordable	0.76	0.43	0.77	0.42	0.9446	0.76	0.43

Variable	Dropped - out		Renewed		Mean diff. p-value	Total	
	Mean	SD	Mean	SD		Mean	SD
Capacity to afford for CBHI - Low	0.21	0.41	0.19	0.39	0.5755	0.19	0.40
Capacity to afford for CBHI - Medium	0.08	0.28	0.12	0.32	0.3586	0.11	0.32
Capacity to afford for CBHI - High	0.70	0.46	0.69	0.46	0.8812	0.69	0.46
<b>Access to &amp; quality of care</b>							
Travel time to health center	55.09	35.25	65.83	37.56	0.0151	63.69	37.45
Travel time to public hospital	90.87	47.13	102.87	49.21	0.0387	100.61	49.16
Health workers favour insured patients - Disagree	0.22	0.42	0.24	0.43	0.7624	0.24	0.43
Health workers favour insured patients - Neutral	0.45	0.50	0.41	0.49	0.5655	0.42	0.49
Health workers favour insured patients - Agree	0.33	0.47	0.35	0.48	0.7441	0.34	0.48
Quality of care linked to CBHI - Good	0.34	0.48	0.39	0.49	0.4004	0.38	0.49
Availability of blood testing equipment	0.83	0.38	0.94	0.23	0.0002	0.92	0.26
Waiting time to see a medical professional	23.20	19.91	29.44	24.69	0.0279	28.33	23.97
<b>Community characteristics</b>							
Region - <i>Tigray</i>	0.30	0.46	0.18	0.39	0.0139	0.21	0.41
Region - <i>Amhara</i>	0.11	0.32	0.34	0.48	0.0000	0.30	0.46
Region - <i>Oromiya</i>	0.32	0.47	0.26	0.44	0.2627	0.27	0.45
Region - <i>SNNPR</i>	0.26	0.44	0.21	0.41	0.2890	0.22	0.41
Observations	87		396			483	

**Table 4**  
**Probability of dropping out – marginal effects (std. error)**

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Socioeconomic status</b>					
2nd consumption quintile (ref: poorest consumption quintile)	0.123* (0.0629)	0.124** (0.0622)	0.135* (0.0758)	0.123* (0.0632)	0.135* (0.0750)
3rd consumption quintile	0.0122 (0.0510)	0.00882 (0.0506)	0.0442 (0.0615)	0.0111 (0.0508)	0.0391 (0.0566)
4th consumption quintile	-0.0350 (0.0476)	-0.0409 (0.0467)	-0.00614 (0.0654)	-0.0336 (0.0479)	-0.0137 (0.0605)
Richest consumption quintile	-0.0567 (0.0459)	-0.0569 (0.0464)	-0.0264 (0.0492)	-0.0570 (0.0472)	-0.0230 (0.0501)
HH head education - Informal (ref: no education at all)	-0.0804** (0.0342)	-0.0791** (0.0333)	-0.0663* (0.0345)	-0.0792** (0.0338)	-0.0659** (0.0316)
HH head education - Primary or above	-0.0678* (0.0369)	-0.0664* (0.0366)	-0.0419 (0.0441)	-0.0669* (0.0372)	-0.0421 (0.0428)
Participated in PSNP	-0.0945*** (0.0353)	-0.0908** (0.0359)	-0.107*** (0.0350)	-0.0943*** (0.0351)	-0.0990*** (0.0347)
<b>Demographic traits</b>					
Male headed HH	-0.0158 (0.0494)	-0.0149 (0.0485)	-0.0465 (0.0688)	-0.0124 (0.0480)	-0.0373 (0.0659)
Age of HH head	-0.00156 (0.00174)	-0.00147 (0.00173)	-0.00131 (0.00211)	-0.00169 (0.00169)	-0.00125 (0.00201)
Household size	-0.0110 (0.00907)	-0.0111 (0.00918)	-0.00635 (0.00921)	-0.0109 (0.00933)	-0.00682 (0.00905)
Prop. of children aged under 6 (ref: Prop. of male aged 16 to 64)	0.0699 (0.156)	0.0689 (0.151)	-0.0817 (0.175)	0.0735 (0.157)	-0.0836 (0.164)
Prop. of male aged 6 to 15	-0.269** (0.120)	-0.262** (0.118)	-0.319* (0.168)	-0.261** (0.120)	-0.303* (0.164)
Prop. of female aged 6 to 15	-0.179 (0.169)	-0.181 (0.169)	-0.200 (0.169)	-0.173 (0.172)	-0.191 (0.167)
Prop. of female aged 16 to 64	-0.332** (0.152)	-0.344** (0.150)	-0.533** (0.221)	-0.329** (0.154)	-0.521** (0.214)
Prop. of elderly aged above 64	-0.00634 (0.170)	-0.0264 (0.166)	-0.0896 (0.176)	-0.00177 (0.171)	-0.107 (0.165)
<b>Health status and health care use</b>					
Prop. of household members with good SAH (ref: Prop. of household members with poor SAH)	-0.0736 (0.0694)	-0.0774 (0.0697)	-0.117 (0.0820)	-0.0722 (0.0688)	-0.123 (0.0856)
Past illness event	0.00138* (0.000774)	0.00139* (0.000759)	0.00196** (0.000843)	0.00134* (0.000744)	0.00186** (0.000847)
Chronic illness	-0.0439** (0.0179)	-0.0441** (0.0177)	-0.0593** (0.0254)	-0.0430** (0.0182)	-0.0590** (0.0245)
CBHI card used	-0.116*** (0.0342)	-0.120*** (0.0346)	-0.103** (0.0411)	-0.117*** (0.0338)	-0.108** (0.0422)
<b>Understanding of health insurance</b>					
Health insurance understanding level - medium (ref: Low)		-0.0401 (0.0439)			-0.0733* (0.0395)
Health insurance understanding level - high		-0.0446 (0.0420)			-0.0565 (0.0556)
<b>Knowledge of &amp; participation in CBHI scheme</b>					
No of CBHI meetings attended before implementation			-0.00207 (0.00488)		-0.00217 (0.00459)
Involved in CBHI management			-0.0442		-0.0494



Official position held			(0.0319)	(0.0325)	
			-0.0850**	-0.0798**	
			(0.0353)	(0.0333)	
<b>CBHI experience and design features</b>					
Overall satisfaction with the scheme - Medium (ref: Low)				-0.0280	-0.0150
				(0.0396)	(0.0480)
Overall satisfaction with the scheme - High				-0.0277	-0.0213
				(0.0403)	(0.0516)
<b>Supply side characteristics</b>					
Travel time to health center	-0.000464	-0.000521	-0.000866	-0.000513	-0.000921*
	(0.000538)	(0.000525)	(0.000578)	(0.000550)	(0.000547)
Travel time to public hospital	-0.000342	-0.000290	-0.000336	-0.000328	-0.000296
	(0.000395)	(0.000406)	(0.000398)	(0.000401)	(0.000398)
Quality of care linked to CBHI- Good (ref: Not good)	-0.0314	-0.0373	-0.0350	-0.0263	-0.0380
	(0.0344)	(0.0349)	(0.0373)	(0.0395)	(0.0420)
Health workers favour insured patients - Neutral (ref: Disagree)	0.00808	0.00625	-0.0117	0.00915	-0.00830
	(0.0360)	(0.0352)	(0.0403)	(0.0362)	(0.0409)
Health workers favour insured patients - Agree	-0.0187	-0.0190	-0.0421	-0.0121	-0.0301
	(0.0445)	(0.0443)	(0.0398)	(0.0441)	(0.0398)
Availability of blood testing equipment	-0.124	-0.128	-0.0713	-0.131	-0.0801
	(0.0899)	(0.0924)	(0.0853)	(0.0918)	(0.0894)
Waiting time to see a medical professional	-0.00105	-0.000935	-0.00108	-0.00102	-0.000810
	(0.00119)	(0.00121)	(0.00103)	(0.00116)	(0.00100)
<b>Community characteristics</b>					
Region - <i>Tigray</i> (ref: <i>SNNPR</i> )	-0.0383	-0.0403	-0.0353	-0.0374	-0.0387
	(0.0591)	(0.0583)	(0.0573)	(0.0586)	(0.0550)
Region - <i>Amhara</i>	-0.183***	-0.183***	-0.169***	-0.179***	-0.166***
	(0.0500)	(0.0492)	(0.0530)	(0.0511)	(0.0517)
Region - <i>Oromiya</i>	-0.0955**	-0.0905**	-0.0610	-0.0963**	-0.0566
	(0.0442)	(0.0454)	(0.0502)	(0.0447)	(0.0481)
Observations	459	459	376	459	376
Pseudo R-squared	0.2004	0.2030	0.2529	0.2018	0.2618
Log pseudo likelihood	-171.021	-170.479	-133.907	-170.722	-132.303

**Notes:** Outcome variable is CBHI membership renewal status in 2013. Explanatory variables are at their 2012 or 2011 values; standard errors in parentheses are clustered at the village level; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 5**  
**Single most important reason for (not) renewing contract**

<b>Dropped out (N= 87)</b>	<b>N (%)</b>	<b>Renewed (N= 396)</b>	<b>N (%)</b>
Reason for not renewing		Reason for renewing	
Illness and/or injury does not occur frequently in our household	5 (5.8)	Illness and/or injury occurs frequently in our household	37 (9.9)
The registration fee and premiums are not affordable	23 (26.4)	Pregnant women in our HH needed health care services	9 (2.4)
Want to wait in order to confirm the benefits of the scheme from others	9 (10.3)	Child/children in our HH needed health care services	27 (7.2)
Lack of awareness about the detail of how the CBHI works	28 (32.2)	To finance unexpected health care expense	145 (38.7)
The quality of health care services is low	5 (5.8)	Premium is low compared to the user fee	81 (21.6)
The benefit package does not meet our needs	5 (5.8)	Pressure from the CBHI/ <i>kebele</i> officials	40 (10.7)
CBHI management staff is not trustworthy	4 (4.6)	Pressure from other members/community	15 (4.0)
Other	8 (9.1)	Other	21 (5.5)
		The share of households that plan to renew their CBHI membership	382 (96.5)

**Table 6**  
**Health status in 2013 by CBHI membership status in 2013**

<b>Variable</b>	<b>Enrolled</b>		<b>Non-enrolled</b>		<b>Mean diff. p-value</b>	<b>Total</b>	
	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>		<b>Mean</b>	<b>SD</b>
<b>Health status and health care use</b>							
Prop. of household members with good SAH	0.81	0.30	0.75	0.37	0.0067	0.78	0.34
Past illness event	6.43	13.48	5.56	13.1	0.2598	5.98	13.29
Chronic illness	0.22	0.66	0.17	0.65	0.2193	0.19	0.66
Observations	574		618			1192	

**Appendix**  
**Table A1**  
**Description of explanatory variables**

Variable	Description
<b>Socio-economic status</b>	
Poorest consumption quintile	Classification of households based on monthly household consumption expenditure (in Birr) excluding health care spending (poorest quintile, 2 <sup>nd</sup> quintile, 3 <sup>rd</sup> quintile, 4 <sup>th</sup> quintile, richest quintile)
HH head education	Education level of the household head (no education at all, informal education, primary or above)
Participates in PSNP	Household participated or still participates in productive safety net programme, PSNP (1=yes)
<b>Demographic traits</b>	
Male headed HH	Made headed household (1= yes)
Age of HH head	Age of the household head (in completed years)
Household size	Number of household members
Prop. of children aged under 6	Proportion of children in the household aged under 6 years old
Prop. of male aged 6 to 15	Proportion of males in the household aged between 6 to 15 years old
Prop. of female aged 6 to 15	Proportion of females in the household aged between 6 to 15 years old
Prop. of male aged 16 to 64	Proportion of males in the household aged between 16 to 64 years old
Prop. of female aged 16 to 64	Proportion of females in the household aged between 16 to 64 years old
Prop. of elderly aged above 64	Proportion of elderly in the household aged above 64 years old
<b>Health status and health care use</b>	
Prop. of household members with good SAH	Proportion of household members aged 6 years and above with good self-assessed health status (based on the perception of the respondent to the household survey)
Prop. of household members with poor SAH	Proportion of household members aged 6 years and above with poor health status (based on the perception of the respondent to the household survey)
Past illness event	Household, total number of days ill past two months
Chronic illness	Number of household members aged 6 and above years who suffered from a chronic disease (symptoms have been going on for more than 30 days)
CBHI card used	The household used its CBHI membership card to cover health costs (1=yes)
<b>Understanding of health insurance</b>	
Only sick people buy CBHI	Only those who fall sick should consider buying HI/CBHI (1= if the respondent provides appropriate response)
CBHI is same as saving scheme	HI/CBHI programmes are like savings scheme, you will receive interest and get your money back (1= if the respondent provides appropriate response)
CBHI finances health care	In HI/CBHI programmes you pay money (premiums) in order for the HI/ CBHI to finance your future health care needs (1= if the respondent provides appropriate response)
CBHI premium can be returned	If you do not make claim any costs through HI/CBHI your premium will be returned (1= if the respondent provides appropriate response)
Health insurance understanding level	Composite variable constructed based on four questions measuring the respondent's knowledge of health insurance (low understanding if two or less than two questions correctly answered, medium understanding if three questions correctly answered, high understanding if four questions correctly answered)
<b>Knowledge of &amp; participation in CBHI scheme</b>	
No of CBHI meetings attended before implementation	Number of CBHI related meetings/trainings attended by the respondent or any of her/his HH members before CBHI was implemented
Involved in CBHI management	Involvement of the respondent or any one of his/her household members in the administration and management of the CBHI scheme (1 = yes)
Official position held	At least one household member held or still holds official, <i>kebele</i> , or traditional position (1=yes)
<b>CBHI experience and design features</b>	
CBHI agents solve problems	The local CBHI agent tries hard to solve CBHI implementation problems (1= if the

Variable	Description
Community guides CBHI administration	respondent agrees) The community /CBHI members have the right to guide and supervise the activities of the CBHI administration (1= if the respondent agrees)
CBHI management is trust worthy	The local CBHI management is trustworthy (1= if the respondent agrees)
CBHI registration service	Satisfaction with the experience at the local CBHI office when you went to register (1= if the respondent is satisfied)
CBHI premium collection service	Satisfaction with the experience at the local CBHI office when you went to pay premium (1= if the respondent is satisfied)
Overall satisfaction with the scheme	Composite variable constructed using five indicators/questions measuring the satisfaction of the respondent on the CBHI experience and design feature of the schemes (low level if agreed/satisfied with less than two indicators, medium level if agreed/satisfied with two or three of the indicators, high level if agreed/satisfied with four or five indicators)
The timing of premium payment	The timing/time interval of premium payment is convenient for my household (1= if the respondent agrees)
CBHI registration fee	The CBHI registration fee is affordable for my household (1= if the respondent agrees)
CBHI premium	The CBHI regular contribution (premium) is affordable for my household (1= if the respondent agrees)
Capacity to afford for CBHI	Composite variable constructed using three indicators/questions measuring the capacity of the households to afford for CBHI (low level if the respondent agreed with one or no indicator, medium level if two indicators, high level if three indicators)
<b>Access to &amp; quality of care</b>	
Travel time to health center	Travel time to the nearest health center (in minutes)
Travel time to public hospital	Travel time to the nearest public hospital (in minutes)
Health workers favour insured patients	Health professionals treat patients with CBHI membership better than patients who are not members (disagree, neutral, agree)
Quality of care linked to CBHI	The quality of healthcare services provided under the CBHI scheme is good or excellent (1=yes)
Availability of blood testing equipment	The health facility has blood testing equipment (1=yes)
Waiting time to see a medical professional	Average waiting time (in minutes) to see a medical professional (Doctor, nurse) (based on the response of five patients interviewed after getting medical treatment from the health facility)
<b>Community characteristics</b>	
Region	The region where the household is located ( <i>Tigray Region, Amhara Region, Oromiya Region, Southern Nations Nationalities and People's Region /SNNPR</i> )

**Table A2**  
Perception of CBHI experience and affordability

	Agree			Neither agree nor disagree			Disagree		
	Dropped - out	Renewed	Total	Dropped - out	Renewed	Total	Dropped - out	Renewed	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
CBHI agents solve problems	44 (51.2)	252 (64.1)	296 (61.8)	30 (34.9)	87 (22.1)	117 (24.4)	12 (14.0)	54 (13.7)	66 (13.8)
Community guides CBHI administration	35 (40.7)	206 (52.3)	241 (50.2)	37 (43.0)	118 (30.0)	155 (32.3)	14 (16.3)	70 (17.8)	84 (17.5)
CBHI management is trust worthy	48 (56.5)	241 (61.3)	289 (60.5)	32 (37.7)	104 (26.5)	136 (28.5)	5 (5.9)	48 (56.5)	53 (11.1)
The registration service of local CBHI is satisfactory	59 (68.6)	285 (72.3)	344 (71.7)	21 (24.4)	66 (16.8)	87 (18.1)	6 (7.0)	43 (10.9)	49 (10.2)
The premium collection service of local CBHI office is satisfactory	59 (70.2)	286 (74.3)	345 (73.6)	19 (22.6)	59 (15.3)	78 (16.6)	6 (7.1)	40 (10.4)	46 (9.8)
The timing/time interval of premium payment is convenient for my household	65 (77.38)	310 (79.69)	375 (79.3)	13 (15.48)	51 (13.11)	64 (13.5)	6 (7.14)	28 (7.20)	34 (7.2)
The CBHI registration fee is affordable for my household	69 (82.14)	328 (84.54)	397 (84.1)	10 (11.90)	33 (8.51)	43 (9.1)	5 (5.95)	27 (6.96)	32 (6.8)
The CBHI regular contribution (premium) is affordable for my household	64 (76.19)	297 (76.55)	361 (76.5)	13 (15.48)	53 (13.66)	66 (9.5)	7 (8.33)	38 (9.79)	45 (9.5)

**Table A3**  
Understanding of health insurance

	Correct response			Incorrect response			'I do not know' response		
	Dropped - out	Renewed	Total	Dropped - out	Renewed	Total	Dropped - out	Renewed	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Only sick people buy CBHI	72 (82.8)	329 (83.3)	401 (83.2)	12 (13.8)	56 (14.2)	68 (14.1)	3 (3.5)	10 (2.5)	13 (2.7)
CBHI is same as saving scheme	71 (81.6)	344 (86.9)	415 (85.9)	8 (9.2)	23 (5.8)	31 (6.4)	8 (9.2)	29 (7.3)	37 (7.7)
CBHI finances health care	72 (82.8)	332 (84.1)	404 (83.8)	13 (14.9)	46 (11.7)	59 (12.2)	2 (2.3)	17 (4.3)	19 (3.9)
CBHI premium can be returned	70 (80.5)	310 (78.5)	380 (78.8)	2 (2.3)	19 (4.8)	21 (4.4)	15 (17.2)	66 (16.7)	81 (16.8)

**Table A4**  
**Characteristics of the households per pilot region, 2012**

Variable	Tigray		Amhara		Oromiya		SNNPR	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<b>Socio-economic status</b>								
Poorest consumption quintile	0.35	0.48	0.21	0.41	0.07	0.25	0.30	0.46
2nd consumption quintile	0.19	0.39	0.20	0.40	0.15	0.36	0.21	0.41
3rd consumption quintile	0.24	0.43	0.25	0.43	0.19	0.39	0.17	0.38
4th consumption quintile	0.16	0.36	0.17	0.38	0.26	0.44	0.14	0.35
Richest consumption quintile	0.06	0.24	0.17	0.38	0.33	0.47	0.17	0.38
HH head education - No education at all	0.54	0.50	0.36	0.48	0.41	0.49	0.34	0.47
HH head education - Informal	0.11	0.32	0.27	0.45	0.18	0.39	0.08	0.28
HH head education - Primary or above	0.35	0.48	0.36	0.48	0.41	0.49	0.58	0.50
Participates in PSNP	0.76	0.43	0.08	0.26	0.09	0.29	0.50	0.50
<b>Demographic traits</b>								
Male headed HH	0.87	0.34	0.92	0.26	0.90	0.30	0.89	0.32
Age of HH head	48.24	12.94	48.25	12.73	47.18	12.11	48.09	13.10
Household size	6.33	2.24	5.57	2.05	6.36	1.99	6.98	2.45
Prop. of children aged under 6	0.15	0.14	0.12	0.13	0.12	0.13	0.11	0.12
Prop. of male aged 6 to 15	0.16	0.14	0.13	0.13	0.20	0.15	0.16	0.15
Prop. of female aged 6 to 15	0.14	0.14	0.16	0.15	0.16	0.14	0.17	0.15
Prop. of male aged 16 to 64	0.24	0.17	0.28	0.15	0.25	0.14	0.25	0.15
Prop. of female aged 16 to 64	0.28	0.17	0.27	0.14	0.24	0.12	0.27	0.15
Prop. of elderly aged above 64	0.03	0.08	0.04	0.12	0.03	0.09	0.04	0.13
<b>Health status and health care use</b>								
Prop. of household members with good SAH	0.90	0.22	0.72	0.37	0.92	0.23	0.82	0.25
Prop. of household members with poor SAH	0.10	0.22	0.28	0.37	0.06	0.18	0.18	0.25
Past illness event	6.51	15.31	6.59	11.03	4.14	9.13	12.76	24.30
Chronic illness	0.34	1.07	0.13	0.45	0.08	0.30	0.30	1.04
CBHI card used	0.07	0.26	0.44	0.50	0.08	0.28	0.73	0.45
<b>Understanding of health insurance</b>								
Only sick people buy CBHI - Appropriate response	0.98	0.14	0.76	0.43	0.90	0.30	0.71	0.46
Only sick people buy CBHI - Inappropriate response	0.02	0.14	0.24	0.43	0.10	0.30	0.29	0.46
CBHI is same as saving scheme - Appropriate response	0.90	0.30	0.91	0.29	0.92	0.27	0.67	0.47
CBHI is same as saving scheme - Inappropriate response	0.10	0.30	0.09	0.29	0.08	0.27	0.33	0.47
CBHI finances health care - Appropriate response	0.66	0.48	0.81	0.40	0.92	0.27	0.93	0.25
CBHI finances health care - Inappropriate response	0.34	0.48	0.19	0.40	0.08	0.27	0.07	0.25
CBHI premium can be returned - Appropriate response	0.85	0.36	0.81	0.40	0.80	0.40	0.70	0.46
CBHI premium can be returned - Inappropriate response	0.15	0.36	0.19	0.40	0.20	0.40	0.30	0.46
Health insurance understanding level - Low	0.12	0.33	0.18	0.38	0.10	0.30	0.31	0.46
Health insurance understanding level - Medium	0.31	0.46	0.29	0.45	0.22	0.42	0.12	0.33
Health insurance understanding level - High	0.57	0.50	0.53	0.50	0.68	0.47	0.57	0.50
<b>Knowledge of &amp; participation in CBHI scheme</b>								
No of CBHI meetings attended before implementation	2.94	3.84	3.34	2.14	1.88	0.90	3.06	1.84
Involved in CBHI management	0.12	0.33	0.25	0.44	0.09	0.29	0.31	0.47
Official position held	0.14	0.35	0.45	0.50	0.30	0.46	0.18	0.38
<b>CBHI experience and design features</b>								
CBHI agents solve problems - Agree	0.29	0.46	0.71	0.45	0.64	0.48	0.75	0.44
CBHI agents solve problems - Not agree	0.71	0.46	0.29	0.45	0.36	0.48	0.25	0.44
Community guides CBHI administration - Agree	0.22	0.42	0.59	0.49	0.57	0.50	0.56	0.50
Community guides CBHI administration - Not agree	0.78	0.42	0.41	0.49	0.43	0.50	0.44	0.50
CBHI management is trust worthy - Agree	0.42	0.50	0.63	0.48	0.63	0.48	0.70	0.46
CBHI management is trust worthy - Not agree	0.58	0.50	0.37	0.48	0.37	0.48	0.30	0.46
CBHI registration service - Satisfying	0.64	0.48	0.76	0.43	0.71	0.45	0.74	0.44
CBHI registration service - Not satisfying	0.36	0.48	0.24	0.43	0.29	0.45	0.26	0.44

Variable	Tigray		Amhara		Oromiya		SNNPR	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CBHI premium collection service- Satisfying	0.60	0.49	0.80	0.40	0.75	0.44	0.76	0.43
CBHI premium collection service- Not satisfying	0.40	0.49	0.20	0.40	0.25	0.44	0.24	0.43
Overall satisfaction with the scheme - Low	0.29	0.46	0.10	0.30	0.21	0.41	0.19	0.39
Overall satisfaction with the scheme - Medium	0.51	0.50	0.36	0.48	0.22	0.42	0.22	0.41
Overall satisfaction with the scheme - High	0.20	0.40	0.55	0.50	0.57	0.50	0.59	0.49
The timing of premium payment - convenient	0.62	0.49	0.91	0.29	0.78	0.42	0.81	0.39
The timing of premium payment - not convenient	0.38	0.49	0.09	0.29	0.22	0.42	0.19	0.39
CBHI registration fee - affordable	0.83	0.38	0.88	0.32	0.80	0.40	0.84	0.37
CBHI registration fee - not affordable	0.17	0.38	0.12	0.32	0.20	0.40	0.16	0.37
CBHI premium - affordable	0.72	0.45	0.79	0.41	0.77	0.42	0.77	0.43
CBHI premium - not affordable	0.28	0.45	0.21	0.41	0.23	0.42	0.23	0.43
Capacity to afford for CBHI - Low	0.24	0.43	0.13	0.34	0.22	0.42	0.20	0.40
Capacity to afford for CBHI - Medium	0.20	0.40	0.14	0.35	0.05	0.21	0.07	0.26
Capacity to afford for CBHI - High	0.56	0.50	0.73	0.45	0.73	0.44	0.73	0.45
<b>Access to &amp; quality of care</b>								
Travel time to health center	59.95	38.08	69.63	42.11	72.25	32.52	49.25	30.31
Travel time to public hospital	91.64	51.09	112.98	50.71	104.35	44.06	87.73	46.35
Health workers favour insured patients - Disagree	0.12	0.32	0.40	0.49	0.14	0.35	0.23	0.42
Health workers favour insured patients - Neutral	0.81	0.40	0.35	0.48	0.40	0.49	0.20	0.40
Health workers favour insured patients - Agree	0.08	0.27	0.25	0.44	0.46	0.50	0.58	0.50
Quality of care linked to CBHI - Good	0.09	0.29	0.37	0.48	0.46	0.50	0.58	0.50
Quality of care linked to CBHI - Not good	0.91	0.29	0.63	0.48	0.54	0.50	0.42	0.50
Availability of blood testing equipment	0.88	0.33	1.00	0.00	0.81	0.39	1.00	0.00
Waiting time to see a medical professional	40.74	33.10	40.41	24.22	14.99	6.61	18.16	4.21
Observations	98		146		132		107	