

Synopsis of Results on the Impact of Community-Based Health Insurance on Financial Accessibility to Health Care in Rwanda

Pia Schneider and Francois Diop

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IN RWANDA**

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Synopsis of Results on the Impact of Community-Based Health Insurance on Financial Accessibility to Health Care in Rwanda

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Abstract: This paper evaluates the impact of prepayment schemes on access to health care for poor households, based on household survey data. Rwanda is one of the poorest countries in the world. After the genocide in 1994, public health care services were provided for free to patients, financed by donors and the government. In 1996, the Ministry of Health reintroduced prewar level user charges. By 1999, utilization of primary health care services had dropped from 0.3 in 1997 to a national average of 0.2 annual consultations per capita. This sharp drop in health service use combined with growing concerns about rising poverty, poor health outcome indicators, and a worrisome HIV prevalence among all population groups motivated the Rwandan government to develop community-based health insurance to assure access to the modern health system for the poor. In early 1999, the Rwandan Ministry of Health, in collaboration with the local communities, and the technical support of the USAID-funded Partnerships for Health Reform project (PHR) started the process to pilot test prepayment schemes in three districts. At the end of their first operational year, the 54 schemes counted more than 88,000 members. The findings presented in this paper reveal that insurance enrollment is determined by household characteristics such as the health district of household residence, education level of household head, family size, distance to the health facility, and radio ownership, whereas health and economic indicators did not influence enrollment. Insurance members report up to five times higher health service use than nonmembers. The analysis confirms findings reported by PHR based on provider data: health insurance has significantly improved equity in health service use for members while at the same time out-of-pocket spending has gone down per episode of illness.

Keywords: prepayment schemes; enrollment in community-based health insurance; equity in health service use; Rwanda.

Disclaimer: The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors, and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

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PREFACE

In January 2000, Dr. Gro Harlem Brundtland, Director General of the World Health Organization (WHO), established a Commission on Macroeconomics and Health (CMH) to provide evidence about the importance of health to economic development and poverty alleviation.

This HNP Discussion Paper is based on a Report on community financing submitted in September 2001 to Working Group 3 of the CMH. The mandate of Working Group 3 was to examine alternative approaches to domestic resources mobilization, risk protection against the cost of illness and resource allocation. The working group was chaired by Professor Alan Tait (Former Deputy Director of Fiscal Affairs, International Monetary Fund, and currently Honorary Fellow at University of Kent at Canterbury and Honorary Fellow at Trinity College, Dublin) and Professor Kwesi Botchewey (Director of Africa Research and Programs at the Harvard Center for International Development).

Professor Jeffery D. Sachs (Chairman of the Commission and Director of the Harvard Center for International Development) presented the findings of the CMH in a Report that was submitted to WHO on December 20, 2001—[*Macroeconomics and Health: Investing in Health for Economic Development*](#).

The report of the CMH recommended a six-pronged approach to domestic resource mobilization at low-income levels: “(a) increased mobilization of general tax revenues for health, on the order of 1 percent of GNP by 2007 and 2 percent of GNP by 2015; (b) increased donor support to finance the provision of public goods and to ensure access for the poor to essential health services; (c) conversion of current out-of-pocket expenditure into prepayment schemes, including community financing programs supported by public funding, where feasible; (d) a deepening of the HIPC (Highly Indebted Poor Countries) initiative, in country coverage and in the extent of debt relief (with support from the bilateral donor community); (e) effort to address existing inefficiencies in the way in which government resources are presently allocated and used in the health sector; and (f) reallocating public outlays more generally from unproductive expenditure and subsidies to social-sector programs focused on the poor.”

Most community financing schemes have evolved in the context of severe economic constraints, political instability, and lack of good governance. Usually government taxation capacity is weak, formal mechanisms of social protection for vulnerable populations absent, and government oversight of the informal health sector lacking. In this context of extreme public sector failure, community involvement in the financing of health care provides a critical but insufficient first step in the long march toward improved access to health care by the poor and social protection against the cost of illness.

The CMH stressed that community financing schemes are no panacea for the problems that low-income countries face in resource mobilization. They should be regarded as a complement to—not as a substitute for—strong government involvement in health care financing and risk management related to the cost of illness.

Based on an extensive survey of the literature, the main strengths of community financing schemes are the degree of outreach penetration achieved through community participation, their contribution to financial protection against illness, and increase in access to health care by low-income rural and informal sector workers. Their main weaknesses are the low volume of revenues that can be mobilized from poor communities, the frequent exclusion of the poorest from participation in such schemes without some form of subsidy, the small size of the risk pool, the limited management capacity that exists in rural and low-income contexts, and their isolation from the more comprehensive benefits that are often available through more formal health financing mechanisms and provider networks.

The work by the CMH proposed concrete public policy measures that governments can introduce to strengthen and improve the effectiveness of community involvement in health care financing. This includes: (a) increased and well-targeted subsidies to pay for the premiums of low-income populations; (b) use of insurance to protect against expenditure fluctuations and use of reinsurance to enlarge the effective size of small risk pools; (c) use of effective prevention and case-management techniques to limit expenditure fluctuations; (d) technical support to strengthen the management capacity of local schemes; and (e) establishment and strengthening of links with the formal financing and provider networks.

The report presented in this *HNP Discussion Paper* has made a valuable contribution to our understanding of some of the strengths, weaknesses and policy options for securing better access for the poor to health care and financial protection against the impoverishing effects of illness, especially for rural and informal sector workers in low-income countries.

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I. INTRODUCTION

In response to declining health service utilization after the reintroduction of user fees for services and drugs in public health facilities in 1996, the Rwandan Ministry of Health (MOH) decided to pilot test alternative health care financing and provider payment methods. During the first six months in 1999, the MOH developed an on-going collaboration with the local communities, 54 community-based health insurance (CBHI) plans—each of them partnering with a health center. The MOH selected three pilot districts, Kabutare, Byumba and Kabgayi, to pilot test these prepayment schemes (PPS). The three districts were chosen based on the extent of their health infrastructure, the repeated demand for technical assistance from the population in developing and implementing CBHI, and the districts’ political will to participate in the health insurance pilot experience. By July 1, 1999, all 54 health centers, which had collaborated in the set up of their CBHI in the three pilot districts, signed a contract with their partnering health insurance scheme. Thereafter, the district population started to enroll in the schemes, which are democratically managed by their members as mutual health associations. At the end of the first year, membership in the 54 health insurance plans mounted to 88,303 individuals, corresponding to 8 percent of the total population of the three districts (Table 1). Technical and financial assistance for the entire design, development, implementation and evaluation phase was provided to the Rwandan government by Partnerships for Health Reform (PHR), a project funded by USAID and administered by Abt Associates¹.

Table 1: Community-Based Health Insurance in Rwanda, First Year Performance (7/1999–6/2000)

Indicators	Pilot Districts with CBHI			
	Byumba	Kabgayi	Kabutare	All 3 Districts
All Prepayment Schemes (Status on 6/30/2000):				
Total Number of PPS	21	17	16	54
Total Target Population in Districts	459,329	368,020	288,160	1,115,509
Total Population Enrolled	48,837	21,903	17,563	88,303
Average Number of Members per PPS	2,326	1,288	1,098	1,635
First year average PPS Enrollment Rate	10.6%	6.0%	6.1%	7.9%

Source: PHR TR No. 61)

The objective of this paper is to respond to two questions on the prepayment schemes’ impact. First, what are the population groups that enroll in community-based health insurance schemes; and second, does health insurance membership improve financial accessibility to care without increasing the burden of out-of-pocket health expenditures. These questions are addressed by presenting a synopsis of the findings from the household survey conducted by PHR in the three health districts. The impact of prepayment schemes on insurance and providers’ utilization, cost, and finances has been analyzed from monthly routine data collected from providers and health insurance schemes over a two-year period in the three districts. Findings of this detailed analysis on the financial sustainability of CBHI and their impact on health care providers are presented in the PHR Technical Report No. 61. This paper will therefore

¹ See: Schneider, P. et al. 2000, PHR TR 45 for detailed information on the development and implementation of prepayment schemes in Rwanda.

respond to the question about the insurance impact on households' financial accessibility to the modern health care system by focusing on information collected in the household survey.

The following section provides a brief summary of the design, development, and implementation of prepayment schemes in Rwanda, which took place from January 1999 until September 2000. The third section introduces the method used to address the research questions and presents the household survey data and variables used. Results are presented in the fourth section; and the fifth section has a discussion and conclusion.

II. BACKGROUND

In January 1999, the Rwandan MOH initiated the design and development phase of prepayment plans by creating a strategic steering committee, which was headed by the Director of Health Care and included representatives and stakeholders from the central and regional levels. The design and implementation of health insurance modalities and management features were discussed and agreed upon during 28 district-level workshops attended by community and health care representatives and in a series of community gatherings with the local population. Proposals stemming from these district and community meetings were shared with the central steering committee, which provided feedback and advice to the communities. As a result of this on-going discussion between the central and local level, the scheme features were designed, the legal, contractual, and financial tools were developed, and workshop participants were trained and prepared to manage the 54 prepayment schemes, each entering into partnership with a health center on July 1, 1999.

Under Rwandan law, the schemes are deemed mutual health associations, headed by an executive bureau with four volunteers, elected by and among the scheme members during a CBHI general assembly. At district level, the schemes have formed a federation. Six members have been elected by and among all PPS executive bureau representatives in their general assembly to constitute the district federation of prepayment schemes. The federation is the partner to the district hospital as well as to the health district and other authorities. Each prepayment bureau has signed a contract with the affiliated health center, and each federation with the district hospital, defining in 17 articles, the rules of collaboration between the insurer and provider. According to the schemes' by-laws, members are invited at least once a year to attend the prepayment scheme general assembly.

Individuals and households, who would like to be insured, pay at the time of enrollment an annual premium of 2,500 francs² per family up to seven persons to the CBHI affiliated with their "preferred" health center³. In case of sickness, members contact first their preferred health center, which is usually their nearest public or church-owned facility. Health centers play a gatekeeper function, and hospital services are covered for members only if referred by their preferred health centers. This is done to dissuade members and providers from frivolous use of more expensive hospital services. PPS membership entitles members--after a one-month waiting period--to a basic health care package covering all services and drugs provided in their preferred health center, including ambulance transfer to the district

² July 1999: RWF 2,500 = US\$7.50.

³ Premium rates were set by taking into account existing user fees and by assuming that utilization rates would increase by 25 percent compared to baseline levels. See TR 45: chapter 3.1.1.

public or church-owned hospital, where a limited package is covered⁴. Members pay a 100 francs⁵ copayment for each health center visit.

The MOH was concerned that the availability of health insurance to a population group with an accumulated demand for health services could lead to adverse selection and moral hazard, causing health care costs to rise. Therefore, the MOH recommended to the district workshop participants to incorporate into the design of the prepayment schemes a provider-payment mechanism that will set the necessary incentives for providers to improve their productivity while controlling for unnecessary use of health services. After several discussions between providers and future scheme managers, the workshop participants selected capitation provider payment to the health center, as a measure to control cost escalations caused by supply-side induced increases in demand for health care. Each prepayment bureau disburses monthly one-twelfth of its accumulated premium fund, of which 5 percent is withheld to cover the scheme's administrative costs, 10 percent is paid to the district's prepayment federation, while the rest is paid as capitation payment to the partnering health center. The federation reimburses the district hospital for covered services provided to members, paying per episode of illness (for C-sections, malaria, and pediatrics), and by service for overnight stays and physician consultations for all other illnesses. Thus, insurance members share their hospital costs on a district level and health center costs on a health center catchment area level⁶.

III. DATA SOURCES AND METHODOLOGY

The analysis presented in this paper is based on data collected in the prepayment scheme household survey, conducted by PHR in collaboration with the Rwandan National Population Office (ONAPO). Data collection took place during 40 days in October/November 2000. The household survey includes 2,518 households that were successfully interviewed in the three pilot districts, and number 11,583 individuals. The sample was designed to provide information on the impact of prepayment schemes on households' enrollment and health care seeking behavior, as well as the related financial implications. The sample was based on the same sampling frame as the Rwandan Demographic and Health Survey (DHS), 2000, covering 11 health regions in Rwanda⁷. Households for the prepayment household survey in the three districts have been sampled at random from a list of primary sample households from sample cells identified in the national DHS sample, rendering the household survey sample representative to the district level.

The prepayment household survey used three structured questionnaires for data collection, first, a socioeconomic household questionnaire, second, a curative questionnaire, and third a preventive care questionnaire. The household questionnaire collected information on households' and individuals' sociodemographic and economic characteristics including household expenditures for consumer goods,

⁴ The Kabgayi PPS covers at the hospital full episodes of C-section, Malaria and non-surgical pediatrics, whereas the Kabutare and Byumba PPS cover C-section full episode, as well as each service of physician consultation, and overnight stay at the district hospitals.

⁵ July 1999: RWF 100 = US\$ 0.3.

⁶ See Schneider et al. (2001)a for detailed analysis of PPS impact on utilization, cost and finances in health centers.

⁷ The DHS has been conducted by the Rwandan National Population Office (ONAPO) in collaboration with Macro International and USAID in 2000/01. Households for the DHS have been selected as primary sample units from sample cells identified for the Living Condition Monitoring Survey (LCMS), conducted by the Ministry of Finance in collaboration with UNDP in 2000/1.

health, and education, and participation in CBHI. The curative care questionnaire was addressed to household members who were sick two weeks prior to the interview, and the preventive care questionnaire was used to interview women of childbearing-age who had delivered a child in the last five years or who were pregnant during the year preceding the interview⁸.

The three pilot districts (Byumba, Kabgayi, Kabutare) are similar in their socioeconomic situation. There is little urban activity, and the population is mainly active in agriculture and animal husbandry. Households are assumed to be equally poor with few of them owning cattle, which are a sign of wealth. For the analysis, the sample population is divided into two groups: first, CBHI members in pilot districts, and second, CBHI nonmembers in pilot districts.

Three models are used in this paper to estimate first, the probability of buying health insurance for specific population groups in the three pilot districts; second, the probability of access to basic health care services for the insured and uninsured population groups in pilot districts; and third, the estimated out-of-pocket health expenditures per episode of illness for all sick individuals and for those who sought professional care, based on a set of explanatory variables. For each categorical variable used in the three models, one category has been selected as a reference category. Odds ratios are estimated in the logit regression models for each category to estimate the factor that measures the magnitude of the difference in relation to the reference category. Interaction effects were tested for significance.

A. MODEL 1: DEMAND FOR HEALTH INSURANCE

The following model estimates the probability of CBHI enrollment for households in pilot districts. The objective is to determine if the poorest buy basic health insurance, and if the poor benefit from a redistribution from richer members of the financial pool. The willingness to join CBHI is a discrete choice—to join or to not join. A logit regression model is used to determine households' CBHI enrollment probability, and the extent to which this decision is influenced by specific sociodemographic and economic characteristics. The hypothesis to be tested is that the CBHI member and nonmember households do not differ in their socioeconomic characteristics. In a logit regression, the dependent variable “demand for insurance” D_i , will equal 1 if individuals buy insurance, or zero otherwise. Formally, the logit model can be written as a linear function of the explanatory variables:

$$(1) \quad L_i = b_1 + b_2 X_{2i} + \dots + b_k X_{ki} \text{ and}$$

$$(2) \quad P_i (D \text{ for CBHI membership}) = 1 / (1 + 1/e^{L_i})$$

The second equation shows that the conditional probability of buying insurance P_i is a non-linear function of the explanatory variables X_i , which represents a series of attributes assumed to have caused a household to buy health insurance membership in the three pilot districts. We will estimate the unknown coefficients b_i which are the weights assigned each of the households' sociodemographic and economic characteristics in the probability that $D_i = 1$ for given X_i . Insurance was an option only for households within pilot districts. Therefore, the logit regression was performed with weighted household survey data from pilot districts, based on household heads as the unit of analysis.

⁸ Diop and Schneider (2001a).

B. DESCRIPTION OF VARIABLES INCLUDED IN MODEL 1

The response to enroll in CBHI is the dependent variable in this model and is made primarily by the head of household, based on a set of independent variables X. These explanatory variables are classified into demographic, socioeconomic, and health attributes of the household. Table 2 presents their sample size, mean, and standard deviation.

Table 2: Summary Statistics: Independent Variables used to Determine Probability of CBHI

Independent Variables	Mean	Std. Dev.	N (Households)
District Kabgayi	0.41	0.492	2,518
District Byumba	0.22	0.411	2,518
District Kabutare	0.37	0.482	2,518
Male household head	0.66	0.474	2,518
Average age household head	44.33	15.789	2,512
Household head 40 years and older	0.83	0.377	2,518
Household head attended school	0.54	0.498	2,515
Household with child <5	0.07	0.249	2,518
Household with pregnancy in past year	0.03	0.167	2,518
Household with cattle	0.18	0.386	2,503
Household with radio	0.34	0.475	2,505
Household with 5 and more members	0.45	0.498	2,518
Household size	4.57	2.255	2,518
Less than 30 min. from household cell to h-facility	0.38	0.487	2,518
Income Quartiles			
1	0.26	0.437	2,518
2	0.25	0.431	2,518
3	0.25	0.435	2,518
4	0.24	0.430	2,518

C. MODEL 2: ACCESS TO THE MODERN HEALTH CARE SYSTEM

Patients' health-seeking behavior was measured based on weighted data for individuals who reported sickness during the two weeks preceding the interview in the household survey and who responded to the curative care questionnaire. As in the first model, the second model applies a logit regression model to estimate the probability of entering (or not entering) the modern health care system for the insured and uninsured in pilot districts. Access probabilities are estimated based on specific sociodemographic and economic household characteristics that determine a sick individual's care-seeking behavior. The hypothesis is tested that the sick who access health care do not significantly differ in their sociodemographic, economic, and health characteristics. Therefore, the logit regression was performed with weighted curative survey data from pilot districts, based on sick individuals as the unit of analysis. The logit model, based on equation (1) presented in the first model, leads to the following definition of the probability of accessing modern health care:

$$(3) \quad P_i (\text{Access to professional care}) = 1 / (1 + 1/e^{L_i})$$

Where, X represents a set of explanatory variables that are assumed to have caused a sick person to seek care with a professional provider at a health center or district hospital during the two weeks prior to the interview.

D. DESCRIPTION OF VARIABLES INCLUDED IN MODEL 2

The decision to seek professional care is influenced by households' socioeconomic conditions, insurance status, and the sick individuals' health status. These explanatory variables are summarized in Table 3, showing for each attribute the sample size, mean, and standard deviation.

Table 3: Summary Statistics of Explanatory Variables for Probability of Professional Visit

Independent Variable	Mean	Std. Dev	N (Sick Ind)
District Kabgayi	0.23	0.421	3,130
District Byumba	0.37	0.482	3,130
District Kabutare	0.40	0.491	3,130
Prepayment member in pilot district	0.06	0.236	3,130
Male patient	0.42	0.494	3,130
Average age patient	24.60	21.003	3,127
Patient age 0-5 years	0.23	0.423	3,127
Patient with pregnancy in past year	0.07	0.251	3,130
Patient spent 4 and more days in bed	0.56	0.497	1,599
Household with 5 and more members	0.57	0.495	3,130
Household head attended school	0.56	0.496	3,130
Household with cattle	0.21	0.404	3,130
Household with radio	0.36	0.481	3,130
Less than 30 min. from household cell to health facility	0.39	0.488	3,130
Income Quartiles			
1	0.23	0.421	3,130
2	0.26	0.441	3,130
3	0.26	0.439	3,130
4	0.24	0.430	3,130

E. MODEL 3: FINANCIAL IMPACT OF HOUSEHOLD OUT-OF-POCKET HEALTH EXPENDITURES

The third model is a log-linear regression that serves to estimate first sick individuals' total average out-of-pocket spending per episode of illness, and second, total out-of-pocket spending conditioned on the positive use of health care services⁹. The model is a linear regression for the logarithm of total health-related spending per episode of illness of the sick, and for the logarithm of total health-related spending for the sick who reported at least one visit. The logarithmic transformation of health expenditures per

⁹ Manning, G., et al., 1987. Yip, W., and P. Berman, 2001.

episode of illness eliminates skewness in the distribution of health expenses among users, yielding roughly normal error distributions. The model can be written as follows:

$$(3a) \quad \text{Log}(\text{total illness related out-of-pocket spending}) = a + b X + e ,$$

$$(3b) \quad \text{Log}(\text{total illness related out-of-pocket spending} | \text{visit} > 0) = a + b X + e$$

where X represents a set of continuous and dummy attributes assumed to influence patients' health expenditures. Detailed health expenditures are reported by episode of illness, which includes spending before and during a professional care visit, and will show to what extent patients rely on alternative sources of care outside the formal health sector. The regressions were performed with weighted curative survey data from pilot districts, based on sick individuals as the unit of analysis. It is assumed that the amount spent on non-professional medicine will be higher for patients whose access to professional care is limited by financial barriers.

F. DESCRIPTION OF VARIABLES INCLUDED IN MODEL 3

Model 3 uses the same variables as in the second model and adds the variable professional care visit to estimate out-of-pocket health expenditures for those individuals who were sick, and for those who sought professional care. Table 4 presents sample size, mean, and standard deviation for each explanatory variable.

**Table 4: Summary Statistics of Explanatory Variables
for Estimated Out-of-Pocket Spending per Episode of Illness**

Independent Variable	Mean	Std. Dev	N (Sick Ind)
All sick with 1+ professional care visit	0.16	0.371	3,130
District Kabgayi	0.23	0.421	3,130
District Byumba	0.37	0.482	3,130
District Kabutare	0.40	0.491	3,130
Prepayment member in pilot district	0.06	0.236	3,130
Male patient	0.42	0.494	3,130
Average age patient	24.60	21.003	3,127
Patient age 0-5 years	0.23	0.423	3,127
Patient with pregnancy in past year	0.07	0.251	3,130
Patient spent 4 and more days in bed	0.56	0.497	1,599
Household with 5 and more members	0.57	0.495	3,130
Household head attended school	0.56	0.496	3,130
Household with cattle	0.21	0.404	3,130
Household with radio	0.36	0.481	3,130
Less than 30 min. from household cell to health facility	0.39	0.488	3,130
Income Quartiles			
1	0.23	0.421	3,130
2	0.26	0.441	3,130
3	0.26	0.439	3,130
4	0.24	0.430	3,130

IV. RESULTS

A. DESCRIPTION OF THE SAMPLE GROUP

Table 5 and 6 describe sociodemographic and economic characteristics for the sample population included in the household survey conducted in the three pilot districts. Males head almost 82 percent of PPS member households. One third of the heads of member household have 5 or more years of schooling, 41 percent of the household heads are in the age group of 40-59 years and belong to households in higher expenditure quartiles as compared to the nonmember households in the same districts. Distance to the health facility also seems to be an important criterion as almost 50 percent of the member households live within 15 minutes of the health facility. Membership starts to taper off as the distance to the health facility increases.

**Table 5: Descriptive Sample Characteristics
(Column percentages sum to 100 within each category)**

Characteristics Head of Household	Pilot Districts		
	Nonmembers (n 2,337)	PPS Members (n 181)	Total (n 2,518)
Gender			
Female	35.4%	17.8%	34.1%
Male	64.6%	82.2%	65.9%
Level of schooling			
Never	47.0%	28.4%	45.7%
Primary <5	22.6%	22.5%	22.6%
Primary =>5	24.2%	33.3%	24.9%
Above primary	6.2%	15.9%	6.9%
Age group			
< 30	17.1%	17.6%	17.2%
30-39	25.2%	27.2%	25.4%
40-59	36.3%	41.2%	36.7%
60 & +	21.3%	14.0%	20.8%
Income quartiles, household			
1	26.1%	19.8%	25.6%
2	24.7%	24.2%	24.6%
3	25.0%	29.9%	25.3%
4	24.3%	26.1%	24.4%
Time distance (min) from household to health facility			
15	37.6%	48.6%	38.4%
45	14.6%	20.8%	15.1%
75	25.6%	24.2%	25.5%
105	22.1%	6.4%	21.0%

Almost 61 percent of insured households interviewed in the survey said they have enrolled all individuals living in the household. Those who have not, usually excluded young adults above the age of 18, still

living in the household, and who are supposed to enroll either in a group category or as individuals¹⁰. Table 6 presents households' monthly average per capita monetary expenditures for each expenditure quartile, as well as the average household size for insured and uninsured households. Independent means tests were performed to compare differences. Households' monetary expenditures were used as proxy to classify households in income quartiles. Insured households number on average significantly more individuals than the uninsured in pilot districts. The possibility of signing up in CBHI as a family up to seven members for the same annual premium might have been an incentive for larger households to enroll with all their family members. Each of the two groups shows a decreasing average household size with higher expenditure quartiles.

Table 6: Household Characteristics, by Income Quartile

Household Characteristics	Nonmembers	PPS Members	Total
Monthly average per capita expenditure (RWF)			
Quartile 1	333	347	334
Quartile 2	1,050	1,007	1,047
Quartile 3	2,241	2,056	2,225
Quartile 4	8,154	9,367	8,247
Total RWF	2,884	3,370	2,919
Average household size, number of individuals			
Quartile 1	4.6	5.5	4.7
Quartile 2	4.7	5.6	4.8
Quartile 3	4.6	5.8	4.7
Quartile 4	4.1	4.8	4.1
Total Individuals	4.5	5.5***	4.6

Note: t-tests were performed to compare the average values of the insured with the uninsured sample.

*** Significant at 1 percent level of significance.

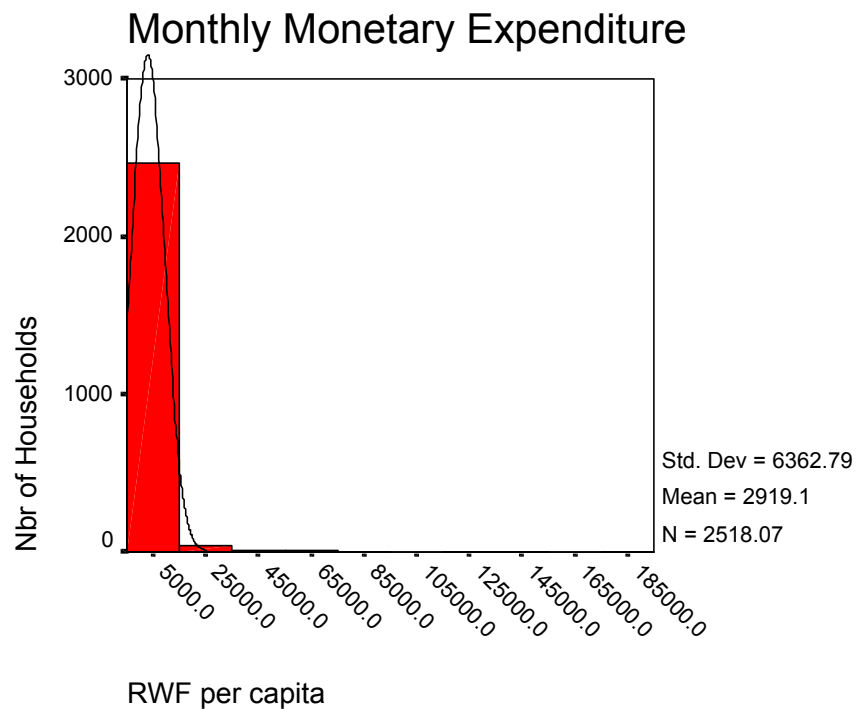
Smaller households in higher expenditure quartiles pay the same premium per household as larger families in lowest expenditure quartiles. Depending on members' service use and financial contribution to health for uncovered services, this negative relationship between household size and income status can lead to a cross-subsidies from the smaller, predominantly richer, to the larger and poorer families in the prepayment health insurance pool.

Table 7 presents the summary statistics for monthly per capita monetary expenditures for households living in the pilot districts. The following histogram visualizes that the monetary expenditure data are very right-skewed, confirming that this is an equally poor population with very few reporting high monetary expenditures: the 90th percentile amount is 5,975 francs compared to the maximum amount of 192,950 francs.

Table 7: Summary Statistics on Distribution of Monthly Monetary Expenditures Per Capita

¹⁰ The enrollment category "household" includes two adults and all children up to the age of 18 living in the same household. Other household members will need to enroll in a group or individual category.

Monetary Expenditures		Households
N		2,518
Mean	RWF	2,919.1
Std. Error of Mean		126.798
Median		1,475.5
Std. Deviation		6,362.787
Minimum		0
Monetary Expenditures (continued)		Households
N		
Maximum		192,950
Percentiles	10	267.0
	25	624.5
	50	1,475.5
	75	3,190.0
	90	5,975.0



The histogram shows that Rwandan households living in these rural districts are poor. They live mostly from subsistence farming in areas with a high-density population. Rwanda is recovering from the recent civil war, and an estimated 10 percent of the male population is still missing. Muller (1997) found in a household survey conducted in 1983 that the average land area farmed by Rwandan households is very small with 1.24 ha and households produced agricultural product worth an average of \$51 per capita per year, 90 percent of which is used for consumption. Findings in our household survey, conducted 17 years later, estimated annual monetary expenditure is approximately \$100 per capita for these rural households.

The Rwandan Ministry of Finance is conducting a living standard survey in Rwanda, which will provide more insight into the socioeconomic conditions of Rwandan households.

B. MODEL 1: WHO DEMANDS HEALTH INSURANCE?

The means comparison in Tables 3.1 and 3.2 has shown that, compared to the uninsured, insured households are more likely to be headed by a male individual, who has attended some schooling. Also proportionally more CBHI member households were likely to come from higher income quartiles and from larger households.

The logit regression results presented in Table 8 show that the level of education of household head, family size, household's district of residence, distance to the health facility, and radio ownership are the major determining factors that influence whether to join a health insurance or not. Households' health and economic indicators did not influence demand for health insurance. Radio ownership is indicative of a household's ability to access information and exposure to advertising about the CBHI. It may also be seen to a certain extent as an economic indicator for these very poor households.

Households who live in Kabgayi are more than twice, and those in Byumba almost 15 times more likely to buy health insurance as households in Kabutare. Household heads who attended school are 103 percent more likely to enroll in health insurance than the illiterate. Large households with five and more members are 60 percent more likely to buy insurance than smaller households. This is likely because, irrespective of the family size (up to seven members), households pay 2500 francs membership fee per year¹¹. Therefore, larger families effectively pay less per household member. Households who live within 30 minutes of their health facility have a 296 percent higher probability of joining than those who live further away. This latter result might have been influenced by health centers' and prepayment schemes' awareness campaign, which could have been more intense in the vicinity of a health facility. Households who own a radio are 47 percent more likely to enroll than those without radio, another result that might have been caused by the regular awareness campaign transmitted by radio. Although, male-headed households are 55 percent more likely to join than female-headed, and households with pregnant women are 23 percent more likely to join, these results are not significant. Other economic attributes, such as household cattle ownership and different income quartiles were not significant in the demand for health insurance. Households in the lowest and lower income quartile were as likely to enroll as those in the fourth income quartile.

Table 8: Logit regression results for households' probability to demand community-based health insurance (prepayment schemes)

¹¹ Households up to seven members pay 2500 francs per year. Individual enrollment costs 2000 francs, and enrollment in a group for eight and more individuals costs 530 francs per person per year. Premiums are slightly higher in Kabgayi due to the larger hospital coverage (Household: 2600 francs, Individual: 2200 francs and group enrollment per person: 550 francs).

Explanatory Variable	Reference Category Variable	Insurance Membership in Pilot Districts		
		Odds Ratio	S.E.	Sign
Kabgayi district	Kabutare district	3.51***	0.362	0.001
Byumba district		15.80***	0.268	0.000
Male hh head	Female hh head	1.55	0.253	0.084
HH head, age 40+	HH head, younger than 40	1.13	0.239	0.598
HH head, attended school	HH head, illiterate	2.03***	0.196	0.000
Large HH size, 5+	Small HH size, less than 5	1.60***	0.189	0.013
HH with child <5	No child <5	0.87	0.488	0.768
HH with pregnancy in past year	No pregnancy in past year	1.23	0.674	0.761
Less than 30min to health facility	More than 30min to health facility	3.96***	0.187	0.000
HH with cattle	No cattle	1.28	0.210	0.237
HH with radio	No radio	1.47***	0.184	0.038
Quartile 1	Quartile 4	1.19	0.264	0.513
Quartile 2		1.21	0.244	0.437
Quartile 3		1.15	0.228	0.535
Ancillary statistics:				
N (households)		2,474		
- 2 Log likelihood		1054.901		
Goodness fit (chi-squared test)		236.998		
Degree of freedom		14		
Nagelkerke R Square		22%		

Note: Hh=Household. Z-tests were performed to test the probability of enrollment for each characteristic in a logit model. *** Significant at 1 percent level of significance. ** Significant at 5 percent level of significance.

The findings from the first model respond to the question, who enrolls in CBHI. Households living in Byumba and Kabgayi, who number five and more individuals, whose household head attended school, who live in the vicinity of a health center, and who own a radio appear to be more likely to buy insurance.

Other important factors also influence households' probability of enrolling such as their risk aversion, their exposure to effective information campaigns on prepayment schemes, as well as trust in the scheme management, which is related to households' willingness to see CBHI as an investment, and which supports the argument that enrollment in health insurance is not necessarily driven by economic conditions such as household income. The following reasons were identified in different surveys (focus group, household and patient exit interview survey) to be important in households' enrollment decisions:

- Both districts Byumba and Kabgayi, had intensive awareness and information campaigns on PPS during the first year, supported by the district authorities and prepayment federation, resulting in steady monthly enrollment increases.
- The prepayment schemes' features, including benefit package, premium level, enrollment categories, copayments, and waiting period, were designed, discussed, and agreed upon (by voting) in a series of about 30 workshops in the three districts. These workshops were attended by the local population. As a result, the health insurance schemes were "tailored" as desired by, and in response to, the needs of the local people.
- The main determinant of PPS participation is trust, which might be captured by the time variable. People living near the facilities are more likely to enroll, because they know the health center personnel, as well as the prepayment scheme management team, and have been exposed to regular information campaigns on prepayment.
- The participatory approach and the democratic management of PPS lead to sentiments of "ownership" and increased trust among the poor, which are basic conditions for poor households to engage in any investment.
- Households that did not have the 2,500 francs (about US\$8) to pay the one-year PPS enrollment fee have joined a "tontine." During five weeks, each tontine household paid 500 francs as an

installment toward the 2500 francs total fee to the “tontine-caisse.” Households are enrolled as full members once they had contributed 2,500 francs.

- Local initiatives (churches and members who attended the PPS general assemblies) helped to pay enrollment fees for indigents, widows, orphans, and poor high-risk patients such as HIV positive individuals.

This shows that poor households will enroll in well-designed health insurance schemes that improve their access to health care. At the same time, these solidarity groups contribute to positive social capital in a society that is recovering from a civil war. Therefore, community-based health insurance becomes a form of social cohesion and provides a link between the poor and the health facilities.

The following section answers the second question, whether health insurance membership improves financial accessibility to care without increasing members’ financial burden.

C. MODEL 2: EQUITY IN FINANCIAL ACCESSIBILITY TO PROFESSIONAL CARE¹²

Evaluation of the first year of prepayment schemes in Rwanda has been based on extensive data collection. The analysis of monthly health service utilization data in health centers and hospitals has revealed that the overall use of curative services for adults and children, and preventive health services for children and women, was up to five times higher for PPS members than for nonmembers¹³.

Results in Table 9 reveal that the insured report considerably better access to the modern health care system with a visit probability of 0.45 compared to the uninsured in the pilot districts (0.15 visit probability). Given the relatively moderate visit probability for sick PPS members of 0.45, it can be assumed that prepayment enrollment was not driven by adverse selection, and there was no frivolous use of health care caused by members’ moral hazard behavior.

Probability of visit by members does not vary by patients’ gender, age, and income quartile; it is determined by patients’ geographical access to the health facility (time distance), and health status, with the sick and very sick being three times more likely to seek care than those who are healthier. Interestingly, CBHI members who said they were not very sick or were sick, reported higher visit likelihood (0.22 and 0.64, respectively) than the average uninsured (0.15), indicating that CBHI membership causes sick individuals to seek care at the onset of illness. Access to professional care is lowest for the uninsured in the lowest income quartile, who are about four times less likely to seek care than the same income group who is insured.

Table 9: Probability of using a professional provider by insurance status

Probability of Visit	Pilot Districts	
	Members (n 376)	Nonmembers (n 3459)

¹² Professional care = public and church owned health centers, district hospitals, and dispensaries. This excludes sick individuals who sought care at traditional healers and others (e.g. ,drug vendors, pharmacy).

¹³ Schneider, et al. (2001b). District averages are 1.5 curative consultations per member per year in Kabutare and Kabgayi, and 1.1 curative consultation per member in Byumba, whereas nonmembers’ curative care consultation level scores around 0.2 consultation per nonmember per year.

Sick Individuals (n 3,835)	0.45***	0.15
Patient gender		
Female	0.42	0.14
Male	0.50	0.16
Patient age		
6 years and older	0.45	0.13
0-5 years	0.46	0.19
Time from household to h-facility		
More than 30min	0.33	0.12
Less than 30min	0.60	0.19
Income (Expenditure) groups		
Quartile 1	0.40	0.06
Quartile 2	0.35	0.13
Quartile 3	0.49	0.14
Quartile 4	0.54	0.26
Self-perceived health status		
Not very sick	0.22	0.05
Sick	0.64	0.15
Very sick	0.61	0.30

Note: Probability of sick individuals with at least one visit with a professional provider during the two weeks prior to the interview. T-tests were performed to compare the rates of the insured with the uninsured in the pilot districts.

*** Significant at 1 percent level of significance.

The following logit regression estimates the probability of a professional health care visit for members and nonmembers, and controls for skewness in the data distribution that could have influenced the access result presented in Table 10. The logit regression coefficient estimates were translated into odds ratios to facilitate interpretation.

Findings show that health insurance has tremendously improved the financial accessibility of its members to the modern health care system, particularly for women, children, and the poor. Access to care is determined by prepayment membership, patient age, pregnancy, patients' health status, distance to the health facility, and households' income group. Most important, prepayment members are 559 percent more likely to enter the modern health care system when sick compared to nonmembers. Health-related indicators significantly influenced health-seeking behavior, with children under 5 years of age being 92 percent more likely to report a visit than older patients. Also, pregnant women report 65 percent higher probability for seeking care, and the sick individuals who spent four and more days in bed were 96 percent more likely to go to a modern health care provider than people who were not that long in bed. People who live close to the health facility are significantly more likely to seek care (61 percent) than those who live farther away. Patients in the lowest income quartile are far less likely to seek care than those in the highest income quartile. This means that while the prepayment scheme has significantly increased access to health care for members including those who are poor, the impact at the level of the district in increased access to health care for the poor remains an issue. The solution is to find mechanisms to increase enrollment of the poor households in the prepayment schemes.

Table 10: Logit regression results for probability of

at least one professional provider visit for members and nonmembers

Explanatory Variable	Reference Category Variable	Probability of visit		
		Odds Ratio	S.E.	Sign
Prepayment members	Nonmembers	6.59***	0.263	0.000
Male patient	Female patient	1.21	0.140	0.170
Patient age 0-5 years	Patient age 6 years and older	1.92***	0.158	0.000
Pregnant in past year	No pregnancy in past year	1.65***	0.248	0.043
Patient spent 4 and more days in bed	Less than 4 days in bed	1.96***	0.139	0.000
Less than 30 min. from hh cell to h-facility	More than 30 min to h-facility	1.61***	0.137	0.000
Household with 5 and more members	Small HH size, less than 5	1.17	0.142	0.277
Household head attended school	HH head, illiterate	0.91	0.141	0.519
Household with cattle	No cattle	1.26	0.162	0.162
Household with radio	No radio	1.33	0.143	0.050
First Income Quartile	Fourth Income Quartile	0.18***	0.230	0.000
Second Income Quartile		0.44***	0.174	0.000
Third Income Quartile		0.46***	0.172	0.000
Ancillary statistics:				
N		1,502		
- 2 Log likelihood		1434.941		
Goodness fit (chi-squared test)		211.744		
Degree of freedom		13		
R Square		19.3%		

Note: Z-tests were performed to test the probability of enrollment for each characteristic in a logit model.

*** Significant at 1 percent level of significance.

** 5 percent level of significance.

D. MODEL 3: AVERAGE OUT-OF-POCKET HEALTH EXPENDITURES PER EPISODE OF ILLNESS¹⁴

Based on detailed provider and insurance data, the evaluation of the prepayment pilot phase has shown that health insurance has a substantial impact on members' financial contribution to health care, as well as on providers' cost and financial situation¹⁵. Findings in PHR report No. 61 have shown that the PPS members' annual per capita contribution to the modern health care system are up to five times higher than those of nonmembers¹⁶. However, the out-of-pocket expenditures per episode of illness are significantly lower for members as compared to nonmembers. This means, that by paying insurance, scheme members face lower fees at the time of illness and have greater access at times of need. Further, in Rwanda, with very low per capita use rates, the higher utilization by members should not be interpreted as an effect of moral hazard, but rather as improved access to essential basic health services.

¹⁴ Professional care = public and church-owned health centers, district hospitals, and dispensaries. This excludes sick individuals who sought care at traditional healers and others (e.g., drug vendors, pharmacy).

¹⁵ See PHR Technical Report No. 61: Utilization, Cost, and Financing of District Health Services in Rwanda.

¹⁶ See PHR TR No. 61, Table 3.14: Members in Byumba reported 580 francs annual per capita contributions to health centers, whereas this amount is only 104 francs per year per capita for nonmembers, due to their lower health service use.

The third model in this paper documents insured and uninsured patients' out-of-pocket health expenditures per episode of illness. This information is first shown for all sick, independent of their care-seeking behavior, and second for those who reported at least one health facility visit.

Table 11 presents total health-related out-of-pocket expenditures for each of the different health-related services paid during an episode of illness, which includes care received before visiting a provider, out-of-pocket spending at the first professional visit, and out-of-pocket spending for other professional providers. This total health expenditure information is shown for the insured and uninsured sick in pilot districts, and further broken down for each group by "with and without a professional provider visit." Within these categories, the different health expenditures are shown by patients' income quartiles. It is found that per episode of illness, sick members pay on average 294 francs for all health related expenditures. This amount is higher for nonmembers in pilot districts (450 francs). The differences are even stronger when comparing only the sick insured and uninsured with a professional care visit. Sick members with professional visit pay 497 francs for the full episode of illness, whereas nonmembers' out-of-pocket health expenditures per episode of illness with professional visit amount to 1,987 francs in pilot districts.

Insurance membership has significantly decreased out-of-pocket spending for a full episode of illness for sick members with and without visit, and at the same time has substantially improved members' access to the modern health care system. Also, health insurance has changed patients' health care seeking behavior. A comparison of members' and nonmembers' average out-of-pocket spending for home and other care in Table 11 shows that the uninsured spend two and a half times more on home care and traditional remedies than the insured, who are more likely to seek quality care in the modern health system. Thus, prepayment schemes have not only reduced financial barriers in accessing better quality care and thus equity in accessing care, but insurance membership has also shifted the demand for health care toward more efficient care.

Members who seek care pay 100 francs copayment per episode of illness at the health center. Sick individuals from richer households spend more on home care and on professional care compared to lower income groups, and this holds for the insured and the uninsured. The fact that the richer insured pay up to 10 times more per episode of illness than the poorest CBHI members supports the assumption made in the previous model. That is, prepayment schemes favor cross-subsidies from richer to poorer members, if there is a uniform premium per family, if poorer families number more individuals than richer families, and if members care-seeking behavior is independent of their income status. So far this argument holds. However, the richer insured may still pay more because they are willing to pay additional amounts for care not covered by the insurance scheme such as drugs excluded from the MOH essential drug list.

Table 11: Average health expenditure (RWF¹⁷) per sick individual without or with visit to a professional provider, by health insurance status and expenditure quartile, in pilot districts

Out-of-pocket spending RWF	Income quartile	Pilot Districts					
		Nonmembers			Members		
		No prof. visit	1+ prof. visit	Total	No prof. visit	1+ prof. visit	Total
	1	90	85	90	276	0	165

¹⁷ Nominal Exchange Rate: USD 1\$ = RWF 370 (official period average in 2000). Source: National Bank of Rwanda.

Home & other care	2	124	178	131	68	23	53
	3	171	230	180	28	20	24
	4	277	322	288	79	133	108
	Total	160	245	172	93	52	74
1st professional provider	1	11	693	49	10	112	51
	2	10	1,356	180	20	178	75
	3	43	1,445	246	9	220	112
	4	36	2,228	600	105	966	572
	Total	24	1,693	269	32	418	207
Other professional providers	1	0	262	15	0	0	0
	2	0	27	3	0	0	0
	3	1	42	7	0	1	1
	4	9	22	13	0	91	50
	Total	2	50	9	0	28	12
Total illness related expenditure	1	101	1,041	154	286	112	216
	2	134	1,561	314	88	201	128
	3	215	1,717	433	37	242	137
	4	322	2,573	901	184	1,190	730
	Total	186	1,987	450	126	497	294

The following log-linear regression estimates sick individuals' average health expenditures for the insured and uninsured in pilot districts. Findings show that prepayment schemes have significantly decreased out-of-pocket spending for the entire episode of illness for sick individuals who are members. Individuals' out-of-pocket health expenditures are positively influenced by the patient's gender, with men paying more than women, by household size, and by use of professional care. Patients classified in the three lower income quartiles report significantly lower out-of-pocket spending for an episode of illness, with or without a visit, than those in fourth income quartiles. Also, out-of-pocket spending per episode of illness is significantly influenced negatively if patients live in the health center's vicinity and if they own cattle (which can be interpreted as a sign of wealth).

Table 12: Log-linear regression results: Estimated total health related expenditures per episode of illness for sick individuals with and without visit

Explanatory Variable	Reference Category Variable	Out-of-pocket all sick		
		Coeff.	S.E.	P>t
Sick insured members	Sick uninsured in pilot districts	-0.604***	0.141	0.000
Male patient	Female patient	0.056***	0.061	0.000
Patient age 0-5 years	Patient age 6 years and older	-0.006	0.075	0.362
Pregnant in past year	No pregnancy in past year	-0.227	0.120	0.933
Patient spent 4 and more days in bed	Less than 4 days in bed	0.228	0.060	0.057
Less than 30 min. from hh cell to h-facility	More than 30 min to h-facility	-0.125***	0.062	0.000

Household with 5 and more members	Small HH size, less than 5	0.111***	0.063	0.045
Household head attended school	HH head, illiterate	0.262	0.061	0.075
Household with cattle	No cattle	-0.090***	0.075	0.000
Household with radio	No radio	0.258	0.067	0.234
First Income Quartile	Fourth Income Quartile	-0.544***	0.091	0.000
Second Income Quartile		-0.290***	0.085	0.000
Third Income Quartile		-0.183***	0.085	0.001
All sick w/ 1+ professional care visit	All sick without visit	1.645***	0.077	0.030
(Constant)		1.048***	0.101	0.000
Ancillary Statistics:				
N		1,596		
F		52.686		
Degree of freedom		(14 1,582)		
Prob > F		0.000		
R square		0.318		

Note: Includes total health related out-of-pocket spending for sick with and without visit. T-tests were performed to test significant difference for each characteristic.

*** Significant at 1 percent level of significance; ** 5 percent level of significance.

Table 13 presents log-linear regression results on out-of-pocket spending per episode of illness for the 336 patients who reported a professional health care visit. As can be expected, CBHI membership has significantly decreased health care costs for the sick members with visit. Patients classified in the first income quartile report significantly lower out-of-pocket spending per episode of illness if they had a visit, than patients in fourth income quartile. However, those in the second and third quartile report lower out of pocket spending per episode but are not statistically significant. Male patients with visits spend significantly more per episode of illness than female patients.

Table 13: Log-linear regression results: Estimated out-of-pocket health expenditures per episode of illness for sick individuals, who reported a professional visit in past 2 weeks

Log of total health expenditures for with visit		Out-of-pocket w/visit		
Explanatory Variable	Reference Category Variable	Coeff.	S.E.	P>t
Sick insured members	Sick uninsured in pilot districts	-0.808***	0.145	0.000
Male patient	Female patient	0.274***	0.099	0.006
Patient age 0-5 years	Patient age 6 years and older	0.068	0.107	0.523
Pregnant in past year	No pregnancy in past year	-0.127	0.172	0.460
Patient spent 4 and more days in bed	Less than 4 days in bed	0.088	0.101	0.386
Less than 30 min. from hh cell to h-facility	More than 30 min to h-facility	-0.121	0.098	0.215
Household with 5 and more members	Small HH size, less than 5	0.061	0.103	0.556

Household head attended school	HH head, illiterate	0.133	0.106	0.213
Household with cattle	No cattle	-0.068	0.112	0.547
Household with radio	No radio	0.007	0.103	0.948
First Income Quartile	Fourth Income Quartile	-0.464***	0.181	0.011
Second Income Quartile		-0.152	0.124	0.221
Third Income Quartile		-0.143	0.124	0.250
(Constant)		2.850***	0.155	0.000
Ancillary Statistics:				
N		336		
F		5.286		
Degree of freedom		(13 323)		
Prob > F		0.000		
R square		0.175		

Note: Includes total health related out-of-pocket spending for the full episode of illness for those who were sick and went to seek professional care. T-tests were performed to test significant difference for each characteristic.

*** Significant at 1 percent level of significance.

Combining these findings with the results presented in the first and second model show that community-based health insurance in Rwanda has been successfully used as a tool to improve financial accessibility to care for the poor who enroll in the scheme while, at the same time, their out-of-pocket health care expenditures could be reduced per episode of illness.

V. DISCUSSION AND CONCLUSION

Findings confirm that prepayment schemes in Rwanda successfully target the rural poor, with their members having an annual average per capita income of approximately US\$100. Logit regression results have shown that the probability of enrolling in prepayment schemes is equal among all income groups and is determined by factors such as households' distance to the health center, exposure to radio awareness campaigns, age, gender, and education status of the household head. Other factors have influenced enrollment such as precautionary behavior for one's family's health and foresight and the possibility of seeing the insurance premium as a trustworthy investment. Survey findings also allude to the fact that social capital such as trust and sentiments of ownership are important determinants of participation in prepayment schemes. Prepayment schemes are forms of solidarity and social cohesion that help strengthen the link between the poor and the health facilities where the local people would like to seek care.

Health insurance has significantly improved equity in financial accessibility to care for members by increasing their probability of a visit while at the same time the financial burden per episode of illness could be reduced. This argument holds for all income groups in the insurance pool, although richer members still pay up to 10 times more out-of-pocket, supporting the argument of possible cross-subsidies to poorer patients. Health insurance has helped to eliminate financial barriers in access to care for the poorest among the insured members, whereas the uninsured in lowest expenditure quartiles continue to report significantly worse access to care than the richer insureds. In addition to improved access, faster access to care of the insured patients has contributed to a shift of demand for care from the traditional to the modern health sector and has improved the efficient use of limited medical resources such as drugs and staff in district health facilities.

The analysis of the financial impact of prepayment schemes on health care providers has shown that community-managed health plans, combined with provider capitation payment, have built up expertise and capacity among insurance members about their rights and obligations and, as a result, have empowered consumers in discussions for better quality care with health center managers during the schemes' general assemblies.

Although data collection during the pilot phase was extensive and included patient exit interview and focus group information as well as routine provider insurance and household data, it is too early to conclude that better access to care due to prepayment membership has caused members' health to improve. However, findings from different sources suggest that conclusion.

Still, about 90 percent of the population in the three districts has not enrolled with prepayment schemes and continues to report dismal health care utilization patterns. Although the large majority of nonmembers interviewed in the household survey said they would like to become members, three fourths of them had serious doubts that they will have the 2,500 francs available to pay the annual fee for their family, raising concerns about how successful the schemes are in improving equity of access to care. During the pilot year, church groups have facilitated enrollment by financing membership for widows, orphans, indigents, and HIV-infected poor individuals. This targeted demand-side subsidy has contributed to a welfare gain if they benefited the indigents' insurance enrollment without decreasing benefits for patients who did not enroll. The church groups' experience with financing health insurance membership has caused prepayment to become a promising tool to subsidize targeted access to care for the vulnerable.

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