

# **Willingness to pay for rural health insurance: Evidence from three African countries**

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in fulfilment of the requirement for the  
degree of doctor of Philosophy  
in the Faculty of Economics,  
London School of Economics and Political Science,  
Universities of London

May 1996

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## **Abstract**

The vast majority of Africans living in rural areas do not have access to health insurance and policy related questions to assist health planners design and implement financially viable rural health insurance schemes have yet to be fully addressed. This thesis seeks to fill some existing gaps in the knowledge about the performance of existing schemes and methods of assessing “willingness to pay” (WTP) and financial feasibility. It begins with a review of the literature on the theory of insurance and its practice in rural areas in Sub-Saharan Africa, that contributed to the research conceptual framework and implementation.

Two health insurance schemes (La Carte d'Assurance Maladie and the Abota in Burundi and Guinea Bissau), were evaluated regarding their social and financial performance in rural areas. The research instruments were household surveys, focus group discussions and health facility costing. In both schemes access to health care appeared to have improved and the findings suggested that where quality of care improved, the schemes would considerably reduce financial concerns faced by people at the time of illness. They would also raise significant revenue.

In the third study country, Ghana, a study of preferred benefit options, WTP, and community rated premiums for a proposed health insurance scheme was undertaken in a rural area. In undertaking this feasibility study, the research developed a WTP instrument and used a contingent valuation approach. Eight hundred households participated in the study. Eighty percent of households said they would be willing to pay the premium required to recover 100% of the non-salary recurrent costs of providing OPD care in a local clinic and inpatient care in a hospital. The stated WTP was conditional on: a) the insurance scheme giving access to health care in which drugs and basic laboratory investigations would be available, b) health staff being professionally qualified and respectful, and c) a local solidarity association having a role in administering the participating health facilities.

Econometric analysis of households' WTP for outpatient insurance cover supported the hypothesis that WTP is influenced by a) the experience of frequent difficulties in paying



for health care in the past; b) the perception that adults in the household are healthier than those in other households; and c) the household head's sex, education and religion.

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## Abbreviations

BI	Bamako Initiative
c	cedis (currency of Ghana)
CAM	Health Card Insurance Scheme (La Carte D'assurance Maladie)
CBA	Cost Benefit Analysis
CPP	Convention People's Party
DHMT	District Health Management Team
ERP	Economic Recovery Programme
GLSS	Ghana Living Standard Survey
HEFP	Health Economics and Financing Programme
HPU	Health Policy Unit
IMF	International Monetary Fund
LSHTM	London School of Hygiene and Tropical Medicine
MOH	Ministry of Health
NGO	Non-Governmental Organization
ODA	Overseas Development Administration
OPD	Outpatient Department
PG	Guinean Peso (currency of Guinea Bissau)
PHC	Primary Health Care
PNDC	Provisional National Defence Council
RHI	Rural Health Insurance
SAP	Structural Adjustment Programme
TBA	Traditional Birth Attendant
USB	Unidade de Saude de Base (Village health post in Guinea Bissau)
VHW	Village Health Worker
WTP	Willingness to pay



## Acknowledgement

This thesis is based on findings of a research project “Community Health Insurance in Developing Countries and its Feasibility in Ghana”, which was undertaken by the author as part of her activities in the Health Economics and Financing Programme (HEFP) in the Health Policy Unit (HPU) at the London School of Hygiene and Tropical Medicine (LSHTM). HEFP is funded by the Overseas Development Administration (ODA). IDRC and UNICEF jointly supported fieldwork in Burundi, Guinea Bissau and Ghana. The main collaborating institutions were the LSHTM and the Ministry of Health, Ghana.

I am indebted to Dr M E K Adibo, former Director of Medical Services, Ministry of Health, Ghana who in 1988 shared with me his vision of including members of the semi-formal sector in a national health insurance scheme. He inspired me to develop this area of research. I sincerely thank Professor Anne Mills, Head of the HEFP, for diligently reviewing drafts of questionnaires, reports and journal articles produced during the project and providing advice on all aspects of the research. I am also indebted to Dr Daniel Le Touze, formerly of Health Systems Program, Health Sciences Division, IDRC Ottawa and Mr Stephen Jarrett, Bamako Initiative Management Unit, UNICEF, New York for their encouragement and interest in this project.

I am grateful to Dr Irene Agyepong, District Medical Officer, Dangme-West District, the co-researcher in Ghana, and to Dr. Nestor Ndayimirije of the Ministry of Health in Burundi who participated in the field research in Mugyinga, Burundi. My thanks go to Dr. Maria Teresa Hevia, Dr Celestino Costa and Ms Sadjo Djolo of UNICEF Guinea Bissau for their support. Similarly, my gratitude goes to Dr Marinus H Gotink of UNICEF Ghana for his support. I am appreciative of the help provided by Dr Sam Adjei Head of the Health Research Unit in Accra and his staff, in particular Mr Mensah and Tony Williams.

Finally, special thanks to my family and friends, especially Seth, Kwame and Margaret. Their constant support and optimism made it possible for me to complete this thesis.

## Chapter 1: Introduction, aims and objectives and structure of thesis

### INTRODUCTION

The scarcity of resources for health care activities is global, and sometimes the situation is compounded by inefficient and inequitable financing of the public health services. In sub-Saharan Africa, the context has been declining economic growth. (During the period 1980 to 1991 low-income Sub-Saharan African countries had an average GNP growth rate of -1.2% (World Bank 1993).) The situation has been caused by severe droughts, deteriorating terms of trade for agricultural and mining products and failings in government policies. Consequently, rationalization of the financing mechanisms in the health sector has been, and continues to be, seen as crucial if improvements in quality and accessibility are to be realized. This has led policy makers to consider a spectrum of financing options for Africa, ranging from user charges to achieve 100% cost recovery on the one hand to comprehensive national health insurance schemes on the other. In recent years several African governments, sometimes in collaboration with donor agencies, have proposed introducing or expanding insurance-based health care financing (Vogel 1990).

The rationale for encouraging insurance financing rather than user fees, which tend to reduce utilization, is that it will achieve the following. It will, 1) raise additional revenue to fund the cost of health care provision that may be used to improve quality, 2) diminish financial barriers to obtaining health care at the time of illness by providing risk averse individuals the opportunity to maintain income in despite of the uncertainty associated with health care consumption, 3) depending on the design, encourage providers and consumers to use health services cost-effectively. Diminishing financial barriers would be particularly beneficial for those who are vulnerable, such as the poor, the chronically ill, the elderly and children, and would be achieved by sharing the financial risks associated with ill health and health care consumption among an insured population. As a consequence the cost of caring for those with high risks of ill health, ie the very young, the elderly and the chronically ill, would be subsidized by those with lower risks, ie those

in the middle years of life and the healthy.

The majority of people in Sub-Saharan Africa live in rural communities and therefore the research focus was health insurance (risk sharing for health care) that is accessible to people living outside the urban centres. Individuals in this group are not employed in the formal sector, such as commerce and industry, they are engaged in small scale farming, sometimes combined with petty trading and/or the production of local handcrafts. Their cash incomes are, as a result, relatively low and seasonal. 'Access' in this context therefore implies that the premium level and the payment schedule are compatible with this pattern and level of cash income. Community participation in the design of the scheme is the main mechanism for achieving financial compatibility and, in addition, helps to ensure that the benefit packages offered by the schemes are socially and culturally acceptable to the community.

In evaluating the policy relevance of health insurance to rural populations in Africa, it is essential to consider health insurance as a risk sharing mechanism employed to harness private funds for health care, and reduce the financial barrier faced by vulnerable groups to obtaining care. This is in contrast to defining health insurance as those administrative and financial arrangements that exist in many developed countries for pooling health care risks. The latter definition would imply that schemes in richer countries represent universally relevant models, whereas the former suggests that the more pertinent experiences are those of countries such as Burundi, Guinea Bissau, Thailand and Zaïre, who have implemented insurance schemes that provide cover for rural populations. Their rural schemes provide policy relevant information and illustrate the potential for innovative and "appropriate technology" approaches to health insurance in African countries. To complement such information, health planners require tools specifically designed to evaluate the social benefits and costs, and the financial viability, of rural health insurance schemes in their specific national settings.

When the organization of a health insurance scheme involves action by social institutions, communities and the State, either in isolation or in collaboration, the scheme becomes a

social security programme. In effect it represents public action taken to reduce human deprivation and to eliminate vulnerability (Burgess & Stern 1991). Thus, in this thesis 'a rural health insurance scheme' refers to a formal social-security orientated programme in which the community, through its representatives, fully or partially controls a pool of resources. This pool consists of payments by insurees used to fund all or part of the health care costs of community members. This definition implies that the communities explicitly or implicitly participate in the design and the implementation of a scheme.

## HYPOTHESES AND OBJECTIVES

### Hypotheses

Currently, little analytical information is available about rural health insurance schemes, particularly on the affordability of premiums, the appropriateness of payment schedules, the relationships between premiums and benefits, and the resulting level of access to health care among the population. The thesis reports on the objectives, desk studies and empirical investigations of a health economics research project, "Community Health Insurance in Developing Countries and Its Feasibility in Ghana". This project aimed to redress this gap in knowledge. Prior to its implementation only a few studies in the subregion had addressed some of these questions in relation to risk sharing schemes for rural populations. They included the evaluations of the Abota village insurance scheme in Guinea-Bissau (Chabot *et al* 1991; Eklund & Stavem 1990) and hospital prepayment in Zaïre (Moens 1990). In order that other rural areas can initiate schemes that are appropriate for their populations, guidelines/protocols are required to assist local/district health planners and managers to assess the preference for, and willingness to pay for, insurance schemes in their localities. By testing the following hypotheses, the research thesis on health insurance in developing countries and its feasibility in Ghana aimed to increase the information available and develop an assessment protocol.

### Hypothesis 1

- \* A health insurance scheme in a developing Sub-Saharan African country can be effective in reducing the financial barriers faced by those who are most vulnerable,

such as the poor, the chronically ill, the elderly and children, and be financially viable.

## Hypothesis 2

- \* The health care utilization pattern of rural households in a subdistrict in Ghana, their stated preferences for insurance coverage and basic health facility cost data, can be used to forecast the relationship between premiums that households are willing and able to pay, and those premiums that will cover a given percentage of the costs of providing care for those households.

The broad aim of the research was to evaluate schemes for sharing the risks associated with ill health and health care consumption in several rural areas in sub-Saharan Africa, and to use the results as inputs in the design and implementation of a study of the feasibility of a community-based scheme in a subdistrict in Ghana. It was envisaged that later the study protocol would be revised in the light of the research findings and implementation experiences into a pilot protocol to be tested by other districts.

## Objectives

The specific objectives with regards to both the evaluations and feasibility study were as follows:

1. To examine the literature on the economic demand for health insurance by rural households in Sub-Saharan African countries.
2. To assess empirically the degree of risk pooling<sup>1</sup> (Friedman 1986) achieved by, and the financial performances of, three African health insurance schemes that cater for rural populations.
- 3 To investigate the factors determining participation of rural households in health insurance schemes, in particular the affordability of the premiums and the appropriateness of payment schedules.

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<sup>1</sup> Risk pooling here refers to aggregating the uncertain financial consequences of ill-health faced by many individuals to give a population that experiences an actual total health expenditure close to the expected.

4. To determine if high risk groups such as women and children have improved access to health care under existing rural health insurance schemes.
5. To ascertain the types of schemes that are preferred by communities in a sub-district in Ghana and the premiums that households in this area would be willing to pay for different benefit options.
6. To make recommendations to the Ministry of Health Ghana based on the findings of the study, on the feasibility, accessibility and efficiency of different health insurance schemes for the rural and informal labour sector.

## STRUCTURE OF THESIS

The thesis is organised into three parts corresponding to i) a review of the literature on the theory of insurance and its practice, particular in rural areas in Sub-Saharan Africa, ii) the methods and findings of empirical studies on health insurance carried out in 3 field sites in Sub-Saharan Africa, and iii) discussions about financial and social consequences of implementing health insurance schemes for rural populations in Sub-Saharan Africa.

Part One consists of this introduction followed by a review of the relevant literature in chapters 2 and 3; the former describes the economic concepts of risk aversion and expected utility maximization that are postulated as underlying individual decisions to purchase health insurance and the problems of adverse selection and moral hazard commonly found in functioning insurance markets. It also considers the argument for publicly organised health insurance found in economic literature, including interdependence of individual preference functions for health care consumption, positive externalities associated with health care and separation of Pareto efficiency and social efficiency in the market for health care.

The second half of chapter 2 performs two tasks; a) it discusses the conceptual development of Willingness to Pay (WTP) methodology and its application in Contingent

Valuation studies in the health care sector of developing countries, and b) reviews models of health care expenditure as a function of user prices in the absence of insurance as a starting point for identifying the exogenous variables for insurance demand studies. Where past preferences cannot be observed, WTP provides a means of obtaining consumer valuations of health care and insurance policies. In many developing countries, past preference data on quantities purchased at different prices are not available because health care has traditionally been free at the point of use or insurance has not been offered for purchase to the majority of the population.

Chapter 3 presents a review of the limited available literature on formal health insurance activities in Sub-Saharan Africa. It provides a general overview of scales of activity and the policy trends and makes references to specific schemes in the literature as illustrations in focusing on schemes that provide cover for rural populations.

Part two begins by presenting the research questions that emerge from the main findings of the literature reviews. This is followed by descriptions of the objectives and study methods used in the different studies undertaken as part of the research (chapter 4) and by the socio-economic backgrounds of the three countries where field work was carried out, Burundi, Guinea Bissau and Ghana (chapter 5). Although the chapter focuses mainly on the health financing situation in these countries, it also describes rural economic activities to provide insight into the levels and characteristics of cash flows in households, in particular seasonal fluctuations. This information is required to interpret the findings relating to the premiums household heads reported they were able and willing to pay and their preferred payment schedules.

Evaluation findings about health insurance schemes in two study areas, Muyinga Province in Burundi and Gabu in Guinea Bissau, are presented in chapter 6. The first half of the chapter presents the results relating to the financial and social performance of the CAM in the former study area and is preceded by a description of the scheme. The Abota system in the latter study area is the focus of the remainder of chapter 6 and relies on data from the empirical research carried out in the Gabu Region in October 1992.

Chapters 7, 8 and 9 contain the results of the feasibility study carried out in Ghana, the “Osudoku health expenditure and health insurance study”. They describe and interpret those findings that relate to (a) the incidence of morbidity, the pattern of health care utilization and health care expenditure of the study population (chapter 7); and (b) local perceptions about health insurance, “willingness to pay” for health insurance and predictions about affordability and revenue (chapter 8). The final results chapter initially reviews two categories of demand studies that are used to model the demand in the health insurance market; direct models using the conceptual framework of utility maximization under uncertainty, and indirect models arising from insurance- conditioned demand for health care. This chapter concludes by presenting a regression analysis of the factors influencing willingness to pay for health insurance and discusses the predictions arising from the regression model.

Finally, Part Three of the thesis consists of discussions and conclusions (chapters 10 and 11). Critical findings that are relevant to policy decisions about financial and social consequences of implementing health insurance in rural settings are identified in this chapter. This chapter also considers the lessons learnt with regard to contingent valuation of the demand for health related goods in general, and health insurance in particular, in an African context.

Chapter 11 presents the major research conclusions relating to the demand for health insurance in the study countries and comments on how they provide support for the research hypotheses. It also describes the policy implications of the research findings for health care financing in Ghana and in other Sub-Saharan African countries. In conclusion, future studies needed to (a) assess and manage adverse selection that may arise from increasing numbers of AIDS patients in Ghana and (b) evaluate the impact of a district health insurance scheme on health sector efficiency and equity, are discussed.



## **Chapter 2: A Review of health insurance theory and willingness to pay (WTP) studies**

### **INTRODUCTION**

This chapter reviews the literature on the theory of health insurance and the factors that affect the efficiency of the market for health insurance policies. The first part of the chapter focuses on the economic concepts that have been used to explain a) individual preference for health insurance cover and the willingness to pay for policies; b) strategies for regulating the quality of insurance contracts; and c) mechanisms by which inefficiencies arise in the market for health insurance. In the second part, a review of willingness to pay (WTP) studies in the health sectors of developing countries is presented. The WTP technique provides a means of obtaining consumer valuations of health care and insurance policies in situations where past data on the quantities purchased at different prices are not available. Understanding of the strengths and weaknesses of WTP methodology was central to the thesis since one of its objectives was to ascertain the premiums that households in a sub-district in Ghana would be willing to pay for different benefit options even though in the past insurance was unavailable to the study population.

### **INSURANCE AND PRINCIPLES OF DEMAND FOR POLICIES**

Individuals are uncertain about the timing and form of their future health care consumption and consequently the cost of that consumption. These uncertainties in many situations have led to the demand for health insurance. Health insurance increases welfare by spreading the risk of financial loss due to illness and therefore maintains income. It also relieves the consumer from concerns about health care prices and income constraints at the time of illness. When health services are free, or virtually free, at the point of use some of the financial uncertainty (specifically the risk of income reduction due to health care expenditure) is removed and this may limit the demand for health insurance. This was the situation in many developing countries before the onset of the present decline in

their economic growth rates. More recently patients have increasingly shared in the financing of government health services through the payment of consultation charges and the purchase of drugs and other renewable items because the health institutions have inadequate government provision. It is therefore conceivable that in Sub-Saharan Africa there is now increasing and significant demand for insurance policies to cover illness eventualities.

An insurance policy is "a state-contingent income claim" which is obtained before the state of the world is known. In other words, the policy entitles the buyer to wealth or income if and when the event against which he or she has insured occurs, and the policy is purchased before he or she knows whether the event will occur. The decision is therefore made under uncertainty. Faced with an uncertain situation in which one of the possible states of the world will result in financial loss, ie illness occurs and health care fees must be paid, a person may decide to protect himself by purchasing insurance cover. However the fact that insurance firms normally make profits is an indication that such a person pays more in premiums than his expected loss and therefore the decision to insure does not arise from a desire to maximize his expected income. Rather the decision to insure and the value he places on that insurance emerges from his attitude to risk and the manner in which his *utility* or true worth of wealth changes as wealth changes.

#### Expected Utility under uncertainty

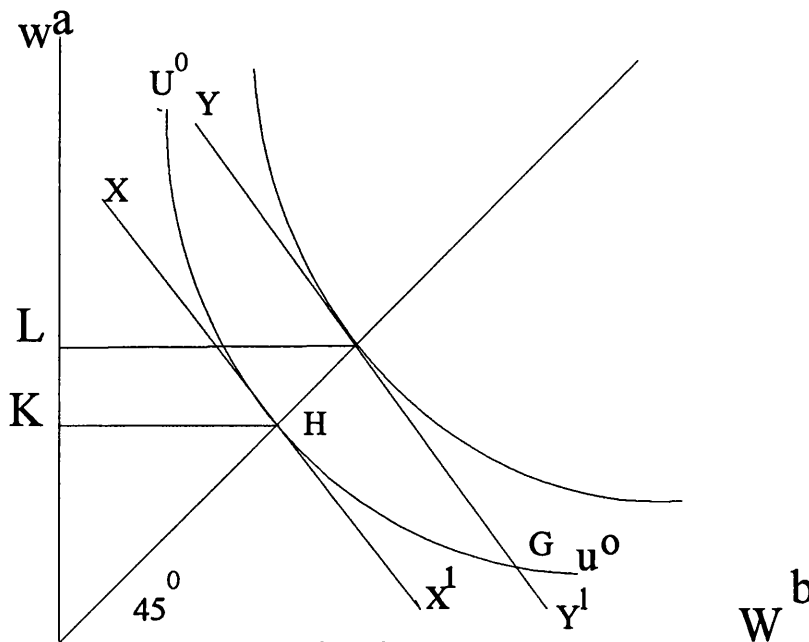
Daniel Bernoulli in the early eighteenth century proposed that the true worth or utility of an individual's wealth is the logarithm of the amount of money possessed. In 1947 John Von Neumann and Oskar Morgenstern offered a treatment of utility in which they proposed that a utility curve can be tailored for any individual provided that the assumption of the Expected Utility Theory holds. This theory states that individuals choose among alternatives in order to maximize expected utility.

The assumptions underlying this theory make it possible to determine utility values pertaining to a single individual who behaves consistently in accordance with his own tastes. Those originally postulated by Von Neumann and Morgenstern start by asserting

that a person is able to determine, for any pair of outcomes, which she or he prefers or that both are regarded equally. *Transitivity* of preference is also assumed and reflects an individual's consistency such that if A is preferred to B and B is preferred to C, then, A must be preferred to C. The third and fourth assumptions are those of *Continuity* and *Substitutability* indicating that an individual regards a gamble having the best and worst outcomes as rewards to be equally preferable to some middle outcome and that it can be substituted by a gamble that is equally regarded. The final assumption of the theory asserts that the preference for gamble between the same two outcomes increases as the probability of attaining the better outcome increases.

In applying state preference theory and the theory of expected utility maximization to explain insurance decisions, the orthodox literature on health insurance postulates that individuals purchase health insurance because they are risk averse consumers attempting to maximize expected utility (utility being the satisfaction derived from the consumption of a good or service) (Bernoulli 1738; Lapin 1987). Rees (1989) in his analysis of asymmetric information in the market for insurance, examined individuals' insurance decisions using the above theoretical framework of insurance. He employs state preference indifference curves to illustrate the relationship between expected wealth and utility in uncertainty. The first theory in this framework, the State Preference Theory, implies that a person's wealth is dependent on the state of the world and that given two different states of the world the marginal rate of substitution (the rate at which reductions in wealth in one state can be compensated by an increase in the other), is given by the slope of the line  $U^0$   $u^0$  in figure 2.1. The second, the Theory of Expected Utility Maximization, implies that the expected utility is the probability weighted sum of utility in the possible states where the sum of the probabilities is one.

## Expected Wealth and Utility in Uncertainty



**Figure 2.1**

$W^a, W^b$  = states of the world

$Y^1Y$  and  $X^1X$  = expected wealth lines = constants

The individual is indifferent between  $H$  and  $G$

$H$  is a situation of certainty

$G$  is risky leading to different levels of wealth according to the state of the world

$KL$  = difference in expected wealth between situations of certainty and risk  
= Risk Premium

On any expected wealth line, there will be one certain position,  $H$  in figure 2.1, where wealth is the same irrespective of the state of the world and there will also be many risky positions. The difference in the expected wealth between a certain and risky position of the same utility (difference between  $L$  and  $K$  in figure 2.1) is known as the risk premium and is a measure of the individual's risk aversion. Risk aversion describes an attitude towards risk in which as wealth increases, the increase in satisfaction increases at a diminishing rate. It is one of the three basic attitudes to risk obtained by applying the Expected Theory of Utility and its assumptions, the other two being risk seeking and risk neutrality. Persons are accordingly described as being a risk averter, risk seeker and

neutral risk taker. A risk averter will accept only a favourable gamble and will not pay a fair price to gamble; a risk seeker will pay a premium for the privilege of gambling; and a risk neutral individual considers the face value of money to be the true value and is therefore indifferent to a gamble and receiving the expected payoff.

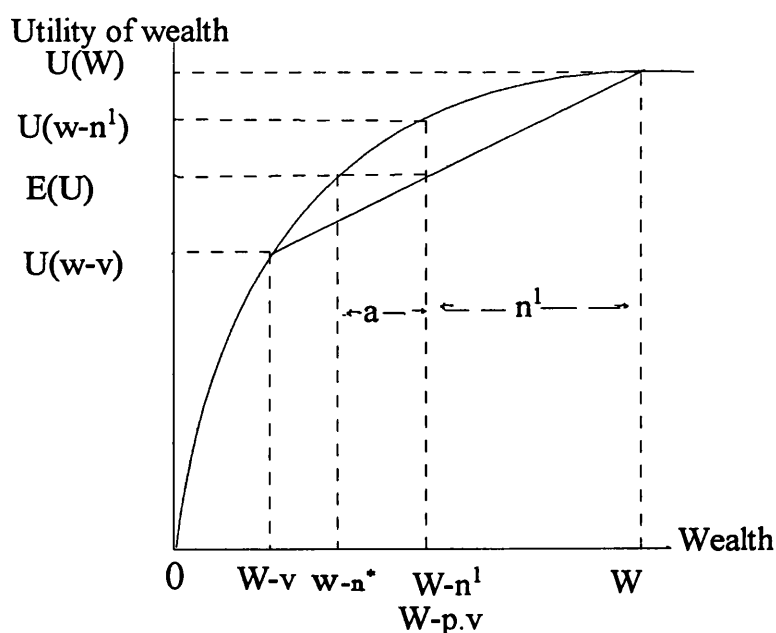
### Risk aversion and expected utility maximization

Insurance provides a risk averter the means of transferring the consequences of the worst outcome of an uncertain situation to an insurance firm by paying a positive price. A risk averter will therefore purchase insurance when the price does not exceed the sum of his individual monetary evaluation of the risk (pure risk cost) and the expected loss. This can be shown as follows. A risk averter has a utility function with respect to wealth which is characterised by a *diminishing marginal utility of wealth* (figure 2.2). The utility function of a risk averter shows a concavity. If such an individual is at a point on the utility function so that he or she has an asset valued at  $V$  and faces the probability  $P$  that it will be stolen. In accordance with the Expected Utility Theory a risk averter will always prefer to buy insurance offered at a 'fair premium'  $n^1$ , where a fair premium is defined as

$$n^1 = \text{expected loss} = P \cdot V$$

1

The expected utility from the risk  $E(U)$  is less than that utility offered by the certain



**Figure 2.2** (Adapted from Mayston (1989))

wealth that remains after purchasing a fair premium insurance.

$$E(U) = P.U(w - v) + (1 - p).U(W) \quad 2$$

$$E(U) < U(W - n^1) \quad 3$$

The conclusion is that he prefers a certain event to a risky event since even though both yield the same expected monetary value of wealth yet he is not indifferent. He is willing to pay a positive price to avert the risky situation denoted by  $a_1$  and defined as the difference between the expected value and the certain-value equivalent of the risky situation.

$$a_1 = (W - P.V) - (W - n^*) \quad 4$$

where

$$n^* = a_1 + n^1 .$$

The risk averse person when faced with the above probabilities and payoffs will therefore be willing to buy insurance up to the value  $a_1 + n^1$  (the maximum premium the individual will be willing to pay). Hence,  $a_1$  becomes the maximum loading costs that he will accept from the suppliers, confirming that the decision to buy insurance is subject to the premium not exceeding the sum of the pure risk cost and the fair premium.

In the event that the degree of aversion increases the new utility function will have a greater degree of concavity. The same risk will then have a higher pure-risk cost of  $a_2$

$$a_2 > a_1 \quad 5$$

The individual, having acquired a greater degree of aversion, will now pay a higher positive price for certainty, corresponding to being willing to pay a higher price for the

same insurance cover.

$$n_2^* > n_1^*$$

6

In summary, risk aversion is an attitude towards risk which is consistent with a *diminishing marginal utility of wealth*. This utility function is a concave curve, the concavity of which increases as the degree of aversion to risk increases. Greater concavity results in a higher pure-risk cost such that the individual will pay a higher price rather than face the uncertain situation. Increasing degrees of aversion affect a risk-averse person by making him or her willing to buy insurance at a higher price.

It can be inferred from the orthodox economic theory of utility maximization and decisions under uncertainty, that the degree of risk aversion in absolute terms is greater for a poor individual than for a rich individual. Classically this is depicted by constructing indifference curves which cling nearer to the certainty line and are more curved as one moves lower down on the indifference map. This inference is compatible with the intuitive notion that people in poor countries have greater absolute risk aversion than people in wealthier countries. Thus it could be inferred that people in developing countries would have a high demand for insurance, including health insurance. This line of reasoning would also imply that, all things being equal, individuals in developing countries, by virtue of their greater risk aversion, would be willing to pay insurance premiums that include a higher percentage of pure risk cost than people in developed countries. Since the pure risk premium represents the maximum "loading"<sup>2</sup> that an insurance policy purchaser would accept above the fair premium<sup>3</sup>, all things being equal, greater risk aversion implies that more revenue will be available for administrative costs and/or profits for insurance suppliers.

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<sup>2</sup> The "loading" represents the administrative charge and the normal profit obtained by the supplier per policy and is equal to that part of the premium above the fair premium.

<sup>3</sup> A fair premium is equal to the expected loss, that is the probability of loss multiplied by the value of loss.

The Arrow-Pratt measure of local, absolute risk aversion is the formal measure of risk aversion found in standard economics texts (Pratt 1964; Arrow 1971). Unfortunately it fails to capture the decision-maker's attitude towards health risks because it is applicable only where the utility function depends exclusively upon the level of wealth, irrespective of the state of the world. In situations involving health risks, where wealth changes are caused by changes in health, the marginal utility of wealth depends also on the state of health. Karni theoretically considers the relationship between risk aversion and optimal health insurance where preferences depend on the decision-maker's health and the insurance policy specifies cash payments (Karni 1981). It is doubtful that his conclusions are applicable where the insurance supplier provides the health care. Therefore an analytical approach for examining and modelling the decision to purchase health insurance that relies on the direct measurement of absolute risk aversion would not provide a conceptual framework that could be translated into empirical research.

However, the above conceptual framework implies that individuals who are risk averse will purchase more comprehensive coverage against illnesses of "low probability and high loss" than for those of "high probability and low loss" in order to maximize their expected utilities. This suggests that the demand for insurance against illness may be influenced by the likelihood of the illness events, and consequently the probability of requiring specific treatments and the costs involved. Following this line of argument, all things being equal, the pattern of demand for health insurance will be characterized by a greater demand for insurance against rare but major illness associated with expensive treatments, eg cardiovascular accidents (stroke), than for insurance to cover frequently occurring illness treated at lower costs, eg adult malaria in hyperendemic areas. An American study in 1984 was consistent with the conclusion that, given coverage of equal actuarial value, people choose to insure against low probability high expense health problems before high probability low-loss conditions (Pauly 1986). In the absence of data to estimate accurately the probabilities and the monetary loss associated with different illnesses in a developing country, empirical studies could incorporate this theoretical prediction by approximating "low probability high expense health problems" to inpatient episodes of illness, and "high probability low-loss illness" to OPD and assess the demand for OPD



and inpatient policies separately.

## THE HEALTH INSURANCE MARKET: ITS OPERATION AND REGULATION

The literature cited above attempts to explain why an individual purchases insurance and, more importantly, health insurance so as to understand the demand pattern. However the overall structure of the market for health insurance is also important because it dictates how the market may be regulated to ensure it provides the greatest benefit to society. In order to explore the pattern of both demand and supply, and therefore the likely structure of the market for a community health insurance scheme, it is helpful to analyse the components of health insurance.

### The insurance contract

The basic concept of an insurance contract is defined by two elements

$p$  = the premium received under the contract

$x$  = stochastic variable representing the amount paid to settle claims.

" the premium must be sufficient to compensate the common losses, to pay the expense of management, and to afford such a profit as might have been drawn from an equal capital employed in any common trade" (Adam Smith (1776) as quoted by Borch (1990)).

Borch observes that in the developed countries, the profit - the charge that the insurer makes for his risk-bearing services - is determined not only by the supply and demand conditions in the insurance market but also by government regulations. He illustrates this by the following: let  $P$  = total premium received,  $X$  = a stochastic variable representing the amount used to settle claims and where  $F(X)$  = the distribution of  $X$ , then the probability of a company paying claims exceeding premiums is:

$$\Pr \{X > P\} = 1 - F(P)$$

Usually an insurance company will, by law, be required to hold reserve funds, or equity capital,  $S$ , which can be used to settle claims in the event of such losses. The probability that the claims cannot be met, ie "the probability of ruin", now becomes

$$\Pr\{X > S + P\} = 1 - F\{S + P\}$$

Government regulation may then stipulate the largest permissible value of "the probability of ruin" as 'a'

$$\Pr\{X > S + P\} = 1 - F\{S + P\} \leq a$$

$1-a$  is therefore a measure of the minimum "quality" of the insurance, in the sense that it is an indication of the insurance company's ability to pay claims that exceed the expected loss upon which the premium has been calculated. As the "a" decreases this ability increases. As  $1-a$  approaches unity the ability becomes a statistical certainty and the quality of the insurance may be described as excellent.  $S$  can be invested without risk at a rate of interest of  $r$ . In a free market economy this simple model implies that the minimum premium is determined by (1) the risk-free interest rate,  $r$ , and (2) the permissible probability that insurance claims cannot be met (as set by the government),  $a$ . It emphasises the essential relationships between premium levels and conditions in the capital market. The need for substantial reserve capital is only removed if the government supplies a guarantee. On the other hand an insurance company may make reinsurance arrangements to compensate for insufficient equity capital. If premiums are adequate, losses requiring the use of reserve funds will not occur often and the equity capital may be invested in assets which are only fairly liquid.

### Efficiency of insurance schemes

The organisational arrangement for supplying a commodity is evaluated as efficient when it achieves set objectives employing minimum resources. The selection of the objective requires a value judgment and is therefore a normative problem. In the context of health insurance one possible objective is to supply the type and mix of insurance demanded by the consumer. Such an objective is consistent with defining efficiency as a Pareto optimum insurance will be consumed such that 'no input can be transferred to alternative

use without making at least one person worse off. Embedded in this definition is the value judgment that the current income distribution is optimal (Pearce and Nash 1989). An alternative objective, corresponding to a different definition of efficiency, is to ensure equity in the consumption of health insurance arising from the desire to attain equity of access to health care. The two definitions represent value judgments and political views at poles of the debate on what is the appropriate criterion for economic evaluation of social projects.

Pareto efficiency or optimality, which is the maximization of the economic welfare of the community, requires the existence of specific conditions, referred to as 'standard assumptions' by Barr (1990). These assumptions may be summarised as: the possession of perfect information by the consumers and the suppliers; the existence of perfect competition, ensuring suppliers make no long run excess profits; and the absence of market failure. In economic theory the presence of market failure in the health insurance market provides efficiency reasons for government intervention or even government provision. An example of such intervention is when the quality of insurance is regulated by government stipulated "probability of ruin", as discussed above. In the context of health insurance, perfect information on the part of the suppliers requires: that the probabilities of needing treatment are known or estimable; that it is independent across individuals and smaller than unity; and the absence of significant adverse selection or moral hazard.

In developing countries some interdependence between individual probabilities of requiring treatment will exist because of the prevalence of infectious diseases and epidemics. While the probability of requiring health care for conditions such as fractures and acute inflammations over a given period is less than unity, this is not so for chronic and/or hereditary conditions (ie diabetes, sickle cell disease and AIDS).

Adverse selection and moral hazard are both major causes of market failure and have received considerable attention in empirical and theoretical studies (Arrow 1963; Pauly 1986; Lohr *et al* 1986; Manning 1987). Adverse selection arises as follows: in a

community there are people with low risk of illness  $P_L$  and others with significantly higher risks  $P_H$ . In the absence of perfect information concerning the values of the risk pertaining to each individual's insurance, suppliers are initially unable to tailor premiums. Instead they offer uniform premiums based on an average expected probability of loss, known as Community Rating  $n^*_C$

$$n^*_C = P_H(N_H/(N_H + N_L)) + P_L(N_L/(N_H + N_L)) + L$$

Where  $L$  is the loading amount and  $N_L$  and  $N_H$  are the numbers of low and high risks respectively in the insured population. The community rated premiums discourage those of low risk from purchasing while making insurance attractive to high risk individuals. The resulting "selection" of high risk individuals increases the average expected loss for the insured population in subsequent periods. In subsequent periods the average expected loss for the insured population rises above  $n^*_C$ .

At the extreme, insurance becomes impossible as  $P$  approaches unity for the selected group. The outcome is an unstable market in which the individual schemes are not financially viable. Adverse selection thus prevents an insurance scheme based on a community rated premium attaining an optimum in the Pareto sense.

If individuals and households are able to predict accurately their risks then the conditions exist for adverse selection in a community-rated rural health insurance scheme. If the household head's perceptions of the household's risk are correct, then the expenditure he or she anticipates for a subsequent period will be close to the actual expenditures incurred by the household. Therefore if rural households do accurately predict their health expenditures, then all things being equal, adverse selection will be a problem in voluntary community-rated schemes.

Provided insurers are able to correctly predict the risk of those insured, experience rated premiums, as an alternative to community rated premiums, reduce or eliminate adverse selection. Thus for insurance policies to be based on experience rated premiums,

individuals or groups of individuals, are offered individual premiums related to their assessed risks. High risk individuals are charged higher premiums or not offered insurance policies at all.

Although the efficiency of the insurance market is improved by experience rated premiums, in Pareto terms, considerable inefficiencies may still exist from moral hazard. Moral hazard occurs when individuals, once possessing full and fair insurance policies, lack the incentive to take actions that reduce the probability of the insured event occurring or the loss associated with it (a full insurance policy is one in which the loss resulting from the insured event, in this case illness, is exactly compensated for; a fair policy is one in which the premium is equal to the expected loss: the probability of loss multiplied by the value of loss). In the context of health insurance, moral hazard leads an insured person to invest less in preventive health measures and to use more resources to treat illness. In the presence of third party payment the individual has no incentive to contain the cost of medical treatment, he or she faces zero marginal costs at the point of consumption and consumes to the point of satiation. Computation of an accurate expected loss is then extremely difficult and the insurance market becomes unstable. The outcome is rising rates of utilization together with increasing health care costs and premiums.

Rees (1989) considered adverse selection and moral hazard to be the consequences of information asymmetry and focuses his analysis by assuming away social risk and any imperfect competition in the insurance market. He is able to show that in response to moral hazard, such a market will offer only partial coverage, in the form of coinsurance, to all individuals irrespective of their level of risk. Also his analysis indicates that adverse selection results in partial coverage for individuals of low risk.

In reality the administrative or transaction expenses of insurance tend to be substantial. High transaction costs are inefficient if an alternative system of provision can reduce them. Arrow (1963) suggests that in theory, “a deductible” (the initial minimal fee that is not covered by the policy and is paid out-of-pocket by the insured) attempts to reduce these costs. Were deductibles proportional to premiums, then the theoretical interpretation

would be that individuals bear a small risk in order to save on the administrative cost. However this is not the case and deductibles are determined more by the number of claims than the premium. In the presence of deductibles, the user price is the same as the market price, beyond which it falls to zero. Arrow (1971) shows that the optimal insurance policy (for a risk averse individual who maximises his or her expected utility) is one which provides for full coverage of the loss above a deductible minimum.

Coinsurance<sup>4</sup> makes the use price of health care non-zero. Therefore, the effect of linear coinsurance on use in theory can be predicted from the user price elasticity. The price elasticity or coinsurance elasticity of demand reported in the literature at the mean range from -0.1 to -2.1 (Newhouse & Phelps 1974; Colle & Grossman 1987; Newhouse & Phelps 1976).

Manning *et al* (1987) found that the utilization of outpatient physician services was responsive to the coinsurance rate (elasticity of approximately -0.2) among an experimental group of 2,005 families assigned to 14 experimental insurance plans in the Rand Health Insurance Experiment. Six centres of population across the USA were involved in this experiment from 1974 to 1982. Some of the plans provided free (at the point of use) health care while the remaining fell into three categories requiring coinsurance payment. The relationship between insurance type and health status was also investigated and no significant difference in health status was found between the free plans and the cost-sharing arrangements. In contrast, Lohr *et al* (1986) found that poor sick children showed the greatest response to coinsurance in the likelihood of any use of health services. However the total health care expenditure was 45% higher for the free plan leading the researchers to conclude that the arguments for the provision of health care free at the point of consumption are not justified by recourse to the health benefits involved. Reduction in the number of episodes of medical treatment was found to be responsible for all of the reduction in health care expenditure with coinsurance (Keeler *et al* 1988).

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<sup>4</sup> In contrast to a full insurance contract, a contract involving coinsurance means that the insurer and insured pay fixed proportions of the total loss.

Finally, the presence of positive externalities in health care is a major cause of market failure. In general, an externality exists when a variable controlled by one economic agent enters the utility function of another economic agent, and specific externalities exist when the consumption of a good by individual b enters into the utility function of individual a. The explanations for this interdependence may be either selfish or altruistic needs of individual a, and for both the following economic analysis is applicable. The true social evaluation of each unit of health consumed by b, as reflected by the willingness to pay, is therefore given by the vertical summation of the demand function of a and b. The society as a whole benefits by ensuring that members consume health care as close to the social optimum as possible. An equilibrium which fails to take into account this externality is unlikely to be one which will make at least one person worse off by reallocation.

#### Public versus private health insurance

In answering the question, "can there be an efficient private health insurance scheme?", the objectives of a health insurance scheme define the precise meaning of efficiency in this context. Pareto efficiency in the provision of health insurance is not possible because, as already discussed, the market lacks the properties of a competitive market. In particular, imperfect information leads to adverse selection and the problem of moral hazard prevents the attainment of Pareto efficiency. In a welfare economics context where the benefits of consumption of health by an individual include the positive externalities to others in the society, there is a clear distinction between Pareto efficiency and social efficiency.

Government intervention in the private health insurance market in the USA through the provision of tax subsidies is considered by Pauly (1986) to be Pareto inefficient. He argues that in the USA there is no evidence that there is under-consumption by those income groups (the upper and middle-income groups) that purchase insurance and secondly that "Virtually all the tax subsidy goes to the non-poor" (Lohr *et al* 1986).

The theoretical literature contains examples where efficiency is implicitly defined in terms of equity of consumption of health insurance. Much literature on health departs from the

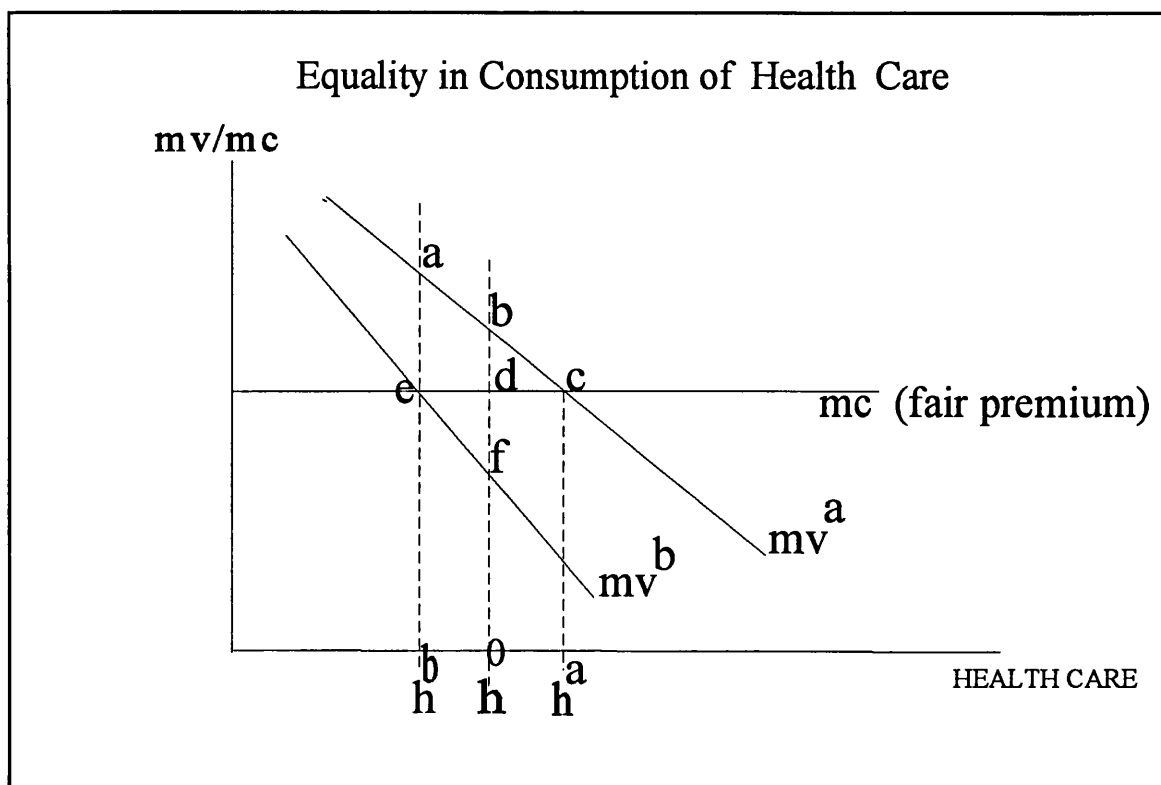
assumption that individual preference functions are independent of each others'. General interdependence is one of the characteristics which distinguishes the health field from sectors exhibiting the norms of competition (Lees & Rice 1985). It also forms the foundation of Lindsay's explanation of the observed widespread support for public provision of health care (Lindsay 1969). He postulates a society in which individual utilities depend not only on the quantity of goods consumed, but also on a measure of equality of health care consumed. A member of this egalitarian society, J, has a utility function

$$U_J = U_J (X_J^1, X_J^2, \dots, X_J^n, h_j, e)$$

where;  $X_J^i$  ( $i=1, \dots, n$ ) are the quantities of goods consumed by the  $j$ th individual,  $h_j$  is his consumption of health care and  $e$  is a measure of the distribution of health consumption about its mean.

Lindsay constructed a model of a two-person society and represented it graphically such that the vertical axis shows the marginal value (mv) and the marginal cost of the health care and the horizontal axis the quantity of health care (figure 2.3). The graph illustrated that if it is simply equality per se that is desired, inequality in health care consumption may be reduced either by inducing the poor individual (b) to consume more or by inducing the wealthy individual (a) to consume less. This permits the wealthy individual four options, each with its associated cost, whereby he or she may increase equality. In selecting an option to use alternatively or jointly he aims to "promote equality to the point where his marginal evaluation of a unit of equality is equal to the marginal subjective cost of that unit".





**Figure 2.3** Adapted from Lindsay 1969.

Promoting equality to this point requires him to select the least-cost method of producing that quantity and would therefore be the most efficient. These options are as follows:

- a) The Sacrifice/Burnt offering method - where individual a after purchasing his optimum quantity of health only consumes  $h^b$  and destroys  $h^b - h^a$ . The cost of this action is high and consists of the total cost of the quantity,  $h^b ech^a$ , plus the consumer surplus  $eac$ .
- b) Abstention Method - by purchasing only  $h^b$ , the cost of which is given by the loss of consumer surplus  $eac$ .
- c) Price Subsidy Methods - to drive b to voluntarily choose to consume up to  $h^o$  - at cost  $edf$ . This must be combined with one of the two previous methods to lower a's consumption also to  $h^o$ . Combining with abstention will be the least-costly of the two, costing  $bcd + efd$ .

- d) The Gift Method where a buys his optimum  $h^a$  but makes a gift of  $1/2(h^b - h^a)$ . The cost is given by  $h^0 b c h^a$  and exceeds  $(bcd + efd)$ .

The efficient solution which attains equity in the model is therefore a scheme which combines subsidies and abstention. When the above model is expanded to more than two persons, and more than one individual has the stated egalitarian preference, private action will not provide positive externalities to all others who value equality. This is because private action would lead to a free-rider problem. Only collective action to secure equality would allow extension of the activity to the optimum level. Therefore the solution implies collective action in which individuals of high income in the society subsidise the health care of those of low income. Lindsay argues that welfare oriented health care systems, such as the British National Health Service, are based on this type of rationale.

The solution also provides universal coverage more efficiently than a free market system. The low per capita health expenditure in Britain as compared with America supports this conclusion. In the context of the NHS, the abstention may be viewed as rationing of excess demand arising from moral hazard, the level of abstention being largely determined by the suppliers (doctors) through the referral and waiting system. The observed relationship between patients and physicians permits this rationing mechanism to operate.

“By certifying the necessity of a given treatment or the absence of need, therefore the physician acts as a controlling agent on behalf of the insurance companies”  
(Rushing 1986)

Rushing, in his comprehensive work on the social functions of health, put forward a different reason for public provision. He uses a conceptual framework, found in social anthropology and sociology, "structure-function", to analyse health insurance. He presents the thesis that the purchase of health insurance is a social ritual alleviating anxiety and promoting social integration and cohesion in the society. These attributes underpin the view held by many people in Western societies that reliable insurance is important enough

to be seen as a public utility. Consequently it is subject to public regulation, even to the extent of public provision.

From the above it may be concluded that the extent to which individuals in a community view mutual-aid groups as desirable and their willingness to assist those who are ill will determine, to a large degree, the stability of a community health insurance scheme. Information that may be useful in assessing this is the level of participation in existing community mutual-help groups, especially those that provide health care-related benefits to members of the community. The level may be considered as an indication of the value placed on equal consumption of health care by individuals in the community.

## FUNCTIONS OF A SOCIAL HEALTH INSURANCE SCHEME

The theoretical consideration of health insurance presented above suggests that one that is social welfare oriented will have two prime functions that merit separate consideration, although they are intrinsically linked. The first is a financial function: to provide a pool of funds to cover all, or (in government subsidized schemes) part, of the cost of health care for those who contribute to the pool; and to encourage providers and consumers to use health services in a cost-effective manner. Schemes that perform well financially by raising adequate revenues from insurer contributions to cover a high percentage of the costs of care provision, plus all administrative costs, will provide meaningful additional funds for the health sector. On the other hand schemes may have poor financial viability because of an excess of high risk members in the scheme (adverse selection), or as a consequence of levying an inadequate premium relative to the health care needs of the insured population. Finally, a scheme may be unable to fund the health care claimed by its insured because they make excess demands as a response to being insured (moral hazard).

The second prime function of a social welfare oriented health insurance scheme is social, including social equity. It is to remove financial barriers to obtaining health care at the time of illness for the vulnerable groups in society, i.e. the very young and elderly, and the

chronically ill. Many of these persons are also in the low income groups and/or require expensive health care. This social function is achieved through the subsidization of the cost of caring for some individuals in the society by those who have lower risks, i.e. the wealthy and more healthy. This may be regarded as redistribution of effective income. Thus a health insurance scheme promotes social equity because individuals who have equal health care needs ("need" being defined as the capacity to benefit from care) are assisted to obtain comparable care, irrespective of their economic status. All members participating in the insurance scheme benefit from removal of the uncertainty about wealth or income arising from health care expenditure. In addition to providing private benefits to participating individuals, health insurance also increases overall social welfare by promoting the optimal consumption of health care and thus maximizing the resulting positive externalities. A scheme may fail to perform its financial function adequately as a consequence of low participation of individuals of low risk (adverse selection) and high income. This will then minimize its impact on the distribution of effective incomes and make it impossible for it to perform the equity function of reducing the financial barrier to the disadvantaged when seeking health care. Financially non-viable schemes may, however, be assisted by government subsidies to have an impact on the levels of financial concerns faced by the poor at the time of illness, and thus still provide a valuable social function.

## WILLINGNESS TO PAY METHODOLOGY AND MODELLING THE DEMAND FOR HEALTH CARE

Close association exists between the demand for health insurance and health care because the former by altering the price of health care at the point of use, influences the behaviour of the consumer. In theory, the effect of insurance can be predicted from the user price elasticity. Furthermore, for private insurance in particular, the price of a policy which influences an individual's decision to be insured is set by the insurer taking into account the individual's past utilization of health care. The linkage between the two demands therefore involves interdependent decisions made by those insured and suppliers of insurance policies and a feedback mechanism.

The interdependent decisions of the insurer and the insured may be modelled using simultaneous equations of the individual's health care expenditure, the insurer pricing and the demand/choice of insurance policy by the individual. Stability and financial solvency of an insurance scheme would require that these equations attain an equilibrium state in which insurance price is a stochastic independent variable in the equation for health care utilization/demand, insurance prices being set by the insurer based on the cost of transactions between policy holders and the insurer, the unit costs of health care production, and utilization/demand for care by the insured population. The demand for care, the primary endogenous variable, therefore, would feed back into the equation of the insurance price. The relevant price in the health care demand equation is determined by the choice of insurance policy which is an expression of demand for health insurance. The demand for insurance would also be influenced by expected future health care needs.

This section briefly reviews two categories of health demand studies that are relevant to the above outline of a stable insurance market and its empirical investigation. The first group of studies considered is willingness to pay (WTP) studies in the health sectors of developing countries because where past preferences cannot be observed, WTP research techniques provide a means to obtain consumer valuations of health care and insurance policies. In many developing countries, past preference data (that give quantities purchased at different prices) are not available because health care has traditionally been free at the point of use or insurance has not been offered for purchase by the majority of the population.

Another approach to the study of demand for insurance is indirect, and models insurance conditioned demand for health care. In developing the equations found in this group of studies, the framework for the demand for care in the presence of user charges is one of the starting points for identifying the exogenous variables. Consequently, the second group of studies reviewed in this chapter is studies in which health care expenditure is modelled as a function of user prices in the absence of insurance policies. In reviewing this second group of studies and their models, the aim is to emphasise the postulated mechanism through which charges faced at the point of use of health care enters the

behavioural frameworks, rather than to give descriptive details of the models.

In chapter 9 a brief review of studies that attempt to model the demand for insurance using the conceptual framework in which demand is the outcome of utility maximization under uncertainty is presented. They illustrate the application of those concepts used in developing the thesis model of the factors that influence WTP for health insurance policies. In these models, demand is determined by expectation rather than past experience.

### Willingness to pay studies in the health sector

Consumers' monetary valuations of a good or service may be assessed indirectly by observing quantities purchased in the past as a function of price (the implicit evaluation method), or by direct inquiries about quantities they would be willing and able to purchase as a function of price (the questionnaire method). Studies designed as part of the latter approach have been termed Contingent Valuation studies because the respondent is asked to state his or her preference in a hypothetical situation.

Willingness-to-Pay studies are undertaken from two main perspectives; to measure the benefits to a society arising from the provision of a good or service as part of a Cost Benefit Analysis (CBA) or to predict demand patterns as inputs to pricing and marketing decisions (Lavy & Quigley 1993; Mills *et al* 1994; Donaldson *et al* 1995). A few studies however, do not fall into these two categories, for example they may measure ordinal preferences as a function of attributes to guide planners in evaluating the effect on demand of different specifications of a good.

Much of the early conceptual and empirical development of willingness to pay methodology was undertaken in connection with CBA in the field of environmental and transport economics. In early examples of such studies, health economists used the WTP methodology in CBA of projects that had the saving of human life as the sole or a major benefit and contingent valuations were used to value the lives saved. On the premise that a person would be willing to pay an infinite amount to avoid certain death, then the

relevant compensation in decisions about projects that alter risk of death is that required to accept that change of risk. An approach based on valuation of risk of death was first considered by Drèze in 1962 (Drèze 1962) and has been established through the work of Mishan (1971), and Jones-Lee (1976). The emphasis is on evaluating the individual's marginal rate of substitution of wealth for risk of death as opposed to valuing the consequences of the person's death to society. Jones-Lee suggested that information acquired at the individual level could be aggregated to give the relationship between magnitude of a decrease in risk and the maximum amount that would be paid to effect that change (ie willingness to pay for reduction in risk of mortality). The problem becomes one of decision under uncertainty and can be considered using the expected utility theory as treated by Von Neumann and Morgenstern.

As pointed out by Mishan, the formulation of the choice only becomes meaningful in terms of compensation for accepting a risk of death where the risk is very much smaller than unity. In practice the compensating variation required can only be obtained through interviews using hypothetical questions. Whether people are able to comprehend small probabilities then becomes an important issue. Although people do make choices regularly between alternatives that affect the probability of their own death, as in whether or not to cross a road using a pedestrian overhead bridge, they may not be accustomed to doing so in terms of explicit probabilities of survival. Other arguments against the use of WTP questionnaires have been put forward and most infer that responses to hypothetical questions may lack reliability and validity (Diamond & Hausman 1994; NOAA 1993).

Much less theoretical and empirical evidence has accumulated with respect to WTP studies in the context of pricing of goods and services, particularly those provided publicly rather than privately. Nevertheless, recently researchers in developing countries have been attempting to use WTP studies to measure the potential for cost recovery in some sectors that are traditionally largely public, in particular health and water and sanitation. The results of these studies are intended for policy makers to assist them to make price decisions with respect to goods supplied in these sectors. The rationale for using WTP

rather than the implicit evaluation methods in these cases are usually one or more of the following:

- \* Lack of a previous market for the good or service because it has been provided free or because it is new to the study area.
- \* Difficulty of assessing the maximum that consumers are willing to pay because they have faced price structures significantly lower than that proposed, for example where prices have been token and not adjusted for inflation for many years.
- \* Lack of comparability in the quality of the service previously consumed and that proposed.

As mentioned above, in the literature on contingent valuation there is discussion of the possible causes of unreliable and/or invalid answers to WTP questions. Reliability is the level of agreement between replicate measurements/assessments made on/of the same subject. Respondents may give random and therefore unreliable answers if the description of the good and the market within which it is being sold fails to produce a meaningful and realistic scenario. When inappropriate words are used in the description or insufficient details are provided, this problem is likely to arise. Insufficient information about the existence of a substitute good, for example health care provided by other suppliers, is a particular important example of the latter. Where a good or service is complex, as in health care, or previously unknown, as may be the case for health insurance in rural areas in developing countries, this type of problem will be intensified.

A common test of reliability of contingent valuation measures is whether or not the explanatory variables explain a significant amount of the variation in the independent variable. A widely accepted general rule in the case of continuous responses is that the adjusted  $R^2$  of an ordinary least squares fit should be at least 0.15. The model chi-square test may be more relevant where the responses are dichotomous. A significance level



of less than 5% implies that the likelihood of the observed responses, given the estimated equation, is significantly greater than their likelihood given an equation without independent variables (Norusis 1990).

Validity of the technique is the extent to which a method provides a true assessment of that which it purports to measure. Both reliability and validity are required if measurements produced by a study are to be accurate and legitimate for analysis. Reliability is not however a guarantee of validity since a method may consistently measure an alternative variable.

Strategic bias occurs when the respondent attempts to influence a decision or plan that may depend on the outcome of the research findings by providing inaccurate answers. For example the respondent may understate his or her WTP where the health care has a 'public good' nature, as in the case of immunization, in the hope of becoming a 'free-rider'. Questions that offer a price may be interpreted as the critical price ("value cues") and the respondent may state WTP below or above in the hope of securing a specific outcome.

Hypothetical bias occurs when the respondent does not consider that his or her answers will directly influence the outcome of decisions or plans. Consequently the answers may be given without proper thought or they may be used to convey an attitude rather than a magnitude of preference.

A perfect assessment of validity requires an independent standard of reference which can be considered indisputably true. In the case of WTP for health care, such an assessment would require that the hypothetical market becomes a reality and respondents' answers are compared with their actions, however this is rarely possible. Consequently, there are only a few empirical studies in which validity has been assessed in this way. One such study showed that residential properties differing only in levels of surrounding air pollution were sold in the market at prices that reflected values for clean air consistent with those obtained by a WTP questionnaire (Brookshire & Crocker 1981).

In the absence of the conditions needed to demonstrate consistency between answers to hypothetical questions and real market behaviour, validity may be assessed by examining two types of construct validity, a) theoretical validity and b) convergent validity. Theoretical validity implies that the relationship between WTP answers, and price and total consumption, is consistent with economic theory; in particular that respondent would be less willing to pay high prices than low prices, producing a downwards sloping demand curve. A negative and significant coefficient for the natural log of the price provided some proof that the responses to contingent valuations questions had theoretical validity in the study by Weaver et al (1993).

#### Composition of WTP questionnaires

Several authors have provided guidelines on composition of questionnaires and what areas should be covered (WASH 1988). The consensus is that the following components are essential although the debate about the best form of the questions is ongoing.

a) *Past health care practices, expenditure and attitudes*

These questions stimulate the respondent to consider his current and past valuations and choices, the rationale being that the WTP values for the new health related good or service will be made in the context of existing information about prices, qualities and suppliers. Overall these questions establish the credibility of the subject matter.

b) *Creation of a plausible hypothetical market*

The type of information required to create a realistic market in the case of health related services and goods includes; a detailed description, the institutional and organizational circumstances, the method of payment, actual and perceived risk of illness, and perceived effectiveness of care (Morrison & Gyldmark 1992).

c) *Questions which elicit the respondent's willingness and ability to pay*

Empirical studies have reported substantial differences in people's responses to willingness to pay versus compensation questions in the context of measuring

potential economic losses. Thus the individual facing certain death will pay only a finite amount to save his life (WTP), but when alive due to a medical treatment will demand infinite compensation for curtailing the treatment (willingness-to-accept {WTA}). This is contrary to economic theory which implies that the two methods of measuring changes in an individual's welfare should yield similar estimates providing income and wealth effects are small. Gafni (1990) claims that the difference between WTP and WTA stems from comparing answers to bounded versus non-bounded questions. *'What sum are you willing to part with for reduction in the probability of death?'* is a question bounded by income, whereas, *'what sum do you require for compensation for increased risk of death?'* is a non-bounded question.

To take account of the stochastic rather than deterministic effect of health care Gafni argues that WTP questions should be asked in the context of insurance purchasing. Phrasing the question in this way is also thought to be consistent with the fact that; "If services were provided based only on individuals' willingness-to-pay at the point of consumption, many would not exist at their current level since many individuals would not be able to pay for many services they currently consume". This argument is less relevant where the WTP is input into the pricing decision rather than input into the decision whether or not to provide a public funded or subsidised service. In the case of WTP for insurance policies an insurance phrasing is an obvious option.

d) *Questions about the respondent's and his or her household characteristics*

Socio-economic and demographic variables are required to aid interpretation of the WTP findings and to allow some exploration of reliability.

In 1995, a review of contingent valuation studies in developing countries was able to identify eight health sector CV studies and five water and sanitation sector CV studies (Russell 1995) that had the objectives of providing information for pricing. Almost all the water and sanitation studies used questionnaires that provided precise descriptions and

reminded the respondents of substitutes and expenditure on these. They also checked that subjects had understood the nature of the good or service for which they were /would be asked to provide WTP values. Only half of the health studies incorporated these important measures.

Willingness to pay for health insurance was not the focus of any of the above studies. A contingent valuation survey was, however, used in Israel to assess the potential demand and welfare improvements generated by a proposed supplementary health insurance in which a special insurance scheme was considered to be a possible financing mechanism (Elise *et al* 1993). In spite of the likelihood of insurance financing, the WTP questions in this survey seem not to have been asked in the context of insurance purchasing. (The sample question reported was “Suppose that for some time you {or one of your family} have been suffering from a medical problem, and you are seeking additional medical advice. Would you be willing to pay a specialist for a private consultation?”). The questions focused on demand for care in a certain situation of ill health rather than demand for a good that reduces the probability of being denied access to care.

### Modelling the demand for health care

#### *Past models of demand for health care*

Underpinning most empirical economic research that investigates the use of health care services is the micro-economic paradigm of constrained utility maximisation, ie models based on a sovereign and fully informed rational consumer. This is in sharp contrast with models which imply that the decision about the need and consequently the demand for medical care is entirely determined by the medical expert. However, if "need" is defined as the capacity to benefit, and the benefits also include the utility gained from the acquisition of information and the assurance that symptoms are insignificant, then demand cannot be solely determined by third parties. Models in which demand for care is determined by professionals are therefore omitted from this discussion.

The models in which the effect of price on the demand for health care are investigated may be classified into those in which health care enters directly into the individual's utility

function, permitting an estimation of a reduced-form demand for health care, eg outpatient visits, well baby clinic attendance, and those in which the demand for health care is derived from the demand for health requiring an estimation of the underlying health production function.

Some are static, one period models while others are intrinsically dynamic because changes over time are explicitly considered by employing multi-period objective functions and constraints. Models in which uncertainties are incorporated may be classified as stochastic as opposed to deterministic models, in which the variables are non random.

Early models that were used by Feldstein (1974) and Newhouse (1981), primarily to explore price and income elasticities, ignored the fact that the basic trade-off is between health and other commodities. Rather, these models were derived from a traditional utility maximisation process in which purchases of health care are traded against those of a composite good under a budget constraint. The market price of medical care,  $P_m$ , is found in the function limiting utility as follows;

$$\max U(m, c) \text{ subject to } P_m M + P_c C = Y$$

Where  $M$  is medical care,  $C$  is a composite good,  $P_c$  is the market price of this and  $Y$  income. The endogenous nature of health in decision making is not expressed and health care is seen as another consumption good. Many of the social variables such as health status indicators and education, elicited by anthropological studies referred to in the preceding section, were assumed to be "taste shifters".

Acton (1975) extended the utility-maximizing model to embrace the argument that time costs are involved in the consumption of health care. The total cost per unit of health care is therefore defined as the sum of the monetary cost and the opportunity cost of time. Consequently, his model predicts increasing sensitivity of demand to time costs as cash price approaches zero. It also implies that the effect of earned income is ambiguous since increased wages raise both income and the opportunity cost of time. Assuming health care to be a normal good the increased earnings have a positive income effect but a

negative own price effect since consumption becomes relatively more expensive.

Acton's model has the general form shown below;

$$\text{Max. } U = U(m, X)$$

$$\text{Subject to } (p + wt)m + (q + ws)X \leq Y = y + wT$$

Where

$U$  = utility

$m$  = constant quality units of health services

$X$  = composite of all other goods

$p$  = money price per unit of medical services

$t$  = time price per unit of medical services

$q$  = money price per unit of other goods

$s$  = time price per unit of other goods

$w$  = hourly earnings

$Y$  = full income including earned income, unearned income, and the opportunity cost of home production

$y$  = unearned income

$T$  = total time available for market work and own production

Relevant demographic variables play no defined role and thus many of the proven predictors of health and health care consumption discussed above are excluded. The inclusion of time cost, though intuitively appealing, cannot be upheld conceptually. In the model utility is derived directly from the consumption of health care, making this a leisure activity which therefore should have a zero time cost.

Akin et al's (1986) empirical study of the determinants of households' decisions to use medical services and their choice of practitioners in the Philippines employs this type of demand model. To permit the use of the Lagrangian multiplier technique, Akin assumes the utility function to be "strictly quasi-concave", continuous and weakly separable between health services and a vector of all other goods. This implies that the consumer's

preference ordering is "strictly convex" or the indifference curves representing preferences are convex to the origin and do not intersect the horizontal or vertical axes.

In view of the general consensus that consumption of health care in the presence of severe illness is imperative (an example of evidence supporting this is the finding from group discussions by Waddington and Enimayew (1989)), and that in such instances the demand may be considered as 'needed' or 'necessary', it is reasonable to postulate that preference between health and a vector of all other goods is not strictly convex. Rather, it intersects the "health related goods" axis such that health related goods as a substituted completely for all other goods.

The literature includes several different models that explain the pattern of health care expenditure, including a two-part, expandable to four-part model by Manning *et al* (1987), and a four-part estimation model used by Duan *et al* (1982). The latter separately estimates inpatient and outpatient expenditure, using two equations for each type of expenditure. The first estimates the probability of any use and the second estimates the level of expenditure among users. Other models are sample selection estimates and may be superior to two-part or four part model where there is sample selection bias (Duan *et al* 1983; Hay & Olsen 1984; Duan *et al* 1984).

A facility-specific model of outpatient and inpatient expenditure as a function of level of health insurance was developed and used in two rural counties in Sichuan Province, China (Cretin 1990). In The Central African Republic Weaver and collaborators used a two-part model to estimate the willingness to pay for quality improvements in care (Weaver *et al* 1993).

### **Chapter 3: A review of health insurance activities in Sub-Saharan Africa**

#### **HISTORICAL POLICY CONTEXT**

In this chapter a review of the literature on health insurance activities in Sub-Saharan Africa is presented. Published and unpublished data about this subject are very limited. Consequently, the review is not an account of all health insurance systems in Sub-Saharan Africa, but provides a general overview of scales of activity and the policy trends and makes reference to specific schemes in the literature as illustrations. Initially it considers the range of insurance schemes reported and then it focuses on schemes that provide cover for rural populations. To provide some insight into the policy context in which these schemes have evolved, relevant information from major health financing policy documents of international agencies has also been included. Although the primary sources of the information are published papers and reports, the review also includes information obtained by personal contact with health planners and workers in several African countries.

#### **Health financing and insurance in sub-Saharan Africa**

A health insurance scheme is any mechanism whereby the risks of incurring health care costs are spread over a group of individuals. Formal schemes refer to instances where officials formally hold a pool of resources consisting of prepayments by insurees and use it to fund all or part of the health care costs of members contributing to the pool. The officials are either third parties or the providers of health care as in the case of a Health Maintenance Organization. Prior to the second World War in developing countries, formal health insurance, whether private or social security linked, was mainly confined to some Latin American countries. By the 1980s, out of 90 developing countries studied, 40 were using one or more forms of insurance to provide medical services (Zschock 1982). Surveying the health financing activities in 23 African countries during the period 1987-90, Vogel (1990) revealed that only 7 countries (30%) had formal health insurance schemes. An ILO survey of 37 African countries in 1993 found that 14 countries



(approximately 40%) had formal schemes as defined here, and four others had employer provided health care programmes.

Following a survey of 28 African countries in 1990, ILO classified five countries (Cape Verde, Gabon, Kenya, Tunisia and Egypt) as having "public service health services" combined with classical social insurance:

“Social Security/social partnership intervention in the health care sector in Africa ranges, in terms of population coverage, from virtually zero in countries like Ghana or relatively small-scale intervention of employer-based systems like in Nigeria to a population coverage of almost 50 per cent in Tunisia. Gabon and Kenya have reached an intermediate level of population coverage of 25 per cent” (Arhin 1995)

Based on the findings of the above surveys and in official documents, formal African health insurance schemes can be grouped into two categories; those operated by the government and those operated by other organizations. Schemes may also be grouped with regard to the populations for whom they offer insurance cover - the eligible population - and the nature of the benefits included in the cover- the benefit type. Tables 3.1 and 3.2 illustrate the range of eligible populations and benefit types for non-government and government schemes respectively. In the second column of these tables are illustrative examples of countries operating schemes that provide the benefits for the populations stated in the first column. Where the information is available, an estimate of the total population covered by the example schemes is provided in the last column.

*Non-government schemes.* This category consists primarily of private-for-profit schemes and in reality these are significant in five Sub-Saharan African Countries - Zimbabwe, Cote d'Ivoire, Ethiopia, Kenya, and Nigeria. In Zimbabwe, where the private insurance market is relatively well established, private insurance covered only 4.6 % of the total population in 1990. Another category of schemes consists of those operated by private companies for their employers, typical examples being the mine companies in Ghana,

Zambia, Nigeria. In these countries employees of mine companies constitute a very small percentage of the total population and therefore their contribution to providing free care at the point of use for the whole population is minimal. In parts of Francophone Africa, however, significant medical insurance is provided by private and parastatal firms who reimburse workers' medical expenses, or provide free care at facilities that they operate or partly fund. In Zaire for example, 30% of revenue in Kasongo Health District is derived from employer organized insurance schemes.

Table 3.1 Non-government managed schemes

Eligible population/benefit types	example country /scheme	coverage of total pop
Private individuals	Zimbabwe:	4.6%
Households in a hospital catchment area care in designated hospitals free inpatient care	Ghana: "Nkoranza Hospital Scheme"	-
Households in participating villages care at village and public facilities free total care	Guinea Bissau: "Abota"	-
Employees of private companies care at "employer owned facilities" free total care	Ghana: Ashanti Gold Company health benefits	-
care at contracted facilities free total care	Nigeria	-

Source: Vogel (1990), ILO (1993) and Arhin (1995)

The final group of schemes in this category includes those operated by NGOs and communities. Their designs are "non-conventional" in that they provide health insurance covers that are accessible to households and individuals living in rural areas. The Nkoranza Hospital Scheme in Ghana and the Abota in Guinea Bissau, examples of this

group given in Table 3.1, are described later in this chapter. These two schemes illustrate the diversity of forms that rural insurance may take. The Abota Scheme was also evaluated as a case study in this research and therefore additional information about it is included in Chapter 6.

*Government schemes.* A study in 1990 by Vogel was able to identify six forms of explicit and implicit government insurance in Sub-Saharan Africa, ranging from free care for citizens (as in Tanzania) and government employee health insurance funds, to mandated employer coverage of employees (Zaire) (Vogel 1990). The majority of schemes operated by the government provide health insurance coverage for government employees and their families. Examples of such schemes are those for government workers in Kenya, Botswana and Burundi.

In Kenya, in the National Hospital Insurance Fund, employees' contributions are graduated with their earnings and are deducted at source. (Between 1967 and 1988 those earning monthly incomes of Ksh 1,000 contributed Ksh 20 and in 1990-91 contributions ranged from Ksh 30 to Ksh 320 per month.)

All employees of the Botswana government are eligible to be members of the Botswana Public Offices Medical Aid Scheme, established in 1990 as a society. Members have the option of two levels of benefits, High Benefit and Standard Benefit, which differ in the copayment rate and the maximum amount of benefits available to members and his or her dependants during a financial year. The total contribution payable by a member (half of which is payable by the government) is based on the income of the member, the number of dependents and the benefit option and ranges from P25 to P75 for Standard and P55 to P205 for High Benefit. In 1992, an employee in the middle basic monthly category of P1,501-P2,000 with three dependants was required to contribute P147 for High Benefit and P75 for Standard Benefit.

The Kenyan and Botswana schemes are unique examples because civil service members may obtain care from both the private and the public sectors under the schemes, whereas

it is more common for government employee schemes to limit coverage to care in public facilities.

Government schemes that provide cover for the general public are much fewer in number. In the study by Vogel, only Senegal out of 23 Sub-Saharan countries studied had a comprehensive social security health insurance scheme providing care for government employees and the general public.

The final example in this category, the CAM in Burundi, differs from the other examples in that although not part of a formal social security system, the general public are eligible for cover. The features of the scheme are such that it is accessible to rural households and therefore it is described later in this chapter in the section on “Community health financing and health insurance for rural populations”. Also, since the CAM was the subject of one case study carried out as part of this research, further information about the scheme is provided in chapter 6 where the case study findings are presented.

## HEALTH INSURANCE TYPES IN AFRICA

With the exception of a few schemes, existing government, private employer and private for profit schemes are modelled on health insurance schemes that have developed to function within the socio-economic realities of Western societies, many of which are integral to complex and expensive social security systems. For example, premiums are collected monthly in all these schemes and in some schemes there is reimbursement of expenses by the third parties, all of which require considerable administrative resources and those insured to have regular incomes. Although the prevalence of formal insurance schemes in sub-Saharan Africa is low, in countries where they do exist, Vogel and others conclude that the data indicated that they covered primarily those employed in the formal sector, effectively those who constitute the relatively small upper and middle classes (Vogel 1990; Abel-Smith & Rawal 1994). For example, Zambia's public health insurance schemes covered 6.1% of the total population, mainly professional and skilled workers and their dependents.

Table 3.2 Government Managed Insurance Schemes\*

Eligible population/benefit types	country/scheme	coverage % of pop
<i>Government employees only</i>		
<i>care in public facilities</i> free total care	Burundi: "Mutuelle de Function Publique"	1.4%
Discount schemes	Ethiopia	< .001%
<i>care in private facilities</i> free inpatient care with coinsurance	Kenya Botswana	0.2%
<i>Government employees plus general public</i>		
<i>care in public facilities</i> free total care	Burundi: "La Carte d'Assurance Maladie" (CAM)	30%
free total care and social security	Senegal: "les Institutions de Prevoyance Maladie" (IMP)	15%

\*This excludes "insurance" consisting of free health care for all funded entirely by general tax revenue and systems that exempt poor from paying fees

In addition to the problem of low coverage, the various attempts by African countries to set up insurance programmes modelled on schemes in Western countries have been fraught with major managerial and financial difficulties. For example, in Kenya, the National Hospital Insurance Fund (NHIF) reports a high administrative cost ratio of 14 per cent of contribution income, and in Zambia a shortage of trained staff to manage the group insurance schemes exists (ILO 1993). As a consequence of these and other problems encountered by developing countries who have attempted insurance schemes, a frequent assumption in development literature (explicitly or by implication ) is that

developing countries are too poor to "afford" social-security-based health care systems. Furthermore, rural health insurance has often been regarded as not feasible, based on the assumption that there is no demand for health insurance among the relevant populations ("demand " used in the economic sense of willingness and ability to pay for a good or service). Not surprisingly, the majority of implemented reforms in sub-Saharan Africa introduce and/or consolidate health financing based on the payment of fees by patients at the point of use (referred to as 'user-fees').

In spite of the low level of coverage and financial difficulties that have arisen with conventional schemes since the mid 1980s, many African countries have put forward plans to increase the role of risk sharing mechanisms in the financing of health care. In most cases the emphasis is on the introduction of various forms of "national health insurance". These countries include Ghana (Amenyah 1985), Nigeria (Nigerian Federal MOH 1986) and Zimbabwe (Vogel 1990). (Although called "National Health Insurance", unlike national social insurance schemes in Europe, the proposed schemes are designed to cover only some sections of the population, such as formal sector employees and members of agriculture cooperatives.) A strong argument against such national insurance at this point in time and one in favour of "alternative" or "appropriate technology"schemes, is the inadequacy of the administrative network for collecting premiums on a national basis and the limited coverage attainable using payroll-based contributions.

## COMMUNITY HEALTH FINANCING AND HEALTH INSURANCE SCHEMES FOR RURAL POPULATIONS

Donor organizations, specialized UN agencies, international monetary institutions and African health ministers have all in recent times advocated policies that endorse community financing of the public health sector in Africa. Thus the Alma-Ata declaration (WHO/UNICEF 1978) in 1978 required that Primary Health Care (PHC) be affordable to the community and should involve community participation; the World Bank strategy outlined in the "Agenda for Reform" (World Bank 1987) called for increased private

sector provision of health care, user charges and health insurance; and the Bamako Initiative (WHO 1988; UNICEF 1988; UNICEF 1988) announced by the African health ministers in 1988 depends on community financing of recurrent costs to improve accessibility and quality of primary health services.

In 1982, a review of 100 community financing schemes throughout the developing world found that 31 involved some form of prepayment (Stinson 1982). The organization of some of these schemes depended on the production and sale of primary products such as coffee and rice (Vaca *et al* 1978). In Africa many existing and planned community financing schemes are based on fee-for-service. Few schemes provide risk sharing through the payment of premium contributions. Carrin in 1987 reviewed 20 community financing schemes in Africa and found only one involving prepayment, although two others combined prepayment with a fee at the time of receiving the service.

The 1993 World Development Report "Investing in Health" makes detailed policy recommendations about insurance financing in middle income countries but this option is discussed only briefly with respect to poorer countries (World Bank 1993). The report gives the impression that insurance-based financing for low-income countries would be a desirable but impractical option.

It is only within the last 10 years that a number of African countries have experimented with rural health insurance schemes that cater for rural communities; these countries include Burundi, Guinea Bissau, Ghana and Zaire. The schemes they have adopted have taken a variety of forms - in some cases, benefits are provided at a central facility, such as a district hospital, or at scattered lower level facilities, such as health centres and health posts. In other cases the benefits consist of comprehensive care at all levels of the health system. The administration of these schemes is also varied; some are managed by a central government organization together with local officials, while some have been implemented solely by autonomous community solidarity groups. Some of the specifications that the dimensions of an insurance scheme may take are shown below.

## Specification of Health Insurance Schemes

Specification variable	possible values
Co-payments	No/yes (if yes : %)
Deductibles	No/yes (amount)
Nature of premiums	Cash/in kind
Time & frequency of premium	Monthly/ annually
Units of Membership	Individual/household
Degree of external subsidy	No/yes (if yes : %)
Coverage of benefits	All health services/ outpatient/inpatient
Management structure	Community elected/traditional leaders/ health facility staff/external persons

Adapted from Russell & Reynolds 1985

The literature about existing schemes, in particular the Abota village insurance scheme in Guinea-Bissau and the hospital health insurance schemes in Nkoranza District Ghana, Bwamanda, and Masisi Health Zones in Zaire, illustrates the diversity of the benefits, administration arrangements and evolutions (see Table 3.3).

### a) The Abota Village Insurance Scheme:

The Abota system entails prepayment for essential drugs and the provision of primary health care at the village level by the community. The system comprises many hundreds of autonomous Abota schemes at village level. Health care is provided voluntarily by members of the village, village health workers known as Agentes de Saude de Base, and by birth attendants at the village health post (Unidad de Saude de Base, USB). The USBs were constructed from local building materials by the villagers and furnished with basic equipment (such as metal storage cupboard, obstetric stethoscope, lantern and a kit of teaching aids) by the Ministry of Health. Administration of the Abota system in each village is the responsibility of the village committee, the lowest level of the country's decentralised political system.



Table 3.3 Specifications of three rural health insurance schemes

	Management structure	Premiums & membership unit	Coverage of benefits	Payment schedule
a) the Abota village insurance scheme in Guinea-Bissau	village management  supplies from central MOH	Cash or in kind  per HOUSEHOLD or INDIVIDUAL	outpatient by village health worker  free referral care	determined by village  usually annually or biannually
b) Hospital health insurance in Nkoranza District Ghana	3-tier Advisory Board Management Team Voluntary registers	c450 in 1991 (1.0 US\$)  per INDIVIDUAL enrolled by family	inpatient care  refund of referral expenses	Annual registration Oct-Dec
c) Bwamanda Health Insurance Plan in Zaire	enrollment and accounting by health staff assisted by NGO	cash = price of 2 kg soya beans + copayment per INDIVIDUAL	all hospitalization and chronic care in health centres	annually (normally in March)

The earliest Abota schemes began in 1980 in a few villages as part of a general village health care programme (Chabot & Savage 1984). Villages in the programme adopted and modified an indigenous payment mechanism, originally used to collectively finance ceremonies, in order to fund inputs for primary health care. Chabot et al (1991) describe the process of trial and error, used by these villages over a three to four year period, to determine the frequency and level of prepayments that would ensure the availability of drugs throughout the year.

The Abota system is now widespread, totalling 462 villages in 1991, and is an integral part of the country's health system. Since 1983, patients referred by village health workers to the public health facilities have been exempt from payment of consultation fees on showing evidence, usually a receipt, of having contributed to Abota. Furthermore the Government of Guinea Bissau's ten year health plan (1984-1993) emphasised the role of

village-based primary health care, thus making the efficient functioning of the Abota system critical to the country's health strategy (World Bank 1987).

The Abota revenue is used to purchase essential drugs and bandages from nearby government health centres or sectoral hospitals. The ultimate supplier is the Central Medical Store situated in the capital. In each village, the village committee decides the procedures for collecting contributions, purchasing drugs and overall monitoring of the system. As a consequence of this autonomy, prepayment terms vary substantially from one village to the other. In 1988 the annual contributions per adult male varied from P.G. 20-500<sup>5</sup>; in 2 of 18 villages surveyed by Eklund and Stavem, only men paid and in another two villages contributions were on a household basis (Eklund & Stavem 1990). Other villages accepted in kind contributions of agricultural produce.

In recent years the country's economic crisis has threatened the survival of the Abota. The economy of Guinea Bissau has deteriorated substantially since 1983 and its current per capita income, of less than US\$200, makes it one of the poorest countries in Sub-Saharan Africa. A decade of implementation of a Structural Adjustment Programme (SAP) has, as yet, failed to improve the economy sufficiently to have a positive effect on the financing of the public health sector: the per capita Ministry of Health budget in 1990 was estimated to be US\$3.00 (MOPH/ UNICEF 1991). As a consequence, problems such as inadequate recurrent budget allocations, shortage of drugs and low salaries for health workers plague the public health system (Tanner 1990). Ramifications include a decreasing capacity of government health workers to train and supervise village health workers and difficulties in resupplying village health posts, even when their Abota revenues are sufficient to fund their requisitions. In a few cases Abota funds have been misappropriated (Knippenberg *et al* 1991) either by village health workers or staff of the Ministry of Health.

b) Nkoranza Health Insurance Scheme:

Started in 1992, the scheme is administrated by a three-tier structure:

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<sup>5</sup> In 1988 350 P.G. (the Guinea Bissau Peso) was equivalent to US\$0.31.

- a) *Insurance Management Team (IMT)* in the hospital, consisting of the Medical Officer in charge of Public Health and the Hospital Management Team. This is the decision making body of the scheme;
- b) *Insurance Advisory Board* made up of traditional, political, religious and administrative leaders in the community and district health leaders (MOH and NGO); and
- c) *Zonal Coordinators and field workers*. There are 11 health zones each managed by a team of three zonal coordinators. They supervise voluntary field workers who register families into the scheme.

The premiums are calculated per person so that they vary with the size of the family. The scheme ensures access to care at St. Theresa hospital, Nkoranza District in Ghana by providing free admission in the medical, surgical and maternity wards. However, admissions for normal deliveries are excluded. In addition, insured persons who are referred to other health institutions may claim refunds equal to the cost of an average admission at Nkoranza. The scheme is available only to families living in the Nkoranza district and all the members of a family must register. Registration is renewable annually, during the last two months of the year only.

c) **Bwamanda and Masisi Health Zone Insurance schemes in Zaire:**

Bwamanda Health Zone is linked to a development project, Centre for Integrated Development (CDI) started in 1969 and supported by Belgian volunteer workers. Impetus for the insurance scheme came from the Zone's medical staff who were concerned about the barrier to access caused by existing user fees and the low recovery of hospital costs from fees. Although the Zonal Hospital (a 156-bedded reference hospital) had recovered 48% of its operating costs in 1985, this was a lower rate than that of eight comparable hospitals in the country (Bitran *et al* 1987). The parameters of the insurance plan, having been set by hospital staff, were explained to the community and preferences between two options of premium and co-payment levels were obtained. Enrollment of members was carried out by health centre staff, mainly nurses, who receive 3% of the premiums they collect as commission. Zone administrative staff make frequent supervisory

visits to health centres during the enrollment period to monitor payment records, distribute membership stamps and transfer premiums to the hospital. They also manage the plan at the hospital by verifying the membership status of admitted patients and keeping administrative and accounting records.

Members of the Bwamanda insurance plan are covered for hospitalizations including deliveries, dental extractions and outpatient surgery. The cost of illness treatment at health centres is also covered. Twenty percent copayment is charged but some groups are exempted.

## THE SOCIAL AND FINANCIAL PERFORMANCE OF RURAL SCHEMES

From the conceptualization of the functions of a social welfare oriented health insurance scheme presented in chapter 2, it follows that performance may be assessed from two dimensions, the social and the financial. The conceptual framework implied that a number of criteria were appropriate. In the case of *Social dimensions* the criteria include: a) the resulting levels of access to health care among the population; b) affordability of premiums; and c) the appropriateness of payment schedules. With regard to the *Financial dimension* the main criteria are the relationships between: a) premium revenue and b) benefits expenditure and the extent of adverse selection. In addition, where possible, some information on the extent of moral hazard would also be helpful.

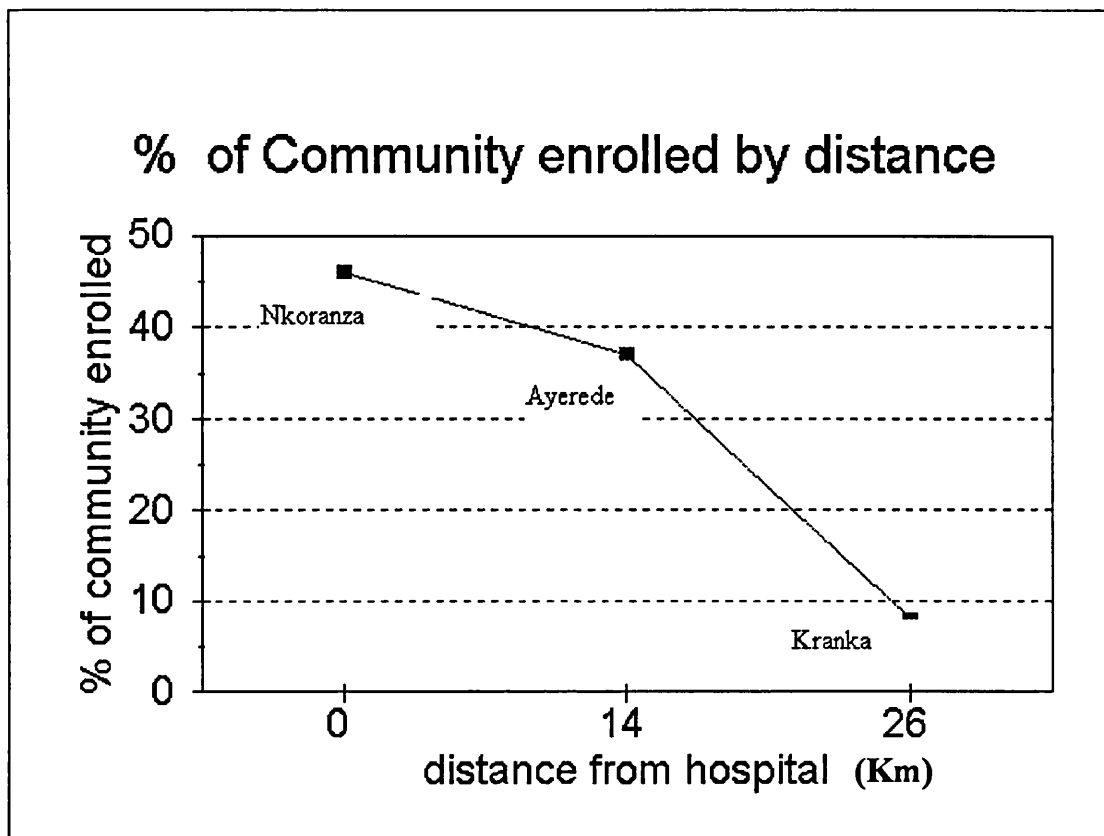
The published and unpublished literature on rural insurance schemes including those described above, provide some information that are relevant to the above mentioned criteria. Therefore, in this section the three schemes, Nkoranza Health Insurance scheme, Bwamanda Health Insurance Plan, and Abota, are evaluated using these criteria. A summary of the evaluation is Table 3.4.

Table 3.4 Performance of three rural health insurance schemes

	<i>Social dimensions</i>			<i>Financial dimensions</i>
	Affordability	Appropriateness of payment schedules	Level of access	revenue / expenditure
a) the Abota Village Insurance Scheme in Guinea-Bissau	affordable - determined by villagers	appropriate - determined by villagers	increased - PHC available in villages	not assessable
b) the Hospital Health Insurance in Nkoranza District Ghana	premiums assessed as unaffordable by two thirds of households and health workers	inappropriate - low cash availability Oct - Dec.	increased - insured /non insured admissions = 2.4 responsible for 9% increase in admissions	revenue/expenditure = 0.45  deficit c11,000,000
c) Bwamanda Health Insurance Plan in Zaire	affordable premiums, copayment unaffordable to some households living far from hospital	appropriate - time chosen by community	increased — insured/non insured admissions = 6.7	revenue/expenditure = 1.45 (1987) and = 1.01 (1989) (interest included)

***Nkoranza Health Insurance scheme.*** At the time of the research the scheme had been in existence for almost two years and performance data for the first year of operation provided information for the assessment presented here (Dept of Insurance, St Theresa's Hospital 1993).

**Affordability of premiums.** Sixty three percent of the scheme's field workers and 66% of heads of households thought that poor people in the district could not afford the premiums. Analysis of the first half of 1992 showed total enrollment of 29% of the district's population. There was a clear relationship between the percentage of a zone's population enrolled and the distance of the zone from St. Theresa Hospital. Distant zones had lower enrollments, ie Nkoranza Zone- 46%, Ayerede Zone (14km away from the St. Theresa Hospital) - 37%, and Kranka Zone (26 km away) - 8% (see Figure 3.1). Therefore it appeared that costs of transport to the hospital had the effect of making the scheme unaffordable to some households.



**Figure 3.1**

Appropriateness of payment schedules. Seventy-two percent of field workers and 65% of household heads thought that "people find it difficult to register because they are short of money between October and December". Sixty-five percent of field workers and 75% of heads agreed that "more people will register if registration is between January and March".

Revenue from premiums and expenditure for benefits. During the first year of operation the premium was set at c450 per person (approximately \$1 at 1992 exchange rates). Using the admissions' data for the insured population, it was estimated that the income obtained from premiums would be approximately 55% of the expenditure for inpatients for the first year of operation. This implied a deficit of c11,000,000. A higher than expected average cost per admission was observed for the insured population and this suggested that adverse selection and/or moral hazard were significant problems.

Resulting level of access to health care among the population. The findings suggested that the scheme had removed a barrier to admission for people in the district. Utilization, in terms of admissions per 100 person-years, was greater than the non-insured by a factor of 2.4. It was estimated that among the insured population 9% of admissions was due to factors such as earlier reporting of patients and more liberal admission policy of staff, and that without the insurance policy this would not have occurred.

***Bwamanda Health Insurance Plan.*** Information in a World Bank report was used to assess the social and financial functioning of the Bwamanda Health Insurance Plan in Zaire (Shaw & Ainsworth 1994). The assessment results pertaining to the criteria of affordability, payment schedules revenue and expenditure, and associated access to health care are presented below.

Affordability of premiums. Absolute inaffordability did not appear to be a problem. It was reported that in setting the premiums, the health staff compared the premium to the price of two kilograms of soy beans as a measure of affordability. In addition, only 16 percent of 21 non-members stated that they had not joined the plan because of inadequate cash. However, the combined costs of the travel and premium may have been unaffordable to some households; when in 1988 the co-payment rate was lowered for those living more than 25km from the hospital, the enrollment declined less with distance than in other years.

Appropriateness of payment schedules. Communities elected to pay premiums during the months that followed the second harvest period (March to April). The explanation provided by the authors was that after the first harvest cash was required to pay school expenses and therefore appropriateness of time of collecting was ensured by consulting the community.

Revenue from premiums and expenditure for benefits. The financial data for the insurance plan showed that in 1987 and 1988 premiums and interest were equivalent to 145% of the

expenditure on care for beneficiaries. As a consequence the share of the hospitals operating costs recovered rose from 48% in 1985 to 79 % in 1988.

Resulting level of access to health care among the population. It was reported by the World Bank study that insured persons were 6.7 times as likely than the uninsured to be hospitalized, implying that access to care was greater for the former group. Since over 60% of the Zone population were insured this implies a significant increase in the access to care as a result of the insurance plan. Even so households living close to the hospital were also more likely to be insured, and therefore their high access and utilization may have been because of good physical access rather than the insurance plan. The combined effects of adverse selection and moral hazard was also felt to account for the high utilization, although the copayment and the requirement of all household members joining the plans probably reduced their prevalence. Other researchers working in Zaire, however, reported the rate of hospitalization among the insured to be only slightly higher than that of the non-insured (Moens 1990).

*Abota.* The published and unpublished literature drawn upon to provide the description of the Abota in earlier sections of this chapter also permit a limited evaluation of the scheme. Again the criteria of affordability, payment schedules, revenue and expenditure, and associated access to health care were used.

Affordability of premiums. Studies of the Abota do not provide direct information on affordability but since the contribution was set by the members of the village it is likely that the amount set could be afforded by the majority. The fact that many individuals were willing to increase their contribution also supports this general conclusion.

Appropriateness of payment schedules. The number of times prepayment contributions were collected in a year varied, some villages collected twice yearly, others once. The frequency of payments was determined by the villages themselves, therefore it is reasonable to assume it was the most appropriate for the community.



Relationships between premiums and benefits. In the first year of operation the villages supply of drugs was depleted within 3 months because the revenue from contributions was exhausted. The scheme appears not to have held reserve capital to ensure the quality of the insurance policy.

Resulting level of access to health care among the population. That participating villages had basic health care made available within the village implies significant increases in access. Near universal membership in participating villages excluded adverse selection, and the watchfulness of health workers and local communities appeared to prevent moral hazard (Eklund & Stavem 1990).

## CONCLUSIONS OF LITERATURE REVIEW

The limited literature on health insurance in Africa permits several conclusions to be made about the availability of schemes to meet the needs of rural communities, the role of insurance in health financing policy and the demand for policies where schemes exist. First, although community health financing had been endorsed by many African countries with the support of international agencies, particularly UNICEF, fewer community-based health insurance schemes than formal social security systems have been attempted.

Secondly, by the beginning of the 1990s, despite considerable involvement in health financing policy formulation in Africa, many of the international agencies had failed to encourage appropriate insurance-based alternatives to fee payment at the point of use. During the financially lean periods, such fees deter many rural patients, the majority of them children and women, from seeking health care. This is to be expected since incomes in rural Africa are very low and seasonal and access to credit facilities is also minimal. Consequently, there are periods, particularly those far removed from the time of harvest and the selling of agricultural crops, in which households have virtually no cash. In this context, fees, coupled with the universal uncertainties associated with the timing and costs of health care needs, increase the chance that individuals requiring health services will find them inaccessible. In particular, the 1993 World Development Report (World Bank 1993)

did not make recommendations for low income countries that would change the situation in the short to medium term.

Thirdly, the available evidence strongly suggests that in the foreseeable future, it is unlikely that either centralised government or large commercial schemes, as found in rich countries, can provide near-universal health insurance cover for people in Africa, most of whom live in rural areas. The main constraints that have hindered attempts are inadequate administrative infrastructures and shortage of trained staff to manage schemes. This underscores the need for information of feasibility of schemes that are designed for rural populations. Data on willingness to pay will be a critical part of such information since WTP will determine demand and the relationship between revenue and expenditure, hence social and financial performance. Affordability of premiums and appropriateness of payment schedules of existing rural health schemes suggest that willingness to pay is substantial for such schemes.

Fourth, the operation of three rural schemes summarised above from a review of the literature (Nkoranza Health Insurance scheme, Bwamanda Health Insurance Plan and the Abota) suggest that insurance systems, in some situations, have a high membership rate among the population and therefore are capable of increasing access to health care and mobilizing resources. However, low participation among the target population of the Nkoranza Hospital scheme in Ghana suggests that hospital based schemes may have the problem of being mainly attractive to those living close to the hospital and as a result achieve low enrollment. Schemes that were less successful than the Nkoranza Health Insurance in obtaining enrollments among their target populations have also been reported in Zaire. For example, the scheme in Masisi health Zone achieved enrollment rates of only 26.8% and the subscription to the scheme appeared not to depend on income disparity but on the differences in the direct and indirect costs of travelling to the one district hospital operating the scheme (Noterman 1993). As predicted by theory, achievement of financial and social goals in these reported schemes appeared to mirror enrollment rates. Enrollment rates in turn reflect the target populations' willingness to pay for insurance plans offered by the schemes. Hence it is concluded that critical analysis of willingness to

pay and the factors influencing it will provide health managers and policy makers with information that will assist them to design schemes that have high enrollment rates.

The review of the current literature on health insurance theory provides some important insights about how a rural health insurance may function. The review supports the thesis that the financial and social performance of a rural health insurance scheme would be determined by factors that are relevant to community financing in general (ie affordability, equity, efficiency, sustainability and quality assurance), all of which will determine its acceptance by individuals and households. In addition, the risk attitudes found in the population and the willingness of individuals to invest in locally managed schemes will be important. This implies that the financial viability of an insurance scheme will be increased if its target clientele are risk averse with regards to health care and they are willing and able to pay the fair premiums plus loading costs.

## Chapter 4: Objectives, Design and Implementation of Studies

### INTRODUCTION

This chapter begins by presenting some research questions that emerge from the reviews of the literature on the theory of insurance and the methods for studying its impact (Chapter 2) and on health insurance activities in Sub-Saharan Africa (Chapter 3). This is followed by descriptions of the objectives and study methods used in the different studies undertaken as part of the research.

#### Priority areas of research

The literature on rural health insurance in Africa fails to, or only partially, address(es) a number of policy related questions that would assist health planners to design and implement effective and financially viable schemes. One central question for African Health Ministries is “*are households in rural Africa risk adverse with regard to health care and therefore willing to pay for health insurance?*” and is only partially answered by the limited literature on existing schemes, notably in Guinea Bissau, Ghana and Zaïre. There is therefore the need for additional information from other countries and about different approaches to risk sharing in Africa. Furthermore, to facilitate improvements in current schemes and to assist planners to design and implement effective schemes, answers to several secondary questions are also required. The secondary questions include the following:

- \* *What are the attributes of a rural health insurance scheme that encourages enrollment/participation?* Premium level, and the quality of care provided by a scheme, are two of the variables that are likely to determine its acceptance by individuals and households. Management and financial structures are other scheme variables that will influence consumers’ confidence and therefore their decision to join the scheme. The personnel structure and their line of reporting will influence the perceived credibility of schemes and consequently their acceptability and patronage by the population.

- \* For a given rural population how may the combinations of premiums and cover options that will result in a high enrollment and sustainability be determined?

A premium P must cover the following three cost components;

$$P = E + A + N$$

E = Expected claim payment

A = Administrative costs

N = Profits

To predict financial sustainability a reliable estimate of the expected expenditure of a scheme would be required based on an estimate of the total claims (expenditure for the insured). Whereas A, the administrative expenses, are a cost accounting problem and the risk premium is a function of an individual's risk attitude, E, the expected claim payment is a statistical problem requiring data on illness experience of the insurance policy holder and the rate of utilization of health care. To provide estimates of revenue from the premiums charged necessitates that the number of individuals/households subscribing be known. This number, in turn will be equal to the number of households whose WTP valuations for the insurance cover is equal or above the premium. Individuals'/households' WTP valuations would therefore be critical information needed to answer the question - what premium and cover option combinations will result in a financially sustainable scheme?

- \* *How does the design of health insurance schemes encourage or limit the problem of adverse selection and moral hazard?* Adverse selection and moral hazard are major causes of inefficiencies in the functioning of health insurance schemes. Important research questions therefore concern the degree of adverse selection and moral hazard existing in schemes of different design and the factors encouraging and/or preventing both. The percentage of the population participating could serve as a measure of the degree of adverse selection existing in a scheme. Establishing the participation rate among high risk groups (children,

women, and the chronically ill) would provide information about adverse selection and would also allow the equity outcome of the schemes to be considered. Data on health care utilization rate and type among the insured and the uninsured would be critical in assessing the extent of moral hazard.

- \* *Is it possible to identify individuals/households that would be willing to pay for a health insurance scheme prior to its implementation?* This would make it possible to predict the expected revenue and revenue ratio and the need for exemption for vulnerable persons. A model that explains individual/household WTP valuation for insurance cover in terms of observable independent variables could be used to predict whether an individual or a household would purchase the insurance at a given premium. Currently few attempts have been made, particularly in developing countries, to develop such a model. The data obtained (ie WTP evaluations, household socio economic variables, illness rate and health care utilization) to answer the above questions could also be used to explore the possibility of obtaining such a model of WTP.

## OBJECTIVES

### Objectives of the case studies

The aim of the case studies was to provide answers to some of the questions identified above and in so doing, assess the social and financial performance of the two schemes selected. (Assessing these two broad dimensions of the schemes is consistent with the conceptualization of the function of health insurance developed by the research in which performance is seen as having two dimensions, the social and the financial.) Consequently, the broad objectives of the evaluations were as follows:

- a) to determine changes in the population's access to health resulting from the schemes;
- b) to evaluate the affordability of premiums charged by the schemes;
- c) to assess the appropriateness of payment schedules to their target population, particularly those living in the rural areas;

- d) to estimate the relationships between premium revenue and benefits expenditure;
- e) to assess the extent of adverse selection and moral hazard.

The first three relate to the social dimensions of performance and the last two objectives relate to the financial dimensions.

### Objectives of Fieldwork in Ghana

The fieldwork in Ghana was designed to provide the empirical data required to achieve the following objectives and, in so doing, to use the assessment tool developed.

- a) to determine the preferred specifications of community-based risk sharing for health care and the “Willingness to Pay” (the maximum premiums/contributions that households would be willing and able to pay).
- b) to estimate the community risks<sup>6</sup>, calculated as the proportions of the population in the study area who would seek western type health care during the dry season and the wet season, for serious and mild illness, if such care were physically accessible and affordable.
- c) to estimate average costs for outpatient and inpatient episodes in health facilities preferred by households in the study area.
- d) to estimate two sets of fair community rated premia<sup>7</sup> using different approaches;
  - a) with the aim of obtaining a contribution revenue equal to the total revenue currently raised from user fees and drug fees from the population; and b) with the aim of obtaining a contribution revenue equal to a stipulated percentage of the cost of providing care at specified facilities to members enrolled in the insurance

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<sup>6</sup> The population’s average expected probability of an event is referred to as “the community risk”. The alternative is the personal risk which is the measure of the individual’s probability of experiencing an event, ie requiring health care.

<sup>7</sup> A fair premium is equal to the expected loss, that is the probability of loss multiplied by the value of loss.

schemes.

- e) to estimate the external subsidy from government and/or donor agencies that may be required to make the preferred schemes financially viable.

The fair premium mentioned above was in fact a “modified fair community rated premium”. A fair premium would have been calculated as the probability of loss, multiplied by the value of loss ie the full cost of care. Since one objective in this research was to obtain policy relevant WTP valuations, in approach b, it was rather calculated by considering only losses due to non salary recurrent cost of providing the care packages. This captures the aims of many cost recovery initiatives in African countries, that is, to recover a proportion of the recurrent costs rather than the full costs.

## STUDY METHOD: EVALUATIONS

Empirical data were collected for the two case studies by administering structured questionnaires to the beneficiaries of the schemes (see Appendix 2). Thus household surveys were carried out in the study areas in Burundi and Guinea Bissau. In addition village health workers involved in the Abota were also surveyed for the Guinea Bissau case study. The drug treatments for a sample of patients were obtained by direct observation at the health centres in the Burundi case studies.

### i) Evaluation of CAM, Burundi

A household survey was used to obtain information on illness occurrence in the month preceding the study, perceptions about the value of the health card insurance scheme and willingness to pay for membership from 300 households in Muyinga Province. Fifty "collines" were randomly selected with probability proportional to population (1990 data) from 259 collines in the province. (A colline is a rural community commonly located on hill tops. Several collines form a sector administered by a Sector Chief, and several sectors form a commune governed by a committee, responsible for local development activities.) In each colline 6 households were randomly selected and the head of household



interviewed by local college students trained to administer the questionnaire by the research team.

Four focus group discussions were conducted (the number was determined by time and resource availability). Three were held among farming women in rural collines and the fourth was held in Muyinga town. The collines were randomly chosen among approximately 50 of the collines that had local women's credit associations. On arrival at the collines the study team either randomly selected a group of 7-12 women working in a field or women living in a cluster of houses randomly selected, and the women were invited to participate in discussions held in the local language, Kirundi. All those invited agreed to be members of the groups. The main question debated was "Has the card insurance scheme increased the access of women and children to health care?". The women's general perception of the health insurance card scheme was the starting point of each of the discussions. Although women of widely differing ages participated in the discussions, the majority were in the child bearing age range, 15-45 years. The discussions were permitted to last 40 to 55 minutes.

A retrospective outpatient survey was used to obtain data about 566 outpatient visits to 5 government health centres in the preceding 12 months. For each month in a health centre, 9 or 10 patients were selected by taking every tenth outpatient registered in that month. The age, sex, diagnosis and drug treatments of the patients in the sample were extracted from the registers. The completeness of a patient's treatment was jointly assessed by the principal investigator (the author) and the co-researcher, both trained public health physicians with clinical experience in tropical Africa, by comparing the quantity of drugs prescribed to the quantity required for a person of the patient's weight under the MOH's dosing schedule. The patient's weight was inferred from age and sex. In some of the health centres the register also provided information on the form of payment used by the patient, ie whether fee for service or a health insurance card.

Initial analysis of the data collected was carried out in the field. Epi Info, version 5, was used to analyse the household survey data. Costing of the drugs received by outpatients

at the health centres was done using the Quattro Pro spreadsheet package.

ii) Evaluation of Abota in Gabu Region of Guinea Bissau

*Household survey*

Six tabancas (villages or hamlets) were studied in each of the five sectors in Gabu region. A non-random selection of half of these tabancas ensured that they had Abota systems at different stages of development. This provided a sample of 10% of the village Abota schemes in the region. The tabancas were also selected so as to include USB of varying distances from the health centres and major roads. In each tabanca surveyed, 7 households were randomly selected (a total of 210 households) and a spokesperson, usually the male head of household, was interviewed using a standard questionnaire.

The questionnaire, originally developed to study prepayment in Burundi, was translated from French into Portuguese, Guinea Bissau's official language. Translation was done by the local staff of the UNICEF office in Bissau prior to the mission. A team of health workers from Gabu region and representatives from some of the study communities subsequently assisted the research team and the interviewers to adapt the Portuguese version of the questionnaire to suit the conditions in the region. Seven local school teachers were trained as interviewers by the principal investigator (the author), and staff of UNICEF and GVC (an Italian NGO). All the interviewers were fluent in the two main local languages. During this fieldwork they were supervised by the Chief Regional Nurse.

Survey of Unidad de Saude de Base (USB)/Village Health Posts

The research team visited all USBs (15) in the study villages. The Agente de Saude de Base in each USB was interviewed using a standard interview form (see Appendix 2), either by the principal researcher through an interpreter or by the field supervisor. The premises, equipment and stock levels of drugs of each USB were inspected and recorded. Records in the regional drug store in Gabu were used to obtain information on quantities and prices of the most recent purchases of essential drugs by the USBs.

## STUDY METHODS: GHANA FIELDWORK

### Selection of the study area

The study area was Osudoku, one of the four sub-districts in Dangme-West District. in southern Ghana. This sub-district was selected for the following reasons:

- \* communities in this administrative area have physical access to a range of health care providers. These include the government - Akuse hospital and MOH level B health posts at Volu; Mission - Battor Catholic Hospital; and community clinics, at Volivo, Asutuare, Atropiya and Dufo (figure 7.1 in chapter 7). Therefore households in the study area had knowledge of the differences in the care provided by these providers in different facilities, either from personal experiences or that of their family and friends. This information would provide the basis for their decisions to participate in ("willingness to pay" for) schemes offering care in facilities operated by different providers with different characteristics.
- \* Dangme West District is a Bamako Initiative district and is therefore one of UNICEF's priority districts in Ghana.

The fieldwork carried out in Ghana had two main components: 1) focus group discussions, "exploratory" and "expandatory"; and 2) a two-stage household survey. The exploratory focus group discussions were conducted at the start of the fieldwork to provide information on the perceptions and discourse relating to solidarity and risk sharing in the study community. Findings were used to refine and tailor the household questionnaire. The expandatory focus group discussions were conducted after the first round of household survey data collection and household heads who had taken part in the household survey were randomly selected to take part. To take account of seasonality of both income and illness occurrence, the household survey collected data for the dry and wet seasons in 1993/4.

### Focus group discussion

Twelve focus group discussions were conducted. The local languages, Ga-Adangbe and Ewe were used and adults of widely differing ages participated in the discussions. They were organized in groups of 7-12 discussants who sat in a circle. The length of the discussions ranged from 40 to 55 minutes and they were conducted in the open air. They were facilitated jointly by the principal investigator (the author) and the co-researcher. Information obtained in each session was recorded in written notes and by audio tape<sup>8</sup>. All the discussions were then transcribed verbatim<sup>9</sup>. A 'questioning route' was developed and used to guide the group discussions. The main questions debated were: 1) What role do solidarity associations play in the community?; 2) how would households in their area view the opportunity to join a health insurance association? The participants' general perceptions about the health care in the community and problems when seeking health care were the starting point of each of the discussions.

### Household Survey

- \* A draft questionnaire was developed for the first round of the household survey (see Appendix 2). It included questions on three main areas of concern: 1) social and economic status of the household; 2) recent health care practice and expenditure; 3) willingness and ability to pay annual amounts to obtain free care at different health facilities in the sub-district. In addition the questionnaire provided basic information about the proposed health insurance associations. The findings of the first round of focus group discussions (Exploratory discussions) suggested it would be more appropriate and valid to ask people in these communities about “their willingness/ability to join associations that require the payment of membership dues and which entitle members to have free health care at specified facilities in the event of illness”, rather than ask for “their willingness

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<sup>8</sup> Audio records of focus groups are invaluable. Krueger R. A. *Focus groups: A Practical Guide for Applied Research* Sage Publications, London, 1981, chapters 5 & 7.

<sup>9</sup> Verbatim transcripts represent accessible and objective raw data that may, at a later date, be re-analysed, either by moderators/researchers or by other persons who were not physically present at the interviews or discussions. Notes written during the interviews and discussions incorporate the initial interpretations of participants' comments by the facilitators(s).

to pay for health insurance covers” .

- \* Enumeration of all housing compounds (total of 1,650) in Osudoku and a census of the households living in each compound was undertaken.

The sub-district is divided into 29 units. These divisions are based on population, and are used by the Committees for the Defence of the Revolution (CDR) and district council for administrative purposes. These units were used as the basis for enumeration; and the unit chairmen as the enumerators. Each unit is made up of several small villages with anything from 1 to 40 or 50 houses. Before the census each unit CDR chairman was asked to list the villages making up his unit. This provided a means of checking that no village was overlooked in the enumeration. This list is provided in Appendix 3 and was also used to bring the map of the sub-district up to date.

All compounds were assigned numbers. (The numbers were painted on the exterior walls of the compounds in order to facilitate their location by interviewers during the household survey.) The census information was entered into a computer data base using an Epi Info programme and formed the sampling frame for the household survey. A study sample of nine hundred households was randomly selected<sup>10</sup>.

- \* Twelve interviewers were selected and trained during a three week period. The majority were ex-clerical staff of a local defunct sugar factory, recently graduated college students and retired teachers. The training consisted of introductory talks on the rationale for the study, discussions of suitability of terminology and units of measurement used in the draft questionnaire, role play and peer group assessment of interviewing techniques.

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<sup>10</sup> Using the illness rates found in the Burundi case study and those found by other researchers working in Tanzania, Zambia and Cameroon, it was estimated that the study required a sample size in the range 700-900 households.

- \* The draft questionnaire was revised in the light of the comments during the interviewers' training sessions and the findings of the focus group discussions.
- \* Two data entry clerks were trained.
- \* The household questionnaire was piloted in an area adjacent to the study area.
- \* Each round of data collection of the household survey was conducted over a 30 day period. The interviewers were supervised in the field by the author, one field supervisor and one deputy field supervisor. Data entry began after the first week and was double entered.

The willingness to pay questions asked in the two rounds of the survey differed substantially. Those in round one were greater in number and provided the information needed to focus the questions in round two on fewer options, ie those benefit options that were most preferred. Thus, in round one respondents were asked to state their WTP to be members of an association that provided care at each of the categories of provider identified as catering for the sub-district, Battor Mission Hospital, Akuse Government Hospital, Volu health clinic/centre, and community clinics. Although a new method of payment, ie periodic household contributions, was described to the respondents, they were not provided with information about the types of care that would be provided. This meant that the hypothetical market was only partially specified and more options could be inquired about in the time available for the interview.

In the second round respondents were given a description of a new and hypothetical good, membership of an association that entitled them to free health care that had characteristics indicated as acceptable during the focus group discussions. They were also told that the management structure of the association corresponded to the model that emerged as being ideal during the focus discussions. The WTP questions were open ended and required respondents to

state the amounts for children and adults separately for each of the following: 1) OPD at nearby government clinics; 2) inpatient at Battor; and 3) combined OPD and inpatient at Battor Hospital. Care at these facilities was selected because, during the first round, the willingness to pay was greatest for care at Battor hospital. Secondly, in the group discussion, access to a local clinic that provided acceptable care was considered of more value than access to a distant hospital.

#### Estimation of household consumption and saving incomes

The household questionnaires included a section (page 7) on household inputs and outputs in which the respondent was asked for quantities used or produced in the previous farming season (either the minor season, “Gbo” or the major, “Gbie” depending on whether it was the first or the second round of data collection). The inputs were labour, seeds and machinery. Outputs were divided to crops and non-crop.

The "total incomes before production cost" ( $I_b$ ) was estimated for each household, by adding the estimated revenues from the sale of crops, live stock, wages/salaries and net transfers. The revenues from crop sales were calculated by multiplying the quantities that household heads said they had produced by unit prices obtained by doing a survey of local markets where farmers sold produce. The wages and salaries were estimated by finding out the nature of employment, for example whether a teacher, a cleaner or a driver, and assuming that the salary was identical to government pay scales. The total income after production cost ( $I_a$ ) for each household was derived by subtracting the costs of production, such as the cost of hiring agricultural machinery and/or labour, from the ( $I_b$ ). This total income after production costs represents resources available for household consumption and savings during the 12 months investigated.

#### Costing of care at the presentative mission hospital

Battor Hospital provided a significant amount of the health care used by households in the sample. However, an initial review of their financial records and reports showed that donated goods which constituted a substantial proportion of the hospital's supplies, were not reflected in the accounts. It was therefore necessary to use the financial information

of another similar facility in the Ghana study. Consequently, a review of financial records and reports of Holy Family Hospital Berekum was undertaken as part of the fieldwork in Ghana. The facility was selected because it was similar to Battor in its administration/management and in the type and quality of health care that it provided. The two hospitals also were of similar size with regards to beds and type and number of health staff. Unlike Battor hospital, however, Holy Family Hospital had financial reports based on comprehensive cost data that included the value of donated goods.

The relevant information to estimate unit non-salary costs per new outpatient, re-attending outpatient and inpatient was extracted from the records and reports. A computer spreadsheet was then developed and used to carry out the estimations (see Appendix 4).



## Chapter 5: Backgrounds of Study Countries

### INTRODUCTION

This chapter describes the physical, demographic and socio economic environment of the three countries where the fieldwork for this research was carried out, Burundi, Guinea Bissau and Ghana. The first two were the only countries in Sub-Saharan Africa, at the time of the research, with the exception of Zaire, that had established health insurance schemes designed to be accessible to those living outside the urban area and/or not employed in the formal sector. For this reason evaluations of their schemes formed an important part of the research. The socio-economic indicators for both countries (Table 5.1) were comparable to those of Ghana: for example, all three had GNP of less than \$450 in 1989-91 and gave further support to the rationale of seeking to use the results of the evaluations to inform the design of the feasibility study in Ghana.

Table 5.1 Basic Indicators of Selected African Economies

	POPULATION (MILLIONS) MID-1991	AREA (THOUSANDS OF SQUARE KILOMETRES)	GNP PER CAPITA \$	AVERAGE ANNUAL RATE OF INFLATION % 1980-1991	LIFE EXPECTANCY AT BIRTH (YEARS 1991)	ADULT ILLITERACY (%) 1990
Ethiopia	52.8	1,222	120	2.4	48	..
Tanzania	25.2	945	100	25.7	51	..
Zaire	0.04	2,345	-	60.9	52	28
Uganda	16.9	236	236	....	46	52
Nigeria	99.0	924	340	18.1	52	49
Kenya	25.0	580	340	9.2	59	31
<b>Ghana</b>	<b>15.3</b>	<b>239</b>	<b>400</b>	<b>40.1</b>	<b>55</b>	<b>40</b>
<b>Burundi</b>	<b>5.7</b>	<b>28</b>	<b>210</b>	<b>4.3</b>	<b>48</b>	<b>50</b>
<b>Guinea Bissau</b>	<b>1.0</b>	<b>36</b>	<b>180</b>	<b>56.2</b>	<b>39</b>	<b>64</b>

Source: World Bank 1993

Ghana's GNP was significantly higher than that of the other two study countries and therefore from the onset it was anticipated that the expectations, in terms of quality of

care, by households in Ghana might be higher than those of Burundi and Guinea Bissau. However, since it was unlikely that high incomes would make households less willing to pay for health insurance, the existing schemes being in poorer countries than the feasibility study, this was not expected to lead to problems in interpreting the findings.

As background to the health financing situation in these countries, the circumstances that led to major economic changes are presented, in particular their structural adjustment efforts. The chapter also provides information on the structures and histories of the Ministries of Health, health care provision and recent financing policies in the health sector in these three countries. Information about variations in local languages was sought and used in making decisions about the wording of the questionnaires and the selection of interviewers; hence it is presented as part of the country backgrounds.

Information on the rural economic activities, which in all three study areas are dominated by agriculture, is also provided. The rationale is that the willingness to pay for health insurance among households will be heavily influenced by the levels and characteristics of household cash availability and flows. Hence, knowledge about the nature of economic returns to agricultural activities assisted in interpreting and evaluating the findings relating to the premiums household heads reported they were able and willing to pay and the schedules of payments they preferred. Some attention is also paid to physical and climatic conditions in these study countries because they affect economic activity, accessibility to health facilities and seasonality of infectious illness. In addition, such information about the whole country made it possible to form impressions about the generalizability of conditions and findings in the study areas.

In Ghana, the progress of democracy and government decentralization were seen as important since this would influence the insurance structures and the regulatory mechanisms that would be acceptable to communities, local administrations and central Ministries. For these reasons this aspect of the countries recent history also forms part of the background for this thesis.

## BURUNDI

This is a landlocked country in East Africa, bounded on the north by Rwanda, on the East and South by Tanzania, and on the West by Lake Tanganyika and Zaire. It has an area of 27,834 sq. km (10,747 sq. mi) and is one of the smallest countries on the African continent. Most of the country consists of a hilly plateau region, with an average elevation of about 1520 m (about 5000 ft). Elevations decrease gradually to the east and southeast. The narrow western margin of the country, bordering the Rusizi River and Lake Tanganyika, lies in the trough of the Rift Valley. The main rivers are the Rusizi, the Malagarasi, and the Ruvuvu. The climate is tropical, moderated in most places by altitude. The average annual temperature is 21.1° C (70° F) on the plateau and 24.4° C (76° F) in the Rift Valley. A dry season lasts from May to August, and the country is subject to droughts.

The population in 1993 was estimated as 5,985,308, giving the country an overall density of about 215 persons per sq. km (about 556 per sq. mi) one of the highest in Africa. The population is more than 90 percent rural. The chief ethnic groups are the Hutu, a Bantu-speaking people making up about 85 percent of the population, and the Tutsi people who form nearly 15 percent of the total. The Twa, a pygmy group, account for less than 1 percent. The official languages are Kirundi and French. Swahili is also widely spoken. About two-thirds of the population is Christian, chiefly Roman Catholic. The remainder adheres to Islam or traditional religions.

Burundi has a predominantly agricultural economy and is one of the poorest nations in the world. Export earnings are dominated by a single crop - coffee. National budget figures for the late 1980s showed about \$189.4 million in revenue and \$222.7 million in expenditures. Cotton and, increasingly, teas are also grown for export. Subsistence agriculture is the main means of livelihood and social and cultural importance is attached to the ownership of large cattle herds. Overgrazing has contributed to extensive soil erosion reducing returns from investments in animal rearing. Mining is based on the

exploitation of small amounts of gold, bastnaesite, and cassiterite (a tin ore). Important reserves of uranium, nickel, and peat remain to be exploited.

Since the advent of the Third Republic, on Sept. 3, 1987, Burundi has been ruled by a 30-member military junta, the Military Committee for National Salvation (Comité Militaire de Salut National; CMSN). Despite the appointment of a Cabinet consisting of an equal number of Hutu and Tutsi the CMSN is the key decision-making organ. Pending the adoption of a new constitution, the ruling party, the Unity for National Progress (Unité pour le Progrès National; UPRONA), acts as the principal counterweight to the army. Burundi is divided into 15 provinces, each subdivided into arrondissements and communes. Power at the local level rests in the hands of centrally appointed authorities, most of whom are of Tutsi origins.

The country's public health sector is managed by a decentralized Ministère de la Santé Publique. Decentralization became effective in 1987 and currently there are Provincial Medical Directors and Sector Medical Chiefs. The health infrastructure consists of 7 referral hospitals, 26 six rural hospitals and 236 health centres. To provide care in these facilities the public health ministry collaborates with other ministries.

In 1990, Burundi had 168 physicians (1 per 31,777 persons) and 10,370 hospital beds (1 per 515 persons). More than 80% of the population lived within 6 km radius of a health centre. The vaccination coverage for infants under the age of 1 year was BCG 95%, above 80% for 3rd DPT and 3rd Polio and 75% for measles.

The most common health problems stem from communicable diseases and nutritional deficiencies, a situation that accounts for 70 percent of infant and child mortality. Malaria, measles, influenza, and diarrhea account for 80 percent of reported cases of communicable diseases. While sleeping sickness is widespread in the lakeshore areas, pulmonary diseases are common in the central highlands. In 1990, the infant mortality rate per 1,000 live births was 111.0. Life expectancy at birth in 1991 for males and females was 50.0 years and 54.0 years respectively.

## GUINEA BISSAU

Guinea Bissau is a small country of western Africa, covering an area of 13,948 square miles (36,125 square km). Its two neighbours are Senegal to the north and Guinea to the east and south. Guinea-Bissau may be divided, from southwest to northeast, into three regions: the coastal lowlands, the interior plain, and the northeastern highland. The coastal lowlands are covered by extensive mangrove swamps, and a dense network of rias, or drowned valleys, covers roughly one-third of the country, extending inland to the northeast. Average rainfall is highest in this region, decreasing from more than 100 inches (2,500 mm) along the coast to between 70 and 80 inches (1,800 and 2,000 mm) inland.

The natural increase rate per 1,000 population in 1991 was 26.0. Native inhabitants of Guinea-Bissau speak languages derived from the Niger-Congo family, and the Balanta Brassa, Fulani, Malinke, and Mandyako are the four major ethnic groups. The animist Balanta Brassa are a people who belong to a stateless society revolving around the family. The Fulani are essentially Muslim pastoralists; their society is hierarchical. The Mandyako are horticulturists. The Malinke are agriculturalists and traders.

Portuguese is the official language, but each tribe speaks its own vernacular, which in turn is divided into dialects. The majority of the people follow traditional religious beliefs. Islam is the dominant minority religion. Christianity has made few inroads in Guinea-Bissau. The annual rate of growth of Guinea-Bissau's population is relatively low in comparison with the rest of sub-Saharan Africa. The people are predominantly rural, and more than two-fifths of the population are less than 15 years old.

Since gaining its independence from Portugal in 1974, the Government has faced the difficult task of rebuilding the economy which had been devastated by the long war of independence. A strategy to diversify production, with emphasis on developing the manufacturing sector, was adopted in the mid-70s but was largely unsuccessful. This strategy diverted substantial amounts of the state's scarce resources away from agriculture, forestry and fishing, sectors in which the country had comparative advantages.

In addition government controls and overvaluation of the country's currency contributed to the development of a parallel market which also had adverse effects on these potentially successful sectors.

In 1983 the government initiated some reforms as part of the Financial Stabilization Programme (FSP) and Structural Adjustment Programmes (SAP) supported by the International Monetary Fund (IMF) and the World Bank. Specific measures in these reforms included price increases for the producers of agricultural goods, devaluation of the peso, liberalization of trade, reforms of public enterprises and reductions in number of civil servants. More comprehensive, medium term adjustment programmes were implemented in 1987. These additional programmes enabled the government to reduce the budget deficit from 14.7% of GDP in 1985, to 4% in 1988 (Evlo 1992). Although more restrictive monetary and credit policies were also put in practice inflation remained high because of devaluation and the liberalization of prices: inflation was 100% in 1987-88 and 70% in 1989. The aim of the above reform measures was to redress the large macroeconomic imbalances. However, by the end of the 1980s foreign public debt was running at 275% of GDP, and debt servicing was an average of 40% of export income.

Between 1990-95 life expectancy at birth was 44.0 years and 45.0 years for males and females respectively. During these years the infant mortality rate per 1,000 live births was 134. The major diseases include malaria, tuberculosis, and measles. Malaria, diarrhea and acute respiratory infections are reported to account for 95% of cases treated at health care facilities (UNICEF 1992).

The western health sector consists mainly of the public facilities although in the capital Bissau there are some private pharmacies. The government allocates 8% of its budget to health and in 1989 the total health expenditure (including that financed by foreign aid) was 13.1 million dollars or 13.1 dollars per capita. Foreign aid to this sector is channelled mainly through the funding of projects and covers both recurrent and investment costs. In the second half of the 1980s the percentage of the health sector expenditure funded by external cooperation ranged from 94% to 99.6%. Donations constitute approximately

60% of external aid, and the main sources of loans are the World Bank and the African Development Bank. The main bilateral donors are Sweden, Italy, the Netherlands, Denmark and France.

Health care delivery is organized at four levels:

- ▶ the central level consisting of the two national referral hospitals in Bissau
- ▶ the regional level which in 1991 had five operational regional hospitals
- ▶ the level of sectors with 12 sectoral hospitals
- ▶ the local level consisting of health areas with an area containing a health centre and several basic health units. In 1991 there were 120 health centres and 462 village health units.

Most health facilities including the national referral hospital deteriorated during the economic crisis. Shortage of trained health staff was also a problem. Physicians working in the country in 1990 were 773 (1 per 7,445 persons). The unavailability of drugs and medical supplies were a major problem but improved when the government adopted an essential drug policy supported by WHO, UNICEF, France and Sweden. Under the policy the Central Drug Depot is managed by the national drug programme and it supplies drugs to health facilities.

In most health centres and hospitals, patients who are not referred by village health workers working in the village health insurance scheme, Abota, pay for treatments. The treatment charges are relatively low and do not aim to recover a percentage of costs. The Abota system in one region is described in chapter 6 and is the subject of one case study in the research. Another system of cost sharing practised in health centres in some parts of the country is the Bamako Initiative (BI) which requires patients to pay higher fees to recover 50% of drug costs. With the support of WHO, UNICEF and GVA, an Italian NGO, the Government started a pilot BI Essential Drugs programme in the Gabu region in 1989. It is estimated that cost-sharing in 1991 represented 15% of all health expenditure.

## GHANA

### Physical Characteristics

Ghana covers an area of 91,843 square miles and lies within the tropics (4° 45' North of the equator extending 850km North to latitude 11° 11'). Although plateaux of varying elevations make up the greater part, the Volta River Basin covering the remainder, the country is divided into three major geographic areas - coastal, forest, and northern savanna. In the coastal part many rivers and streams cross its sandy plains but are generally navigable only by canoe. There are no natural harbours. Ghana's highest point (approximately 884 m above sea level) is found in the range of hills on its eastern border. In the West the terrain is broken by heavily forested hills. Beyond the coastal areas the forest forms the almost a third of the country. In the northern two thirds is the savanna, undulating and drained by the Black and White Volta rivers which join to form the Volta. In the mid 1960s, the Volta was dammed at Akosombo creating the largest manmade lake in the world (250 miles long and 3,275 sq. miles in extent). It is an important geographical feature and is one of Ghana's major economic assets. South of the lake, the river flows to the sea through a narrow gap in the hills.

The country's climate is tropical and is dominated by two air masses - the moisture laden Monsoon and the dry Harmattan. The former is associated with the rainy seasons, one in the north (May to September) and two in the south (April to June and September to November). The Monsoon provides annual rainfall varying from about 1015 mm (about 40 in) in the north to about 2030 mm (about 80 in) in the southeast. The harmattan blows from the northeast from December to March, lowering the humidity and creating hot days and cool nights in the north. In the south the effects of the harmattan are felt in January. Temperatures vary with season and elevation with the annual mean temperature ranging between 26°C and 29°C and daily range of 10 to 16.7 degrees Celsius.

Administratively, Ghana is divided into 10 regions which are subdivided into 110 districts. Seventy percent of the total population lives in the southern half of the country. By the late 1980s about one-third of Ghana's population was estimated to be urban, and



migration from the rural areas into the urban centres was steady and increasing. In 1992, the percentage of the population in urban areas was 34.9%. Despite their rapid expansion in size and population, most of the urban centres remain small by world standards. The Accra-Tema agglomeration, with an estimated population of 985,369 in 1988, is the largest in the country, followed by Kumasi and Tamale.

### Pre-colonial and colonial history

It is thought by some historians that the people of Ghana originated from the ancient African empire after which it is named. The traditions of many of its 190 ethnic groups indicate they migrated from the north of the present boundaries over the period 1200 to 1600. The Portuguese first visited the area in the second half of the 15th century in search of gold, ivory and spices. The English, French, Danes, Swedes, Dutch, German and Portuguese all controlled parts of the territory at different periods until 1901 when Britain assumed full responsibility for the government of the Gold Coast (as it was then called). In 1922 a part of the adjoining German territory of Togoland was placed under British administration by a League of Nations Mandate and, after the Second World War, was placed by agreement under the Trusteeship System of the United Nations. The areas formerly known as Gold Coast (the Gold Coast Colony, Ashanti and Northern Territories), with that part of Togoland which had been administered by the British Government, became independent on March 6th 1957 and adopted the name Ghana. It was the first Sub-Saharan nation to be free of colonial rule.

### Political Background

The Convention People's Party (CPP) under Dr. Kwame Nkrumah led the struggle for independence and ruled the country until the government was overthrown by the armed forces on February 24th 1966. Since then the country has had seven governments, five of which came to power through coups d'etat. The only two elected governments ruled for a total of four and half years.

On December 31st 1981 Rawlings returned to power for the second time as leader of the ruling Provisional National Defence Council (PNDC) by overthrowing the government

of Dr Limann and the Third Republic. The PNDC repealed the Constitution and announced its intentions to foster "grassroots" and participatory democracy. These and subsequent measures had strong nationalist aims and were met with hostility from the Ghanaian middle classes and some western governments, the Reagan administration in particular. However the People's Power rhetoric attracted strong support from the urban and rural poor.

From mid 1983 onwards, in the face of successive coup attempts, continuing alienation by the West and growing enmity among dissatisfied Ghanaians, the PNDC embarked on a policy of reconciliation encouraging representation by a broader range of social groups. From this period onwards the PNDC's relationship with the West improved dramatically with its implementation of IMF/World Bank supported economic policies. In 1988-89 nationwide elections for non-party district assemblies were held as the first step in what the government described as an evolving democratic process. The district assemblies were charged with local development tasks.

Under increasing international and domestic pressures the PNDC initiated the return to constitutional rule in the middle of 1990. In May 1991 the government announced its acceptance of multi-partyism and set in motion processes for the preparation of a draft constitution to be completed by the end of 1991. However some social and political organizations, including the churches, students, lawyers and the opposition Movement for Freedom and Justice (MFJ) have complained that some elements of the constitution making process are undemocratic. In spite of this the PNDC has indicated that a referendum on the constitution will be held (a date has yet to be confirmed), and that it will determine how soon the constitution will come into effect after the referendum.

#### Economic background

A major cause of the past political instability was the country's precarious economy in the 1960s and the decline in all sectors of its economy that followed. In the 1970s food production fell by more than 3 per cent each year, cocoa exports fell from 407,00 tons in 1971 (representing over 40% of the world's output at the time) to 180,000 in 1982 and the

output of the mining sector in 1980 was only half that of 1971. The PNDC took power in 1981 as Ghana staggered into its worst economic crisis while enduring the beginnings of the severest three year drought of the century. Rising poverty coupled with the collapse of the health services lowered the health status and the standard of living of Ghanaians. By 1981 yaws and yellow fever, which had been eradicated a quarter of a century ago, had returned.

The IMF and World Bank approved Economic Recovery Programme/Structural Adjustment Programme (ERP/SAP) was initiated in 1983. Since its inception it has benefited from substantial Western funding, about \$3bn. The Thatcherite principles underlying the programme have arrested the economic decline: between 1985-89 Ghana's Gross National Product grew at an average of 5.5%.

Liberalization of trade and the devaluation of the Ghana's cedi under ERP/SAP (from c2.75 to the US dollar in 1983 to c370 by mid 1991) have increased the competitiveness of Ghanaian goods in the world market and have encouraged steady growth in the export of cocoa, gold and timber. Considerable revenue has gone into paying off the country's international debts while new credits have been used to rehabilitate the transport and communication infrastructure. Despite debt-servicing rising to 50 percent of its annual export earnings by 1985, Ghana has been able to service its mounting debts. This has contributed to restoring its creditworthiness internationally and currently Ghana is often commended as a shining example of IMF/World Bank structural adjustment policies in Africa.

The successes of these policies have been at considerable social cost to many ordinary Ghanaians (Herbst 1993). The distributional impact of the programme has therefore been a cause of concern and debate. Cocoa farmers in particular benefited while food producers such as rice farmers suffered from cheap imports and inadequate food policies. Rising costs of imported intermediate products on the other hand forced local manufacturing industries to wane. Fiscal policies to reduce state expenditure including that on social services necessitated the removal of subsidies from all consumer goods and the

above measures resulted in price increases of 122 per cent in 1983, eventually falling to 23 per cent in 1986. Meanwhile general wage increases were suppressed, and real earnings declined sharply in 1984, partly because the monetary policy aimed to hold domestic credit formation to below 20 per cent. In urban areas, however, increases in real wages above that of the GDP growth have since occurred and salaries of higher income groups have risen faster than others.

### Modern economy

Ghana's GDP, US\$25000 million in 1994, is derived primarily from agricultural and mineral output. In 1991, agriculture accounted for 53% of GDP and provided employment for 56% of the labour force. Timber and gold have also been traditionally important parts of the economy accounting for 17.9% and 15.5% of exports respectively in 1986. Other mineral outputs include manganese ore and industrial diamonds. Manufacturing and services make a small contribution to the economy, industry accounting for 18% of GDP in 1991 (World Bank 1992).

Although in a few rural areas mining is an important occupation, the rural economy is almost entirely dependent on agriculture. Moving from the coast to the north, farming practices and outputs change appreciably. Except for the extreme northeast, agriculture is based on a rotational system in which land is cropped for two or three years and then abandoned for from four to seven years, in order to allow it to regenerate. Thus rural settlements form scattered nuclei surrounded by land that is either under crops or undergoing regeneration. When cocoa or other tree crops are grown, however, cultivation is usually continuous or permanent. In the extreme Northeast where settlements consist of isolated compound houses, each surrounded by its own farm continuous cropping is commonly practised.

The coastal zone is traditionally a region of fishermen and small-scale farmers. In this area, associated with the two rainy seasons of the south (April to June and September to November), there are two farming seasons, the major and the minor. The main crops grown during both farming seasons, mainly for household consumption and the local

market, are corn, rice, tomatoes, cassava, pepper and okra. Poultry and other livestock are also produced on a small scale. In Osudoku (the subdistrict in this zone used as the study area in the research) sugar cane was grown on a commercial scale to supply a sugar factory in the independence years. Large scale sugar cane farming ceased in the late 1970s with the closure of the factory.

The forest region, which constitutes about a third of the country, is rich agricultural land. Almost all the timber, cocoa, and a number of minor cash crops grown for export come from this region. A large part of the foodstuffs consumed in Ghana, in particular plantain, yams and oil palm, are also grown in this part of the country. In addition, gold and other minerals are exploited in the forest area.

The northern savanna region, covering two-thirds of the country, has a harsh environment partly because rainfall is low. The southern part of the savanna that adjoins the forest zone, forms part of the disease-ridden "middle belt" of western Africa and is comparably poor agriculture land. In the most northerly part, which is relatively free from the tsetse fly of the middle belt is savanna vegetation that is well suited to livestock breeding. Its light soils and the rainfall regime support the cultivation of yams and cereals. Although agriculture is mostly of the traditional subsistence type, irrigation and mechanized cultivation have opened prospects. Lake Volta, which extends far into the heart of the region, serves as a reservoir of water for agricultural use.

#### Demography and ethnic characteristics

The population of Ghana (1984 preliminary) was 12,205,574; the estimated population in 1994 was 16,050,000, giving the country an overall population density of about 67 persons per sq. km (about 174 per sq. mi). Since 1970, it maintained a high average annual growth rate of about 3 percent, with females slightly in excess of males. More than 60 percent of Ghanaians are under 25 years of age, assuring that the country's high growth rate will continue for some time. Life expectancy at birth, which in 1960 was placed at 46 years, improved considerably to nearly 55 years in the late 1980s, and in 1993 was 53.3 years for males and 57.2 years for females. Population fluctuations due to emigration

became pronounced during the severe economic depression of the late 1970s and early 1980s.

The population of Ghana is divided into more than 50 ethnic groups. In the coastal areas, from East to West the principal ethnic groups are the Ewe, Adangme (Adangbe), Ga, Efutu, Fanti, Ahanta, and Nzima. Most of the urban concentrations are along the coast in urban centres of Accra, Cape Coast, and Sekondi-Takoradi. West of the Volta, in the forest region, are the Akan people consisting mainly of the ethnic groups Akwapim and Kwahu in the east, the Akim in the south, the Ashanti and Brong in the centre and north, and the Wasaw and Sefwi in the west. The Ewes predominate to the east of the Volta. The largest ethnic groups in the northern savanna region are the Dagomba and the Guang (Gonja), related to the Mossi people of Burkina Faso. Based on language, at least 75 different groups are recognizable. Many of these are very small, and only 10 of them are numerically significant. The largest groups are the Akan 52.4%, Mole-Dagbani 15.8%, Ewe 11.9% Ga-Adangme 7.8%, and Gurma 3.3%.

Nearly two-thirds of the population is Christian, about one-sixth is Muslim, and one-third adheres to the traditional tribal religions. The indigenous religions are based on belief in the existence of a supreme being and a number of lesser deities. They give considerable prominence to dead ancestors, who are believed to be ever-present, capable of influencing the course of events for the living, and can serve as intermediaries between the living and the gods. Stemming from these beliefs are distinct attitudes and practices relating to disease causation and cure. In particular, illness is often associated with the supernatural powers. It is often said that the Ghanaian dreads disease and believes that disease is almost never natural.

#### Causes of morbidity and mortality

Infective and parasitic diseases (particularly malaria, measles and pneumonia), malnutrition, sickle cell, accidents and problems of the newborn are the main health problems in Ghana. Approximately a third of all reported deaths in Ghana results from infective and parasitic diseases. In 1984, it was estimated that sickle cell disease,

accidents and cerebrovascular disease were responsible for 5.5%, 4.7% and 3.3% respectively of the total days of healthy life lost (Ghana Health Assessment Project Team 1981). The national pattern of ill-health conceals geographical and urban/ rural differences. For illustration, in 1991, circulatory disease was the major reported cause of urban mortality, accounting for 23% of male deaths and 26% of female deaths in Accra (Stephens *et al* 1994).

This pattern of ill health has persisted in spite of high priority that successive governments have placed on public health since independence. However geographically disproportional declines in the magnitude of most of these health problems did occur during the 1960s and early 1970s. For example, the infant mortality rate which was 360 per 1,000 live births in 1915, was 143 in 1960 and had declined to 95 during the period 1978-82. By 1994 the national average infant mortality rate per 1,000 live births was 83, rural areas having 24% higher rates than urban areas. In the mid 1970s the national maternal mortality rate was reported to be 5-10 per 1000. It ranged from 5 in urban hospital conditions to 18 in rural areas. In 1994 it was reported to be 2-3 per 1000. However positive trends in nutritional status of the 1960's and the early 1970's have since dissipated. Thirty per cent of children less than three years were undernourished in 1988 and this was unchanged in 1993. The prevalence of acute under nutrition, manifested by wasting, was 12% in 1993 and represented a substantial increase since 1988 when it was 8% (Macro International Inc 1993).

#### Health care providers

Ghana's health care is provided by the government, mission, and private-for-profit western and traditional sectors. The government health system originated from that set up by the British Colonial Civil Service in the middle of the 19th Century, Cape Coast hospital in Central Region being the first to be established. About the same time Christian missions also began establishing independent not-for-profit health facilities, most famous of the early mission facilities being Agogo Hospital founded in 1931 by the Presbyterians. Access to health care was initially restricted to colonial administrators, officials of mining companies, and other Europeans. Following independence existing government hospitals

were expanded, new health posts were constructed and training of health personnel was greatly increased. By 1981 the combined facilities of government mission and parastatals included 124 hospital and 230 health posts. Between 1970 and 1981 the number of physicians increased from 667 to 1665; with similar increases also occurring among other health workers. From 1981, however a steady decline occurred, and by 1994 the number of medical officers and dental surgeons employed by MOH was only 659.

The church related health facilities are estimated to provide 30% of inpatient admissions and approximately 35% of all medical care. Since 1975, following the recommendation of the Adibo committee, the mission facilities have been formally integrated into the government health network. They receive government subventions to support approximately 40% of recurrent expenditures channelled through their umbrella organization the Christian Health Association of Ghana (CHAG). CHAG has 81 member institutions and holds regular meetings with MOH on policy and implementation issues. Revenue from user fees is another major source of income for the majority of CHAG facilities. In 1987 the share of health care expenditure between the government, mission and private for profit was estimated to be 36%, 12% and 52% respectively (MOH Ghana 1995).

Except for traditional practitioners, the majority of providers are allocated in the southern part of the country; Upper West, Upper East, Northern and Brong Ahafo regions in the north of the country have low percentage of their populations within 8 Km of a health facility, ranging from 13% to 45% compared to 100% in three of the southern regions (Table 5.2). Upper Eastern and Northern Regions also have the lowest per capita attendance of health facility rates and the lowest use of antenatal care.



Table 5.2 Regional variations in health service provision and utilization

	Percent of Pop covered*	Number of facilities / 10,000 Pop	Annual attendance per capita**	Percent non antenatal ***
Greater Accra	100	0.27	0.73	6.0
Ashanti	59.0	0.33	0.68	4.7
Brong Ahafo	33.9	0.54	0.68	10.6
Central	100	0.46	0.42	14.2
Eastern	65.0	0.51	0.75	3.0
Northern	13.1	0.38	0.14	42.1
Upper East	45.2	0.25	0.28	42.1
Upper West	22.7	0.46	-	42.1
Volta	100	0.60	0.32	13.6
Western	41.8	0.43	0.54	5.3

Notes

\* within 6 km of a health facility

\*\* adjusted for under reporting

\*\*\* percent of birth with no prenatal care, last five years

Adapted from Smithson 1993.

### Private for profit providers

Limited information is currently available on the characteristics and size of the private-for-profit health sector in Ghana. Providers in this sector include private hospitals, doctor or nurse practitioner clinics, maternity homes, pharmacies, chemical drug shops and a variety of traditional healers. Soon after independence, efforts were made to promote and develop indigenous medicine through the formation of the Ghana Psychic and Traditional Healers' Association and the establishment of a National Institute and Research Centre at Nsawam to conduct research into herbal medicine. They had little impact in terms of integrating Western and Traditional medicine. However, the ministries continued to plan the delivery of health care services that include healers, particularly traditional birth attendants. In the late 1970s and earlier 1980s several experimental and isolated projects involved healers in the delivery of primary services, the best known example being the

Danfa Comprehensive Rural Health and Family Project which trained traditional birth attendants. Recent evidence suggests that the general population consider that the “Western” care provided by such individual is not an acceptable substitute for that provided by full trained health workers (Agyepong *et al* 1992).

#### The government health services

To facilitate health service management, the country is divided into areas using the same boundaries as the administrative/political areas. Thus, there are regional health management units responsible for supporting health districts. In 1978, following the recommendations of a document published by the Planning Unit of the MOH, Ghana started to implement its Primary Health Care (PHC) strategy. Decentralization, community participation and intersectoral coordination were fundamental to the strategy. It involved reorganising the primary level of the MOH into a three-tier district health care system supported by secondary and tertiary referral at the regional and national levels. The community (level A) was to provide the most basic care depending on community health workers selected and remunerated by the local resident groups (the “community”). These workers included the Traditional Birth Attendant (TBA) and the Village Health Worker (VHW). The intermediate tier (level B) was to be staffed by Community Health Nurses, or midwives and Health Inspector Assistants, responsible for direct supervision of the first level workers. At the final tier was the District Health Management Team (DHMT), comprising the District Medical Officer (DMOH), the District Public Health Nurse, the District Administrator and the District Environmental Officer. Measures taken by the MOH with some assistance from donors have ensured that this overall strategy, with the exception of the VHW component, is now operational. The measures included training many young doctors in public health both local and overseas in the 1980s and the implementation of continuous programmes to strengthen managerial capacity of DHMTs with the assistance of WHO, beginning in the Volta Region. These measures were successful in attracting and retaining young doctors into the field of public health, even though between 1978 and 1984 30% of Ghanaian doctors migrated overseas soon after qualification (Arhin 1988).

By 1980, 30 DHMTs had been formed and currently they exist in all districts. The teams submit annual plans and budgets to the regional MOHs to be integrated into regional budget estimates. Another of their official functions is to promote and support local people in their district to participate in the delivery of health care in their areas. Although level C has been successfully organized, in most districts the Level A health workers are relatively few or absent because many programmes to train and support village health workers were unsuccessful. In many cases this was because local residents' groups were unable to provide funds for their payments, and government supplies were erratic and/or inadequate (Amuah *et al* 1989).

In 1988 the legal framework for decentralizing the government was enacted as local government law PNDC law 207 (Republic of Ghana 1988). The process of decentralization began with the creation of the current 110 districts from the original 68 and was followed by the election of district assemblies (Republic of Ghana 1987). Under the law, the district executive committee will include a unit with the responsibility for preparing integrated multi sector plans to be approved by the elected assembly. The district health managing teams (DHMTs) will be integrated into the planning process of the executive committee and will submit annual plans for the health sector.

More recently, the central level of the MOH has been reorganized or restructured to enable it to function effectively in a decentralized national administration. As in the preceding structure, the technical head of the ministry, the Director General for Health, still is accountable to the politically appointed Minister for Health. However those that report directly to the Director are fewer and are the heads of newly organized divisions of: (1) Policy, Planning, Monitoring and Evaluation; (2) technical coordination and research; (3) human resources' development; (4) drugs and supplies; and (5) financing and administration. At the regional level the ministry is headed by Regional Directors of Health Services (RDHS). Other regional staff include the Senior Medical Officer in Charge of Public Health (SMO-PH) and the members of the Regional health Management Team (RHMT).

### Health financing

Although Ghana adopted the concept of Primary Health Care in 1978, financial constraints have hampered progress (Bacon 1980; Pobee 1982; Nimo 1982). The constraints stemmed from inadequate government budget allocations to the public health sector, and inefficiency in financial management and allocation. The per capita expenditure dropped in real terms from c63.6 to c8.3 between 1978-1983. Investments in the health sector accounted for only 3.6 per cent of the Public Investment Programme in 1986-88. The decline in real health care expenditure was born both by the patients and Ministry of Health employees (monthly salaries declined by 69.4 percent between 1978-1983 and in addition to official nominal hospital and clinic fees patients paid high informal charges). In 1989, following the initial success of the economic recovery programme, the Ministry of Health received 11 percent of the government recurrent budget, presenting 29% increase in its budget in real terms. However this rate of growth in the budget did not continue and the annual rate of growth for subsequent years was lower.

During the times of fiscal crisis, especially during the late 1970s and early 1980s, the non-wage expenditure bore most of the cuts mainly because reductions in wage expenditure require retrenchment of personnel. Personal emoluments as a percentage of total recurrent expenditure increased from just over 40% in 1975 to 62% in 1985, reducing non-wage expenditure from 60% to 38% during this period. With the recovery of recurrent expenditure on health during the mid to late 1980s, non-wage expenditure increased marginally as a percentage of total expenditure (excluding subventions) reaching 48% and 41% in 1990 and 1991 respectively (Smithson 1993).

In 1992, 66% of the non personnel budget was designated to remain under the control of the central administration, mostly for the purchase of drugs and supplies. Eighty percent was allocated to the two teaching hospitals and 25% was earmarked for the 10 regional health administrations. Districts receive their budgets from the regional allocations, typically amounting to about 40% of the region's total. Thus the resources that reached the districts were puny, approximately 10% of the total non-personal MOH

budget and it is only in recent years that they have had some control of these resources through the decentralization process.

### Decentralization

Decentralization in the MOH has led to gradual transfer of decision making power and the control of resources from the centre to the periphery. Since 1991 the DHMTs have had control of their designated portions of the recurrent budget allocated to the MOH, known as the financial encumbrances (FE). In 1992 further financial autonomies were given to districts through the introduction of imprests permitting small cash purchase to be made. Dangme West District's FE for 1992 was equivalent to approximately US\$11,094 and most districts received amounts of similar magnitude. The proportion of the allocated funds available to the district has varied from year to year because spending of these funds requires adherence to numerous regulations and there are sudden limits and freezes imposed by the central treasury. Although this system has the advantage that districts no longer apply to the region for the authority to spend, given the erratic nature of disbursements of funds to the district often the revenues from user fees are more reliable.

### User fees

Public sector health service fees were introduced in 1971 through the Hospital Fee Act, but fees were nominal and did not reflect the true cost of the services rendered. The provision of highly subsidized government health services continued until 1983. In that year, following the passage of a hospital bill initiated two years earlier, the government raised the nominal hospital fees from c0.5 per day for ward admissions and first consultation with specialists to c7.5 per day for adults and c25 respectively (Anyinam 1989) (1983 minimal daily wage = c10). The bill was based on a new fee proposal by the MOH that was to form the foundation of a future revolving drug fund. Following comprehensive unit costing of the Ministry's services by its planning unit in 1985, the fees were revised; thereafter, the fee for a first visit to a specialist rose to c200 (1985 minimal daily wage = c20). This fee schedule incorporated charges for drugs that reflected their real cost and the institutions were instructed to retain 50% of the revenue with

authorization to use 25% and 15% on non-capital expenditure for hospitals and health centres respectively. These measures were taken to enable the health facilities to purchase medical supplies, particularly drugs, on the open market when government supplies fail within the decentralised system. Facilities were also expected to use the retained revenue to undertake the minor repairs and maintenance required to improve the quality of their services.

The above changes coincided with, and became part of, the government's Economic Recovery Programme (ERP). The ERP met many of the conditions laid down by the IMF and World Bank that were necessary for these institutions to provide credits (Loxley 1988). As part of the ERP, the MOH set a target of recovery of at least 15% of total recurrent expenditure in 1986, 1987, and 1989 (Vogel 1987). Monitoring of the programme indicated that by 1987, the target of recovery of 15% of recurrent budget had been achieved at the cost of substantial declines in the utilisation of health care services. The decline was greater and more sustained in the rural than urban areas. By January 1989 MOH health institutions had been authorized by government to retain 100% of hospital fees collected to enable the establishment of revolving funds for the purchase of drugs and other medical supplies.

By mid 1989, the MOH had designed a "cash and carry" system to replace the old system whereby health institutions indented for drugs from the ministry's medical stores. Under the new system institutions would use their fee revenues to replenish stocks of drugs and other medical supplies by purchasing from the Central Regional and District Medical Stores (Hagan 1989). The stated objectives of the system were: a) to generate sufficient funds to cover "most of the Ministry of Health's drug and medical supply purchases"; and b) to "ensure that health institutions order and receive the quantities of drugs and supplies that are needed by their patients". Some commentators concluded that the link between user fees and drug purchases would guarantee continuous supply of drugs in the government health sector "even if drug prices and service utilization increase" (Cassels & Janovsky 1992). By 1992, implementation had begun in Greater Accra and in Volta Region. The World Bank considered the cash and carry system to be an important

measure designed to facilitate the restructuring of health financing in the country, and therefore required the government commitment to its implementation as one of the conditions for supporting a second health and population project.

The BI had similar objectives to the MOH's revolving drug funds and "cash and carry" system and consequently it was not met with enthusiasm for several reasons. The initiative appeared to be relatively rudimentary in design with respect to the health system above the district level where the majority of drugs were consumed. Secondly, Ghana had already begun to implement a long term plan to stimulate public participation in local politics and administration of all sectors through the district assembly elections and therefore donor-led support for community involvement in health alone seemed inappropriate. In addition BI emphasized "community involvement" whereas Ghana experience with community funding of level A health had not been entirely successful. Nevertheless, as a compromise with UNICEF, five districts were selected by the MOH to implement experimental BI schemes with drugs supplied free of cost by UNICEF. It remains unclear what the future of these schemes would be after the pilot stage.

Several health care utilization studies have shown that following the above changes and their impacts on fee levels in Ghana, there were significant reductions in the utilization of health services (Waddington & Enimayew 1989), as has been the case in other African countries such as Zaïre (Bethune *et al* 1989; Haddad *et al* 1995), Swaziland (Yoder 1989), and Lesotho (Bennett 1989). The available evidence suggests that in the rural areas of Ghana, the decline in utilization rates have contributed to maintaining and/or accelerating the deteriorating health status indicators for women and children since 1983 (UNICEF 1987). In Brong Ahafo, Northern, and Upper regions where the infant and maternal mortalities are the highest in the country, health unit attendance in 1984 were only 64%, 66% and 23% respectively of attendances in 1982.

#### Demand for health care and rural household economics

Household data collected as part of the second round of the Ghana Living Standard Survey (GLSS) indicated that the "private sector" accounted for 41% of patients for the

country as a whole and 51% of patients in Accra (GLSS 1988). However it is unclear what the term private sector includes in this case.

The economics unit in the rural area is the household, typically an extended family unit which produces crops to meet food requirements and to raise cash for consumption and investment goods. Other major sources of income for some rural households are wages from working on the farms of other households, petty trading and transfers from members of the extended family living in urban areas and overseas. Salaries obtained by working within the formal sectors are generally insignificant. Although rural banks do exist in Ghana, most households in rural areas have little or no access to loans.

Expenditure on health must be balanced against primarily that for food, education, clothing and transport. Many rural households are nearly self sufficient with regard to food; and funds required for education are generally predictable as are those for transport that is not related to illness and death, permitting assistance from the wider extended family to be found. Ensuring the availability of funds for paying for health care on the other hand is usually more difficult because of the uncertainty of the amount and the timing of health care needs. In 1978, when health care was virtually free because fees were nominal, the pattern of household expenditure for the average Ghanaian household was as follows; food and beverages 57.4%, clothing and footwear 14.3%, housing and energy 11.5%, transportation and communications 3.3%, health care 1.3%. Analysis of health data has shown that people in rural areas are less likely to consult health personnel in situations of ill health than people in urban areas suggesting that the patterns and/or total expenditure of expenditure differs for rural and urban households (Oti Boateng *et al* 1989). Although neither recent nor detailed information on rural household expenditure on health care are currently available, relevant data collected as part of the third round of GLSS will soon be published.

Increases in the charges for health care and education in both private and government sectors during the 1980s will have necessitated changes in the pattern of expenditure if their consumption are to be protected. However, recent health care utilization data



discussed above suggested that the economies of rural households in particular are currently unable to fund the same level of health care consumptions as in the years before the economic crisis. Since health care needs are difficult to predict and rural incomes are irregular and seasonal, this change probably does not indicate changes in willingness to pay for health but rather changes in ability to pay at the time of need.

### Health insurance in Ghana

The private health insurance market in Ghana is in its infancy and insignificant relative to the national expenditure on health care. In recent years several insurance companies based in the capital Accra have started to offer health insurance policies. The State Insurance Corporation utilizes social security contributions from all Ghanaians employed in the formal sector to finance care for its own employees. The Corporation currently owns and operates a modern hospital in Accra which provides free care to its employees and charges fees to all others.

However, the Government and the MOH are interested in establishing schemes, as are providers such as medical practitioners, and employer groups. The MOH, with the assistance of a German firm, attempted to identify groups to be covered by "National Health Insurance" in the late 1980s. In 1994 the Ministry commissioned its latest consultancy to undertake a feasibility study of options for national health insurance schemes. The report was made available in October 1994. Primary data were not collected and community insurance was not considered.

Acknowledging the administrative difficulties of implementing a national scheme, the MOH also wished to consider community based approaches. It recognized that community insurance/prepayment schemes have the potential to complement decentralised Primary Health Care (PHC), and to be compatible with the "cash and carry" system for purchasing medical supplies. The MOH surmised that the effectiveness of decentralised PHC, "cash and carry", and cost recovery through the new levels of user charges, may all be enhanced by the provision of risk coverage.

## Chapter 6: Evaluations of Two Rural Schemes

### INTRODUCTION

The case studies in this chapter represent the research's efforts to answer some of the questions identified in Chapter 4, and in so doing, assess the social and financial performance of the two rural health insurance schemes in Africa. Hence, the main findings and the analysis presented attempt to achieve the following specific objectives that were also stated in Chapter 4:

- a) to determine changes in the population's access to health resulting from the schemes;
- b) to evaluate the affordability of premiums charged by the schemes;
- c) to assess the appropriateness of payment schedules to their target population particularly those living in the rural areas;
- d) to estimate the relationships between premium revenue and benefits expenditure;
- e) to assess the extent of adverse selection and moral hazard.

One general aim of the case studies connects it to the feasibility study subsequently carried out in Ghana. It was envisaged that in designing a study to assess the feasibility of health insurance schemes for rural populations in Sub-Saharan Africa, information on existing rural schemes was valuable. Therefore, the two studies, socio-economic evaluations of the national health card insurance scheme (La Carte d'Assurance Maladie, CAM) in Burundi, and the village Abota<sup>11</sup> system in Guinea Bissau, acted as preparatory investigations and provided information to supplement that available from the literature (Arhin 1995; Arhin 1994).

The chapter is divided into two sections. Section one presents the results of the evaluation of the financial and social performance of the CAM. This is preceded by a description of the scheme, and a brief discussion of the assumptions about the functions

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<sup>11</sup> "Abota" is a local term and refers to a communal fund. The fund is derived from the voluntary contributions, usually fixed sums, from households or individuals. The amount contributed is decided collectively.

of a health insurance scheme that underpinned the approach to the evaluation. In Section two an update of the existing information on the Abota system is presented using data from the empirical work carried out in the Gabu Region in October 1992.

## THE HEALTH CARD INSURANCE SCHEME (CAM) IN BURUNDI

This is a national health card insurance scheme introduced by the Government of Burundi in 1984. Purchase of a CAM card by a household entitles its members (restricted to two adults and all children below 18 years) to free health care at all public health facilities. The card is sold at a fixed price irrespective of the household size (in June 1992, the price of the card was 500 Fbu (1.85 US\$)). Persons without cards are required to pay user charges for government health care. The level of user charge per episode of illness treated is determined by the health worker at his or her discretion and generally varies with the age of the patient and the quantity and type of treatment received. All health services provided by the Government are covered by the CAM scheme and therefore, in theory, CAM card holders who seek health care at government facilities should not incur out of pocket expenses. However, due to the shortage of drugs and other inputs, CAM holders, like fee paying patients, are sometimes given prescriptions to purchase drugs on the open market. The names of household members entitled to use a card are written on the card at the time of purchase, making it difficult for it to be used by individuals from other households. The card is valid for one year and may be purchased from a community representative at any time of the year. This makes it possible for a non-CAM patient to pay a user charge at a health centre and on referral to a hospital, to purchase a CAM card in order to obtain free hospital care. The cards are not accepted by non-government health facilities, such as mission and for-profit clinics and hospitals.

The revenues from CAM card sales and user charges are retained by the "commune" committees (the "commune" is the lowest level of local administration in the country). These committees have some financial responsibilities for the health centres in their localities and are expected to fund recurrent expenditures, such as stationery, fuel for refrigerators and linen, and in some cases capital projects such as construction of new

health centres. However, revenues from CAM and user charges are not designated to be used in the provision of health care and therefore in practice only a small fraction is allocated by communes to health. In 1990, 8% of the revenues of communes in Mueang Province came from the sale of CAM cards, whereas on average only 1% of commune revenues were used to finance health care (McPake *et al* 1992). Health worker salaries and drug costs are funded by the government through the Ministry of Health's budget.

The approach used in the evaluation is underpinned by the assumptions derived from the literature review in Chapter 2, namely that a social welfare oriented health insurance scheme has two prime functions that merit separate consideration, although they are intrinsically linked. The first is a financial function: to provide a pool of funds to cover all, or (in government subsidized schemes) part, of the cost of health care for those who contribute to the pool; and to encourage providers and consumers to use health services in a cost-effective manner. The study sought to assess CAM's financial strengths and weakness, in particular to determine the existence of adverse selection and moral hazard. This involved establishing whether differences existed in the illness rates and utilization rates per episode of illness among individuals in households that participated in the scheme and households that did not. Another specific objective was to estimate the ratio of revenue to expenditure by determining the relationship between the average annual value of drugs obtained per participating household from public health facilities, and the annual cost of membership in the scheme. The study assumes that the percentage of the drug costs covered by CAM revenue is central to the scheme's financial performance. The rationale for this approach is that drug expenditure forms a major cost item in the provision of primary level care and therefore the ability of an insurance/prepayment scheme to fund drug supplies adequately will provide some indication of its level of financial viability. In addition community financing of drugs used at the local level is increasingly becoming a part of the health financing strategies of developing countries. Although at the time of CAM's inception it was not an objective to raise funds to cover drug purchases at the health centres, at the time of the study the Ministry of Health was exploring the potential of CAM to cover drug costs of government health centres in the future. The final specific object with regard to financial function was to evaluate the

potential for improved financial performance by considering household health expenditures and the willingness of heads of households to pay higher prices for membership of the CAM, if services were improved.

The second prime function of a health insurance scheme is social, including social equity. It is to remove financial barriers to obtaining health care at the time of illness for the vulnerable groups in society, i.e. the very young and elderly, and the chronically ill. The study focuses on whether CAM improves the access of women and children to prompt health care. It was assumed that women and children had higher risks and less access to money, and therefore if the CAM affected their health care utilization favourably it was performing a positive social function. The specific objectives of the study relating to social benefits of the scheme were: to determine the perceptions of heads of households about the benefits of participating in the scheme; and to ascertain the effect of the scheme on the access of women and children to health care.

### Muyinga Province

The topography of Muyinga Province, like most of Burundi, is that of numerous hills and valleys. Agricultural land is sparse and therefore the slopes and valleys surrounding the collines are intensively cultivated. The majority of household units in the district consist of a mother, father and dependent children, and frequently one or two grandparents. Women produce the food crops consumed by the household, selling any surplus in village markets, while the cash crop, coffee, is harvested and sold by men in the town markets.

Some women brew and sell local beer made from bananas, and therefore periodically earn small amounts of cash income. However, in general, because women in male-headed households are excluded from trading in the cash crops, women have little access to cash. Consequently, it is common for household decisions about the use of cash to be made by men. In order to obtain health care from fee-for-service health facilities, either for themselves or their children, women must frequently request cash from male heads of households.

The average household size was 5.34 persons. The majority of households (90%) said they were Christians. Moslems and other religions accounted for only 3% and 4% respectively. Almost all households in the study area were engaged in farming; 285 (95%) of heads of households were farmers. Only 9 (3%) had received more than 6 years of formal education, 129 (43%) had attended school for 1-6 years and 162 (54%) had received no formal education. The majority of homes were constructed either of bricks, tiles and mud (56%), or mud and thatch (41%). The households possessed few consumer goods: 128 (42.7%) of households owned a radio and/or a bicycle, and only one household possessed a car.

### Participation

Fifty four percent of households were either participating in the CAM at the time of the survey or had done so in the past. Valid cards were held by 23% of households. Table 6.1 shows the distribution of households in the sample with respect to their participation in CAM. The "CAM households" (22.7%) presented valid CAM cards to the interviewer; the "Past CAM households" (31.3%) did not possess valid CAM cards at the time of survey but reported having purchased cards in the past; "Non CAM households" (46%) reported never purchasing a card. Female headed households constituted 13% of the sample. Among female headed households only 7% had cards whereas 24% of male headed households had valid cards.

A hypothesis that CAM membership status of households and the size of households were independent was rejected (Chi-square test  $p < .001$ ). Larger households were statistically more likely to be current or past CAM card holders than households with few members (Table 6.2). The Chi-square test of independence rejected independence between economic proxies (type of house and household possessions) and size of family. However, a test of association failed to indicate a linear relationship and rather suggested that households with either very few or many people were poorer than those of sizes close to the sample average.

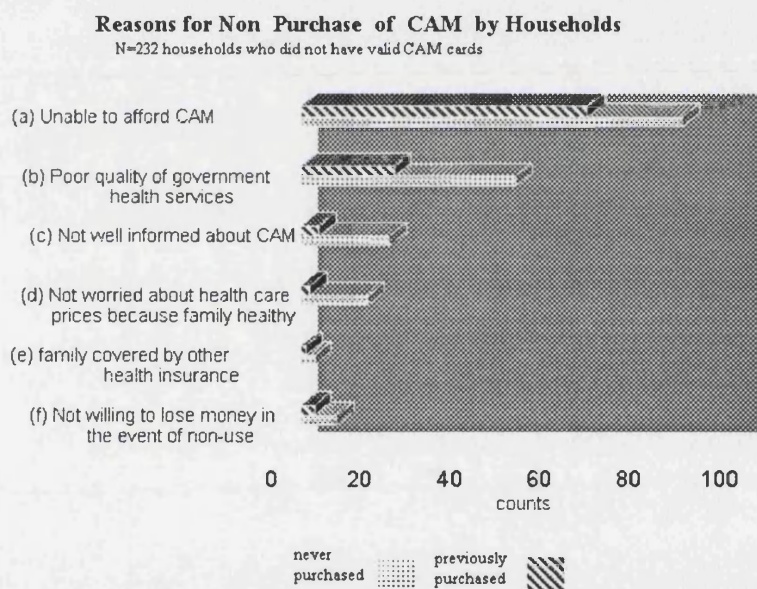
Table 6.1 CAM Status of Male and Female Headed Households

household status	male headed		female headed		total	
(a) Non-CAM	111	42.5%	27	69.2%	138	46.0%
(b) past CAM	85	32.6%	9	23.1%	94	31.3%
(c) CAM	65	24.9%	3	7.7%	68	22.7%
	261	100.0%	39	100.0%	300	100.0%

Table 6.2 CAM Status by Household Size

CAM status	household size (No. of persons)			row total
	<= 2	3-6 count (column pct)	>=7	
Non-CAM	27 84.4%	88 50.9%	22 23.4%	137 45.8%
Past CAM	3 9.4%	54 31.2%	37 39.4%	94 31.4%
CAM	2 6.3%	31 17.9%	35 37.2%	68 22.7%
column total	32 10.7%	173 57.9%	94 31.4%	299 100.0%
Chi-Square	Value		DF	Significance
Pearson	42.7634		4	0.0000
Likelihood Ratio	44.9698		4	0.0000

The most frequently selected reasons for non purchase were affordability, poor quality of government services (lack of drugs) and insufficient knowledge about the scheme Figure 6.1). Forty five percent of the households who gave lack of funds as one of the reasons also said they would be willing to pay at least twice the present price if drugs were always available, suggesting that some of the reported inaffordability may have been relative rather than absolute. Competition from other health insurance schemes did not appear to be a significant factor influencing non participation in the CAM scheme since only 4 (1.3%) households reported that they were covered by other health insurance schemes. Of the 232 households who did not have valid cards, 15 did not select any of the 6 reasons offered in the questionnaire as possible explanations for non-participation. (All reasons were first read to the respondent and during a second reading he or she was asked for an answer.)



**Figure 6.1**

Reasons that might suggest "non risk averse" attitudes to illness were reported by only 23 households. These reasons included "absence of worries about health care prices, because of good family health" and accounted for 8.4% of the reported reasons for never having purchased a card and only 2.1% of the reasons for not having a valid card at the time of the survey. For households that reported "not willing to lose money in the event of non-use", one interpretation is that they have a low monetary evaluation of the risk involved



in illness. A low evaluation would lead to unwillingness to pay a positive price to avert the risk and therefore would be consistent with a low demand for insurance. Only 11 (3.6%) of households fell into this category.

### Illness rates and utilization

The main symptoms reported suggested that the principal illness conditions for all age groups were respiratory infections, malaria, digestive disorders, headaches, and injuries (figure 6.2). These health problems accounted for 76% or more of illness episodes in each age group in the 4 weeks prior to the survey.

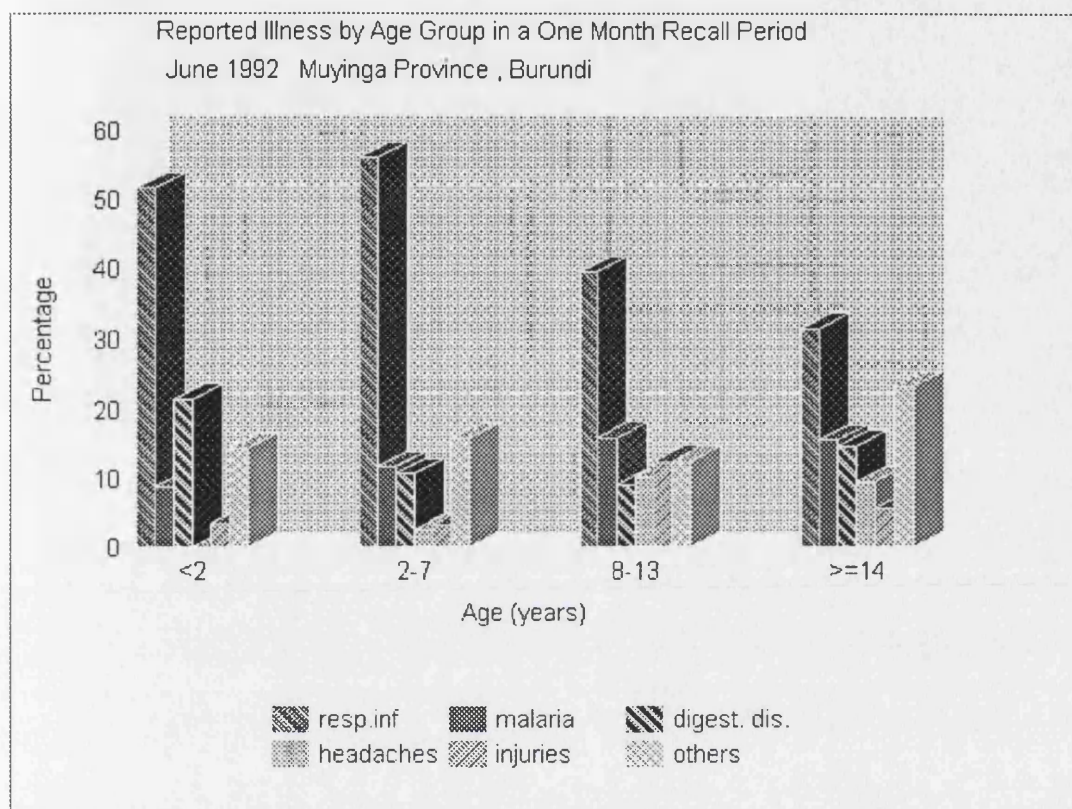
The illness occurrence as measured by episodes of illness per person, was almost identical for households that purchased the CAM and those that did not (Table 6.3). This suggests that there was not a predominance of persons with high tendencies/risks of becoming ill in the households purchasing CAM, compared to households that had not purchased CAM. This in turn suggests that adverse selection of individuals was probably not a major problem. Formal health care (modern/western care obtained outside the home) was not sought for all illness and therefore, the number of formal treatment actions was less than 1 per illness episode. The formal treatment rate per episode was higher for CAM households as opposed to non-CAM: 0.54 per episode for CAM households and only 0.35 per episode for non-CAM. Public treatment (from government facilities) rates were also higher for CAM than non-CAM: 0.37 per episode and 0.91 per household for CAM households, and only 0.16 per episode and 0.3 per household for non-CAM.

**Table 6.3** Morbidity and Treatment Rates for Acute illness in a One Month Recall Period in CAM and Non CAM households

Rate	CAM households	non-CAM households	Total
No. of people	981	615	1596
(a) Illness episodes	400	259	659
Illness /household	2.47	1.88	2.20
Illness /person	0.41	0.42	0.4
Treatment actions	305	164	469
Treatment/episode	0.76	0.63	0.7
(b) Formal treatment rates per episode	0.54	0.35	0.5
(c) Public treatment rates per episode	0.37	0.16	0.3
(d) Formal treatment rate per household	1.33	0.65	1
(e) Public treatment rate per household	0.91	0.30	0.63

(a) as perceived and defined by respondent

(b) and (d) treatment from formal health facilities such as government health centres and hospitals, mission clinics and private health facilities. Excludes traditional/herbal treatments and self medication



**Figure 6.2**

The average number of drugs (types) received by outpatients was similar for the five centres studied. The mean number of drug types was 1.58 (Table 6.4). The average value of the drugs received by patients in each facility, however, varied greatly, ranging from 72 Fbu for patients at Muyinga to 165.5 Fbu for those at Gasorwe. Significant numbers of patients received incomplete treatments in the centres that had low values (Kamaramagamba and Muyinga), whereas most patients received adequate quantities in Gasorwe and Muramba. Distribution of the average value of the drugs received by patients in each facility is skewed towards the lower range of values. The mean value of drugs per patient (both CAM and non-CAM) for the three centres that did not give

incomplete treatments is 134.1 Fbu. (It was not possible to calculate the mean value of drug per CAM patient because the health centre records did not state the method of payment in all cases. However, since drug treatments were generally adequate in these three centres, it was assumed that the mean value of drugs per CAM patient would not differ significantly from this value.)

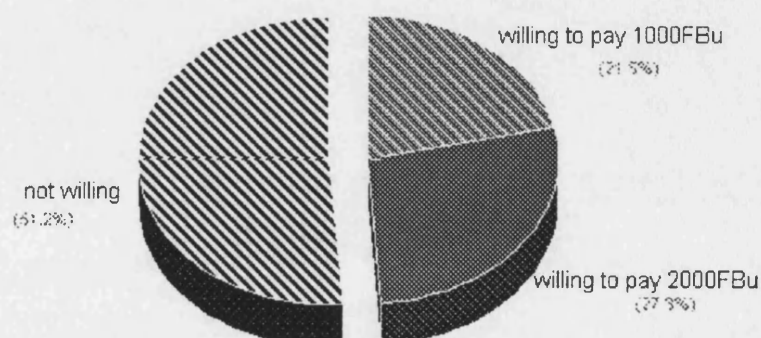
#### Health expenditure and willingness to pay

In the month prior to the study, 110 (36.6%) households had incurred out-of-pocket expenses for medical consultation(s) and/or drug purchases. Of the households who held valid CAM cards, 27.9% had incurred such costs, and of the households without valid cards the corresponding figure was 39.85%. The mean expenditure per household was 254.00 Fbu for the CAM group and 192.84 Fbu non-CAM. The expenditure per treatment action ranged from 10 Fbu to 9,000 Fbu. For households possessing a valid CAM the mean expenditure per treatment action was lower than for households that did not (136.00 Fbu and 249.94 Fbu respectively).

Table 6.4 Number of Drug Treatments and Mean Cost of Drug Treatments by Health Centres in Study Area

Centre	patient(%) N	receiving X=0	X X=1	No. of drugs X=2	X=3	Mean No. of drugs	mean value of drugs Fbu
Gasorwe	120	0.8	30	55.8	13.3	1.82	166
Giteranyi	120	3.3	60.8	34.2	1.7	1.34	111
Kamaramag	120	0.8	30.8	52.5	15.8	1.83	79
Muyinga	120	6.7	51.7	31.7	10	1.45	72
Muramba	86	0	62.8	33.7	3.5	1.41	126
TOTAL	566	2.5	46.3	42	9.2	1.58	114

### Household Willingness to Pay for CAM Card (Willingness to pay was conditional on drugs being available at the health centres)



**Figure 6.3**

Willingness to pay a higher price for the CAM if drugs were more available at government health centres was expressed by 49% of households. About half of these households were willing to pay 1000 FBu and the others were willing to pay 2000 FBu (Figure 6.3). Of those who said they were conditionally willing to pay more for the CAM card, 32% had never purchased a CAM card in the past.

#### Benefit of CAM to women

Contributions in the focus group discussions were in general spontaneous and appeared to reflect a keen interest in the CAM. One rural group opened the discussions with a request that they be informed of the outcome of our study as they had received no feedback from a previous study in which they had participated.

In response to the opening question, "do you think the CAM has any benefits for women?", consensus in three of the groups implied that the CAM has important benefits for poor families, for households with seasonal cash availability and to women whose

husbands spent significant amounts of household cash on alcohol. In these situations the CAM ensured that in times of illness health care was available. This was thought particularly important in cases of child illness since they require prompt treatment.

"Before the CAM if you were unable to pay for expensive drugs then your child would die".

One member stated,

"CAM was started out of love for the people".

Some members of the fourth group expressed the opinion that the CAM provides no benefits because the government health centres provided poor quality service and insufficient drugs.

Some of the comments, in the early part of the discussions, reflected an appreciation that the CAM removed the uncertainty about the affordability of health care at the time of a child's illness;

"It is better to buy the card than to take the chance of illness";

"To guard against falling sick in times of no cash it is well to buy the CAM";

"The card is important because for one year of use it is cheap, especially when one is referred to the hospital".

Overall the groups agreed that households' decisions to purchase the CAM were initiated by the women but that the cards were purchased by male partners. However, several women reported that they had purchased separate cards for older girls living away from home to ensure them antenatal care. The cards were either kept at home and women required no permission from husbands to make use of them or, as reported in one group, "the card is kept in the pocket of the woman just like an identity card".

In three of the groups the issue of quality of health care received by CAM holders became dominant after the initial debate about the merits of the CAM. There was agreement that CAM holders had poor care because the drugs at government health centres were frequently out of stock. They also identified that, in some cases, health workers discriminated against CAM holders and gave preferential treatment to patients that paid cash. It was noted, in one group, that antenatal treatment was poor because there were few female medical technicians at the health centres.

Most of the women in the group that were dissatisfied with the quality of care expressed a willingness to pay a CAM price of up to 2,000 FBu, if this would ensure adequate drug supplies at the health centres. (The groups believed that the revenue from the sale of the cards was used to purchase drugs and other supplies for the Government health centres and hospitals.) These women were also willing to purchase the cards at a specified time in the year to facilitate the purchase of drugs in larger quantities and therefore cheaper unit prices by the government. They suggested July-August, the months corresponding to the end of the harvest. One unwilling woman explained that she was a poor widow. Another said she was elderly and had no children in her care.

In the latter stages of the discussions the groups were asked to make some suggestions to improve the CAM. The following summarises the suggestions made:

- 1) ensuring adequate drug supplies and improved quality of care at government health centres;
- 2) including older girls, aged 18 years and above, who are unmarried and still living with parents, as eligible household members under CAM;
- 3) incorporating the mission health facilities so that CAM holders may receive either free or subsidized care at these institutions;
- 4) provision of exemptions for the very poor and widows.

## THE ABOTA VILLAGE HEALTH INSURANCE SCHEME

### Introduction

The Abota system entails prepayment for essential drugs and the provision of primary health care at the village level by the community. Administration of the Abota system in each village is the responsibility of the village committee, the lowest level of the country's decentralised political system. As a consequence of this autonomy, prepayment terms vary substantially from one village to the other. Some villages accept contributions in kind of agricultural produce. Health care is provided voluntarily by members of the village, village health workers known as *Agente de Saude de base*, and by birth attendants at the village health posts (*Unidade de Saude de base*, USB). Patients referred by village health workers to the public health facilities were exempt from payment of consultation fees on showing evidence, usually a receipt, of having contributed to Abota.

Underpinning the approach to this evaluation are the same assumptions about the functions of health insurance scheme as discussed above with reference to that of CAM, namely that two prime functions are relevant; financial and social functions. Consequently, the evaluation of operations of the Abota in Gabu region focused on some specific indicators of Abota's effectiveness and level of financial and social performance; a) perceptions and the willingness of households to pay Abota contributions, b) the frequency of village health worker training/retraining and supervision, c) the level of revenues, and d) the adequacy of the supplies of inputs to the system. It also explored the contribution of the Abota experience to the debate about the merits of development by "discrete architected projects" compared to that which relies on the gradual evolution of initiatives through participatory learning. Finally, it contributes to the debate and the argument that reflecting the collective nature of many African societies and cultures, some, if not most, African communities will prefer community health financing strategies that are based on an insurance mechanism rather those based on 'fee-for-service' at the point of use.



### Study area

Gabu region is in the north west of the country and has an estimated population of 129,159. With the exception of the inhabitants of the regional capital, Gabu, the population consists of traditional rural farmers living in many small, isolated villages (tabancas) and hamlets. In 1989 the average number of inhabitants in a village was estimated to be 185. Many of the villages could only be reached using dirt tracks and/or foot paths. The major ethnic groups in the study villages were Fula and Mandinga. Ninety nine percent of the households surveyed were Moslems. The average residential compound in the rural area had several units occupied by co-wives and their children. Government health facilities in Gabu consisted of USBs (125), health centres (Centros de Saude) (15) and sectoral hospitals (5). Private health facilities were not available. The USBs provided preventive services (screening for tuberculosis and leprosy, immunizations, and growth monitoring); antenatal care and deliveries; and basic curative care, including oral rehydration and treatment of uncomplicated malaria. Sixty percent of villages in the region have USBs and in most cases they are open for a few hours each morning. Emergency care was obtainable at any time by calling at the home of a health worker or birth attendant. Referrals from the USBs were made either to a Centro de Saude or a sectoral hospital (these facilities have qualified, paid staff and provide more comprehensive curative care, preventive outreach services and supervision of the USBs).

### Perception and Willingness to Pay

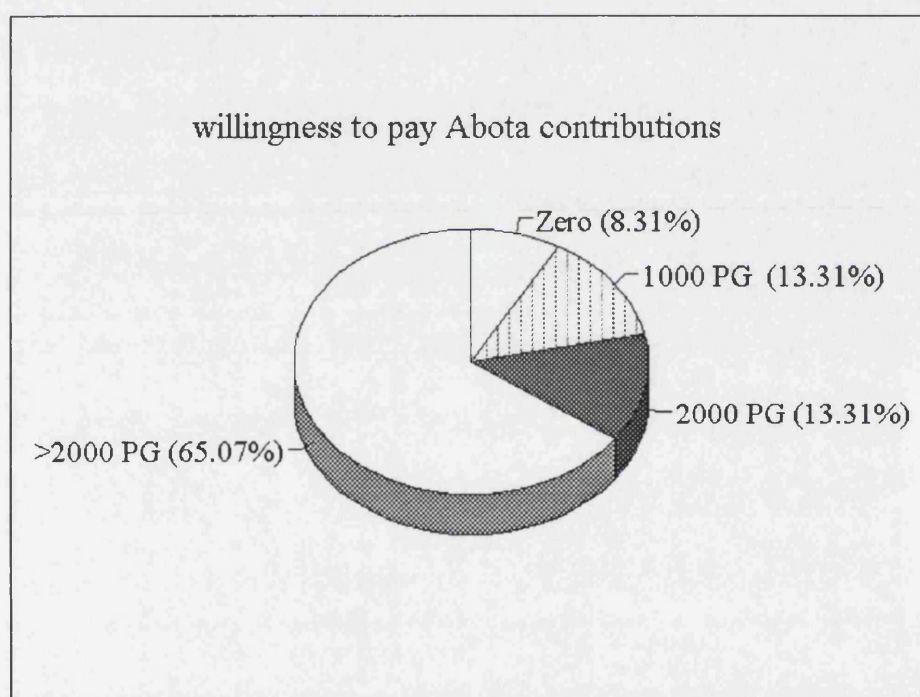
Over 94% of the respondents in the household survey stated that they held a "good opinion" as opposed to "no opinion" or "bad opinion" about the Abota<sup>12</sup>. There was consensus that an important benefit of the system was accessibility; it was frequently communicated to the team that having people in the village, who had been trained to give health care and medication, eliminated the need to walk long distances to government health centres to obtain treatment for common problems such as headaches and mild fevers. A significant percentage of respondents (26%) stated that the quality of care available at the USB was inappropriate. Over 30% of participating households stated that

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<sup>12</sup> It was the view of indigenous co- investigators that in the cultural context of the region such a qualitative measure of perceptions would be more valid than attempts to elicit more finely graded evaluations.

they had experienced some shortage of drugs at the USB.

A high rate of willingness to pay was found: 87% were willing to pay twice their current contributions to the Abota to improve the availability of drugs<sup>13</sup>. Figure 6.4 shows the willingness of households in villages without Abota schemes to pay different levels of Abota contribution, thus making it possible to start schemes in their villages. Approximately 78% stated that they would be willing to pay 2000 P.G. or more. Only 8% of the households stated they would be unwilling to contribute were schemes to be established in their villages or one nearby.



**Figure 6.4**

#### Village Health Worker training and supervision

All village health workers in the study villages were male, aged 28-65 years. About 50% had received some formal education (1-5 years of primary level schooling). On average they had been functioning as village health workers for 6.5 years (ranging from 3 to 11

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<sup>13</sup> The question asked was, "Would you agree to pay twice the current Abota contribution to permit the system to always have drugs available, Yes or No?"

years). All had received an initial 2-3 weeks residential training and had also attended up to five retraining courses and/or refresher courses since becoming health workers. In the two years prior to the study only three of those 15 health workers interviewed had not attended retraining courses. Judging from interviews with village health workers, supervision visits appeared to have been frequent over the previous 12 months. The last supervision visits to six USBs had occurred within six weeks prior to the survey. The others had been supervised within eight weeks prior to the survey.

### *Revenue and the supply of inputs*

The USBs in the study had an average of 6 of the 11 essential drugs and wound dressing materials in stock (see Table 6.5). It is disturbing that chloroquine and aspirin, drugs used in the basic management of malaria, were available in less than a quarter of the USBs surveyed. On average the most recent stock acquisitions had been 5 months prior to the survey. The frequency at which stocks were replenished at the USB was dependent on the frequency of contributions, total revenue and the availability of drugs at the government medical stores. The number of times prepayment contributions were collected in a year varied, some villages collected twice yearly, others once.

Table 6.5 Availability of drugs and wound dressing material in 15 village health posts  
(proportion of health posts with item in stock at time of survey)

Chloroquine syrup	0.38
Chloroquine tablets 100mg	0.15
Aspirin	0.15
Oral rehydration salt	0.54
Tetracyclines eye ointment	0.38
Antibiotic dermatologic cream	0.46
Bandage	0.54
Cotton wool	0.54
Benzyl benzoate(disinfectant)	0.46
Compression cotton	0.54
Neomycin ointment	0.54
Average	0.43

Table 6.6 shows the amounts of Abota revenues presented by villages to the regional drug store between February and June 1992, value of drugs supplied, levels of contribution per family/person and the indicative number of participants per village Abota<sup>14</sup>. The most recent sums (Abota revenue) that had been presented by village Abota schemes for the purchase of essential drugs ranged from 30,000 - 139,800 G.P. The average contribution, per person (1,367 P.G.) was significantly higher than that estimated from data collected in 1989, of 199 P.G. The nominal increase (approximately 690%) in the mean contributions by individuals between 1989 and 1992, appears to have kept pace with inflation, as is judged from the trend in the economic deflator<sup>15</sup> (World Bank 1992). The average contribution per household was 3,778 P.G.<sup>16</sup> All but two of the ten USBs, for which drug purchase data were available, had presented sufficient funds to purchase more drugs than they had received and had some money returned. The funds returned ranged from 5,250 - 68,500 P.G. At the time of the survey a reliable supply of inputs to the health centres in Gabu had been established as part of the UNICEF supported Bamako initiative. This stock appears to be maintained separately from that procured through the Ministry's logistics channels. The prevailing arrangements at the time prevented the USBs from purchasing essential drugs from these BI stocks.

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<sup>14</sup> The Abota schemes studied used revenues from each collection round to make a purchase of drugs supplies. They did not wait to combine revenue from several collection rounds in order to make bulk purchases.

<sup>15</sup> The deflators, taking 1987 as 100, were 174, 296, and 399 in 1988, 1989 and 1990 respectively. Figures are not available for 1991 and 1992.

<sup>16</sup> In 1989 only one out of the six Abota studied in Gabu collected contributions on a household basis, the level was 300 P.G. per household.

Table 6.6 Abota Revenues, Contribution Levels and Implied Participation

		-1	-2	-3	-4	-5	-6	-7
Sector	village	amount presented	amount returned	unit of contribution	level of contribution	level of contribution	implied no. of participants	implied no of participants
		P.G	P.G.		P.G/a	P.G/h	adults	households
Sonaco	Namataba			h		5000		
"	Samba Djan	99,500	6,400	h		3000		11
"	Lenquito			a	1000			
Buruntuma	Camadjaba	98,200	29,300	a	200		345	
"	Fulamansa	90,500	24,000	a	3000		22	
"	Nhawah			h		3500		9
Pirada	Sintchia Sama	66,000	26,000	a	1000		40	
"	Samba Taco	75,000	15,250	h		5000		12
"	Sorilumbata			h		2000		
Boe	Patagui	100,000	68,500	a	1000		32	
"	Sutumaca			a	2000			
"	Teche-tche	60,100	41,650	h		5000		4
Gabu	Candjia			h		2000		
"	Candata	139,800	4,700	h		2000		46
"	Sumacunda			h		6500		
MEAN					1,366.7	3,777.8		

(1) The amount of money presented to MOH for purchase of essential drugs and other inputs (P.G.6,670 = US \$1 in 1992)

(3) = the basis of contribution; a = adult, h = household      (6) = (1)/ (4)      (7) = (1)/ (5)

In summary, despite experiencing some logistical problems, the Abota system was observed to be functional and to have considerable support, in terms of training and supervision of village health workers, from the government and NGO health workers in the region. There was also some evidence, namely continued high rate of participation and positive evaluations by almost all respondents, that suggested social commitment to the system was strong. The evaluation in Guinea Bissau, although exploratory, concerns itself with aspects of community financing of health care that have largely been ignored in the ongoing debate on options for health financing in Africa. It provides preliminary observations on organizational and socio-anthropological issues in relation to insurance for health care in a rural area in an African country.

## Chapter 7: Morbidity, and Health Expenditure in Osudoku Ghana

### INTRODUCTION

The design of the study in Osudoku was guided by the conceptual model of demand for health insurance described in Chapter 2. This model assumes that the determinants of the demand for insurance include the socio economic characteristics of the consumer, health care costs without insurance cover, and the expected state of health. To obtain measures of these determinants the study collected data on household composition and income, past expenditure on health care, and recent illness experiences. The latter (recent illness experiences) were taken as a proxy of health status. This was in addition to information about expected state of health obtained indirectly by asking respondents about their households' health compared with others in the community. In this chapter these dependent variables are described and their correlations with each other are explored. This prepares for the data to be related to the willingness to pay variable in chapters 8 and 9.

The analysis in this chapter also provides the basic estimates required to achieve the following objectives of the Ghana fieldwork already stated in Chapter 4.

- a) To estimate the community risks, calculated as the proportions of the population in the study area who would seek western type health care during the dry season and the wet season, for serious and mild illness, if such care were physically accessible and affordable.
- b) To estimate average costs for outpatient and inpatient episodes in health facilities preferred by households in the study area.

### HOUSEHOLD COMPOSITION

Eight hundred and fifty-three households in Osudoku Health Area (Figure 7.1) were

interviewed in the first round. However, 44 households were lost to the study during the second round either because they could not be traced or because they declined to be reinterviewed. The final sample size was 809 households in which there were 3,871 individuals. The median household size in the sample was six persons. Households with three or four persons were 30% of the sample, and those with five to seven persons 45%. Approximately 34% of households had female heads.

Adults (15-50 years) were 40% of the members in the sample households. "Children of the household head" (offspring below 15 years) constituted 46% of household members. Five percent of individuals were parents of either the household head or parents of the spouse. Overall, individuals above 50 years ("the elderly") made up 14% of the sample.

The overall level of education was low; approximately 5% of females and 16% of males had attended secondary school or higher educational institutions. This was comparable to 1984 national statistics on educational attainment in Ghana; percentage of population age 25 and over having no formal schooling - 60.4%; primary education - 7.1%; middle school - 25.4%; secondary - 3.5%; vocational and other post-secondary - 2.9%; higher - 0.6%. In the study a higher percentage of females were uneducated compared with males; sixty four percent of females had received no formal education compared with 29% of males.

The occupation of adults reflected the general low level of education; only 8.5% were professionals. The three most common occupations were crop farming (51%), petty trading/ table trading (13%) and craftsman/artisans (8%).

Seventy one percent of household heads stated their religion as Christianity. The next most common religion was Traditional African Religion (24%) and only 3% were Moslems. Forty five percent of household heads were members of saving groups or associations that provided financial assistance in times of unforeseen need such as death or illness.



# DANGME WEST DISTRICT - HEALTH CARE FACILITIES



Figure 7.1

## MORBIDITY AND ACTIONS TAKEN IN RESPONSE

### Reported illness episodes and actions

In each round of data collection respondents first provided information about illness episodes and treatments that had occurred in the 2 weeks prior to the interview. In addition they gave information on illness that had occurred within 6 months of the interview. Therefore, the household survey findings related to 2, “two-week recall” periods and 2, “six- months recall” periods. The former (2, “two week recall” periods) provided data for a four week period consisting of two weeks in each of the dry and wet seasons. The latter (2, “six month recall periods”) provided data for a 12 month period.

The study population reported 1,684 actions that were taken in response to illnesses during the 12 months investigated. Some of these were sole actions taken in respect of a single episode of illness and others were part of a series of actions in respect of an illness episode. In 1477 (87.7%) of actions the patient stayed at the place of care for less than 24 hours. These actions were classified as “non-admitted actions” and included outpatient episodes and instances of self-medication. Where individuals reported that they did nothing in response to an illness episode this was included in this broad category of actions as it was considered to be a form of “expectant management”. In 207 (12.3%) of actions patient stayed at the health care provider or remained in bed at home for more than 24 hours. Any action of this nature was classified as an “admitted action” and included also instances of inpatient care.

### Actions in a 2 week recall period

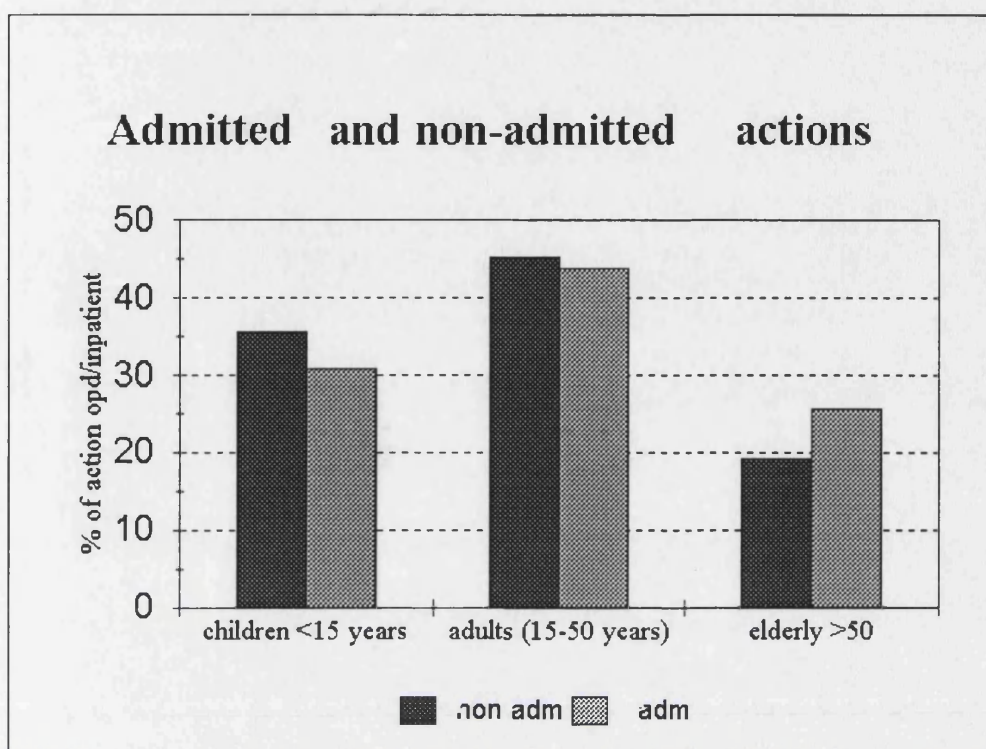
Approximately 38% (549) of the reported non-admitted actions occurred within one of the 2 “two-weeks recall” periods (within two weeks of the first interview carried out in the wet season or within two weeks of the second interview carried out in the dry season interview). Of the admitted actions 26% (54) occurred within one of the 2 ‘two-weeks recall period’. Table 7.1 provides the distribution of these actions by the seasons. The household rate of non-admitted and admitted in the wet season was 0.46 and 0.04

respectively, approximately twice the corresponding rates for the dry season, 0.21 and 0.02 respectively.

Table 7.1 Morbidity in 2 two-week recall periods in dry and wet seasons			
	Wet season	Dry season	Total for 2 periods
No of non-admitted actions	374	175	549
Admitted actions	34	20	54
Non-admitted actions/household	0.46	0.21	0.67
Admitted actions/household	0.04	0.02	0.06

#### Frequency and age distribution of types of illness related actions

Figure 7.2 shows the distribution of a) actions not involving an admission (non-admitted) and b) action involving an admission (admitted) by age category. Adults (15-50 years), children (1-14.9 years) and those over 50 years constituted 45%, 35% and 19% respectively of the non-admitted actions. Adults (15-50 years), children (1-14.9 years) and those over 50 years constituted 44%, 31% and 25% respectively of admitted actions. Since individuals over the age of 50 years made up only 14% of members in the study households they were over represented among the non-admitted (19%) and admitted actions (25%). Although to a smaller extent, adults (40% of members) were also over represented in both types of actions. Actions by adults and the elderly females constituted two thirds of actions, although they made up only half of the household members.



**Figure 7.2**

## USE OF HEALTH CARE PROVIDERS

### Sources of treatment associated with actions

Table 7.2 provides counts and percentages for non-admitted actions reported in the two-week recall periods involving different sources of care. (The table also includes figures for non-admitted actions in which treatments were not given and therefore the treatment source was 'nothing'.) In the first round of the household survey (the rainy/wet season) 374 non-admitted actions were reported in the 2 weeks prior to the interview. Of these 374 non-admitted actions, 29% involved self medication with western medicines, 15% self treatment with traditional cures, 31.5% treatment either at Battor or Akuse Hospitals and 3.2% treatment at the health clinic at Volu. Only 2.4% were treated at the four community clinics in the sub-district.

Table 7.2 Counts and Percentages of Non-admitted Actions by Sources of Treatment in a Two Week Recall Period in Osudoku Sub-district.				
TREATMENT SOURCE	WET SEASON		DRY SEASON	
	Count	% of total	Count	% of total
Akuse	51	13.64	41	23.43
Battor	66	17.65	56	32.00
Local health centre	6	1.60	0	0.00
Volu Health Centre	12	3.21	8	4.57
Asutura MCH clinic	8	2.14	0	0.00
Community Clinics	9	2.41	4	2.29
Self-medication (western drugs)	107	28.61	25	14.29
Self-medication (traditional medicine)	57	15.24	10	5.70
others	49	13.10	23	13.14
Nothing	9	2.41	8	4.57
All actions	374	100.00	175	100.00

In the second round of the household survey (dry season), 175 non-admitted actions were reported in the 2 weeks prior to the interview. Of these 175 actions, 14% involved self medication with western medicines, only 6% self treatment with traditional cures, and 55% treatment either at Battor or Akuse hospitals. Less than 3% received treatment at the health clinic or the community clinics.

One hundred and twenty five (125) actions in which patients stayed at the health care provider or remained in bed at home for more than 24 hours (admitted actions) were reported in the six months prior to round 1 and 82 prior to round 2. Table 7.3 provides counts and percentages for admitted actions reported in the six month recall periods involving different sources of care. (The table also includes figures for admitted actions in which treatments were not sought and not given. Therefore the treatment source was 'nothing'.) Forty four percent (44%) of wet season admissions were in Akuse Government Hospital, 26% in Battor and 22% were admitted in facilities other than those included in the survey.

Of the eighty two (82) admitted actions reported in the six months prior to round 2, fifty one percent (51%) of these admissions were in Akuse Government Hospital, 26% in Battor and 10% were admitted in facilities other than those included in the survey.

Table 7.3 Counts and Percentages of Admitted Actions by Sources of Treatment in a Six Month Recall Period in Osudoku Sub-district						
TREATMENT SOURCE	WET	SEASON	DRY	SEASON	WET & DRY	
	count	% of total	count	% of total	count	% of total
Akuse	55	44	42	51.22	97	46.86
Battor	33	26.4	21	25.61	54	26.09
Volu Health Centre	1	0.8	1	1.22	2	0.97
Asutura MCH clinic		0	2	2.44	2	0.97
Self-medication( western drugs)	2	1.6	2	2.44	4	1.93
Self-medication (traditional medicine)	1	0.8	4	4.88	5	2.42
others	27	21.6	8	9.76	35	16.91
Nothing	6	4.8	2	2.44	8	3.86
All actions	125	100	82	100.00	207	100.00

## CHOICE OF CARE SOURCE FOR EPISODES OF ILLNESS

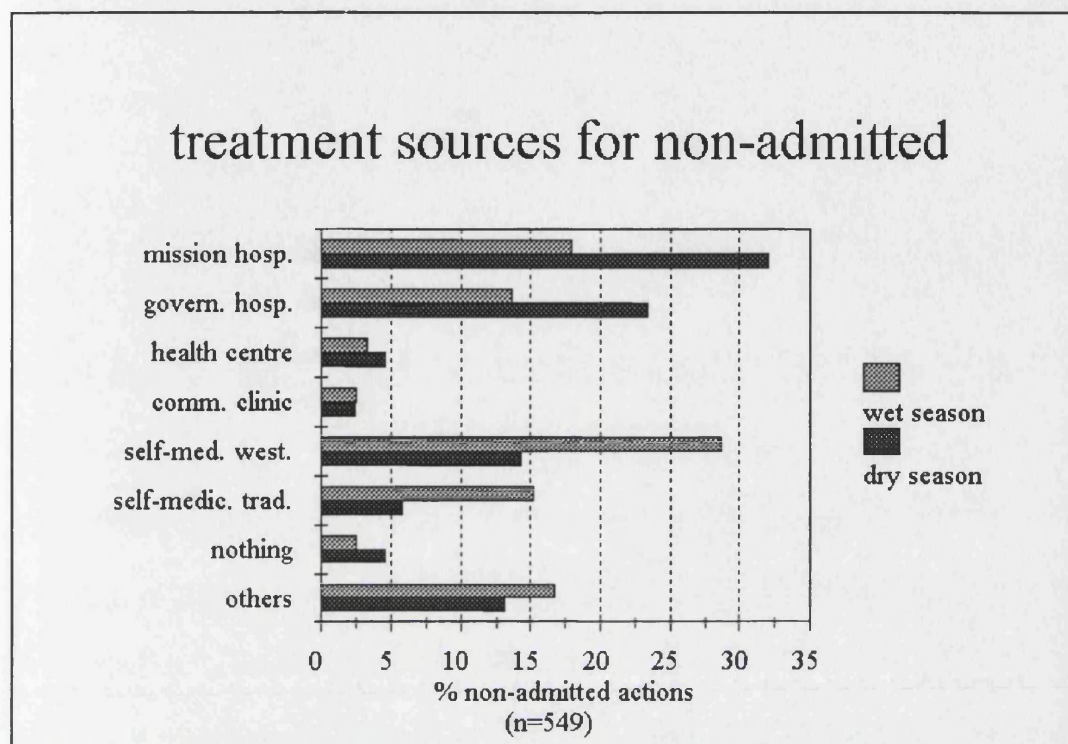
Table 7.4 shows that there were 496 episodes of illness among the population in a two week recall period and that as a result 603 treatment actions (both admitted and non-admitted) were taken. This is because seventeen percent of illness episodes involved more than one treatment action; 14.6%, 2.6% and 0.5% of actions were second, third and fourth attempts to obtain cure for an episode of ill health. Column 1 of Table 7.4 shows the percentage of the first actions that were treated by each of the types of health care. Columns 2, 3 and 4 give these percentages for second, third and fourth actions. In approximately 44% of the episodes the first action taken was care at the local hospitals and in 21% self medication with western drugs. Only for about nine per cent of episodes was care at a primary care facility the first line of action.

Table 7.4 Sources of treatment by order of action (2, two week recall periods)								
Health care type	<i>First response actions</i>		<i>Second response actions</i>		<i>Third response actions</i>		<i>Fourth response actions</i>	
	no.	%	no.	%	no.	%	no.	%
Traditional medicine self medication (n = 68)	47	9.5	16	18.2	5	31.3	0	0.0
Western drug self medication (n = 133)	104	21.0	22	25.0	6	37.5	1	33.3
Hospital care-Battor and Akuse (n = 256)	219	44.2	34	38.6	3	18.8	0	0.0
Primary Health Care (n = 48)	45	9.1	2	2.3	0	0.0	1	33.3
Other (n = 78)	64	12.9	12	13.6	1	6.3	1	33.3
Waiting/spiritual healing (n=20)	17	3.4	2	2.3	1	6.3	0	0.0
Total	496	100	88	100	16	100	3	100

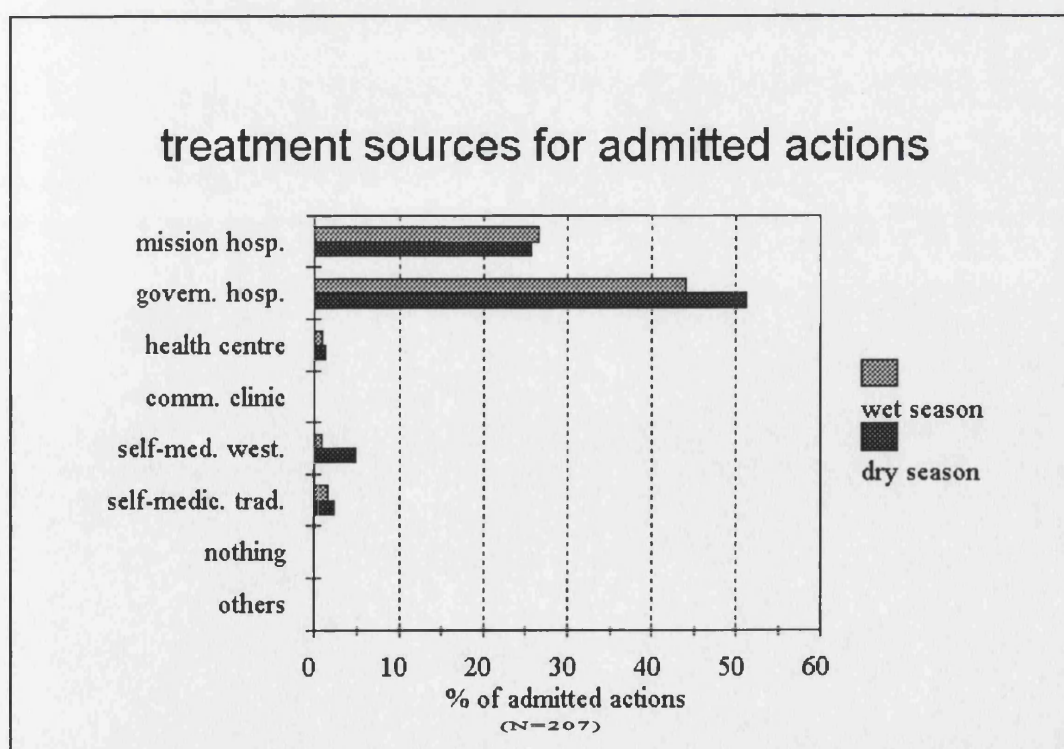
## SEASONAL DIFFERENCES

Figures 7.3 and 7.4 show the sources of treatment in the wet and dry season for non-admitted actions and admitted actions respectively. The data showed a significant difference in the pattern of health care action between the wet and dry. In a two week recall period more than twice the number of non-admitted episodes of health seeking actions in the wet season was observed compared with the dry season (374 as opposed to 175). The difference in number of admitted episodes was less marked; wet-season admitted actions exceeded that of the dry season by 52%. The high incidence of morbidity suggested by this data is consistent with seasonality of prevalence of diarrhoea, nutritional disorders and respiratory infections, and the increased incidence of vector-borne infections, for example malaria, during wet periods in Africa (Ferguson *et al* 1993; Bradley 1991; Feacham *et al* 1978).





**Figure 7.3**



**Figure 7.4**



The source of the health care used by individuals for outpatient care (non-admitted actions) differed between the seasons. Whereas a high percentage of non-admitted health related actions (44%) involved self medication in the wet season, the percentage was only 20% in the dry season. Discussions during the focus groups and general information about the study area suggests two probable explanations for this difference. First, during heavy rains mobility is reduced in rural areas because of poor road conditions. Therefore, patients living far from the hospitals are more likely to self diagnose and/or self-medicate and are less likely to attend clinics in the wet season. Second, the latter part of the wet season is associated with reduced cash availability in rural communities because by this time several months would have passed since the last harvest. Consequently, reduced ability to pay for consultation and treatment contributes to the lower proportional use of Akuse and Battor Hospitals during the periods of rains. These explanations are also consistent with the observed rise in the percentage of actions in which care was sought at these facilities during the dry months, 55.5% in the dry season compared with 31.4% in the wet. Thus, despite more frequent actions being taken to restore ill health in the wet season, a significantly smaller proportion were associated with the use of formal health facilities where diagnosis and treatment could be provided by trained personnel.

Another possible explanation for the reduced use of formal health care in the wet season is that illnesses were less severe in the wet season and/or were of the type that could be adequately treated within the household by self medication and or spiritual healing. This explanation is not supported by the findings about the outcomes of actions or the number of actions taken per episode of illness. In 27% of wet-season episodes more than one action was taken and in 65% of actions the outcome was unsatisfactory (health problem persisted or improvement was minor), as compared to 17% and 54% respectively in the dry. These findings suggest that the care obtained in the dry season was more effective. However, the data does not permit conclusion about the relative severity of episodes in the two seasons. Secondly it is not possible to conclude whether or not individuals chose non formal care in the wet season because they perceived it to be the most effective since respondents were not asked to give their reasons for selecting treatment sources.

Nine of the original ten categories of sources of care were grouped into 5 health care types; self-medication with traditional medicine, self medication with Western drugs, local public hospitals (Battor or Akuse), Primary health care, and others (facilities outside the mission/government sector and/or outside the subdistrict). This was done to reduce the number of categories in subsequent analysis and to allow results to be obtained for units of analysis that were of general policy relevance rather than limited to specific facilities. The tenth source included both actions where nothing was done (waited) and actions in which care was obtained from spiritual healers and would have given a biased estimate of the expenditures on spiritual healers. Therefore it was not included in the groups.

Table 7.5 Treatment types for first response actions in a 2 week recall period by season				
<i>Health care type</i>	<i>Wet season</i>		<i>Dry season</i>	
	no.	%	no.	%
Hospital care-Battor and Akuse	119	36.5	100	58.8
Western drug self medication	81	24.8	23	13.5
Others	46	14.1	18	10.6
Traditional medicine self medication	40	12.3	7	4.1
Primary Health Care	32	9.8	13	7.6
Waiting/Spiritual healing	8	2.5	9	5.3
Total	326	100	170	100

Table 7.5 shows that there were differences between the wet and dry seasons in the type of care that patients used as a first choice similar to the differences in the sources of treatment described above. In the dry season care at a local hospital was the first action taken in 59% of cases compared to only 36% in the wet season. In over a third (37%) of episodes in the wet season self medication was first choice, compared to only less than a fifth (18%) in the dry season.

## EXPENDITURE PER EPISODE OF CARE

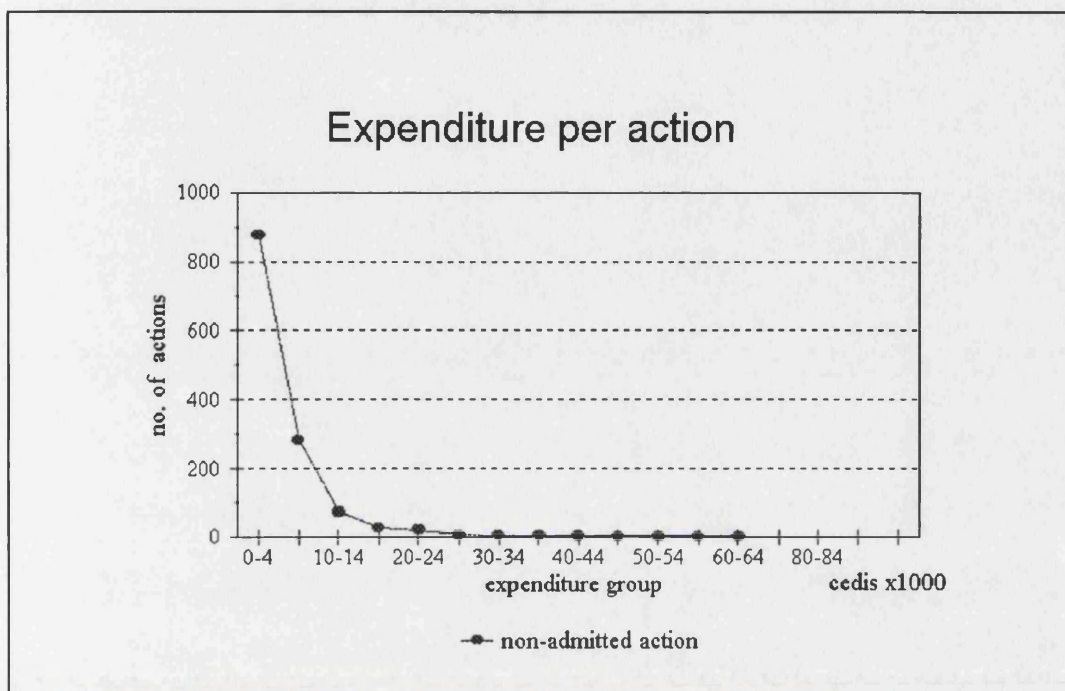
### Expenditure associated with treatment actions

The total household expenditure for each non admitted action was estimated by adding the costs of consultation, drugs, transport and indirect costs. The total expenditure ranged from c100 to c63,000<sup>17</sup>. Transport costs accounted for approximately 30% of the total expenditure for each non admitted episode. The distribution of the total expenditure was such that for approximately 75% of actions, it was c5,000 or less, and approximately 95% were c10,000 or less. Figure 7.5 shows the number of non-admitted actions that fell into different total expenditure groups. Figure 7.6 shows the percentage of the non-admitted actions by total expenditure groups. The direct expenditure for each non admitted action was estimated by adding the costs of consultation and drugs only and ranged from c100 to c33,000. The distribution was similar to that of total expenditure.

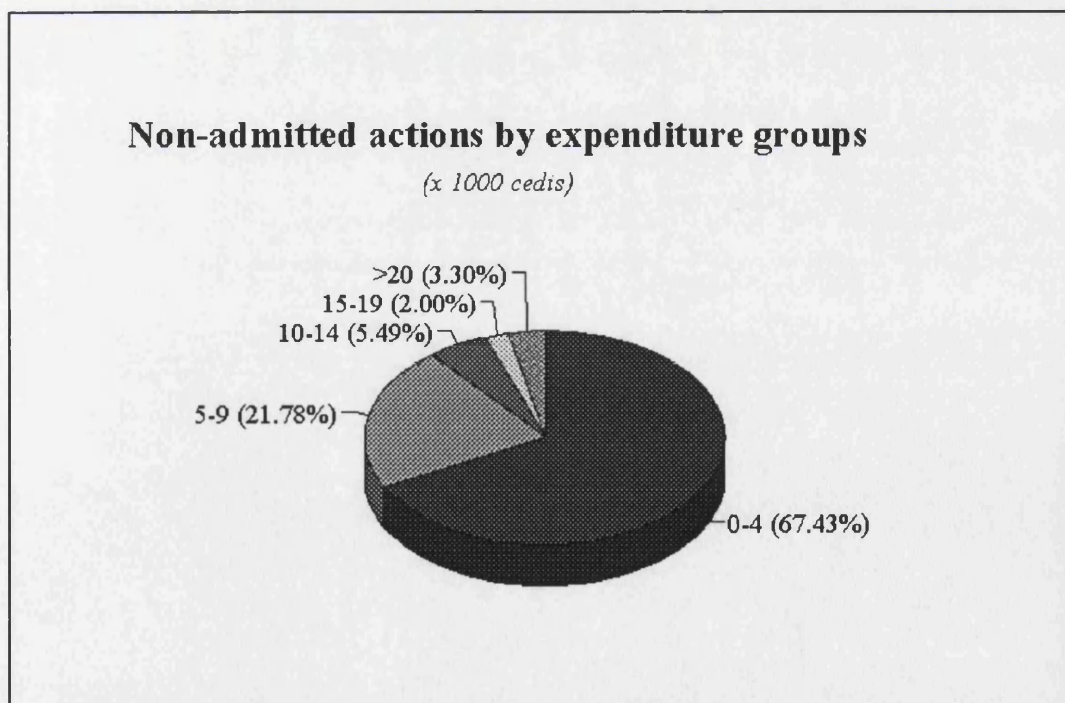
The total expenditure for each admitted action was estimated by adding the costs of consultation, drugs, transport and indirect costs, and this ranged from c1,000 to c103,000. Figure 7.7 shows the number of admitted actions that fell into each expenditure group. Figure 7.8 shows the percentage of the admitted actions by total expenditure group. The direct expenditure for each admitted action was estimated by adding the costs of consultation, drugs and other direct costs such as food. The direct expenditure ranged from c100 to c101,000. The distribution was similar to that of total expenditure.

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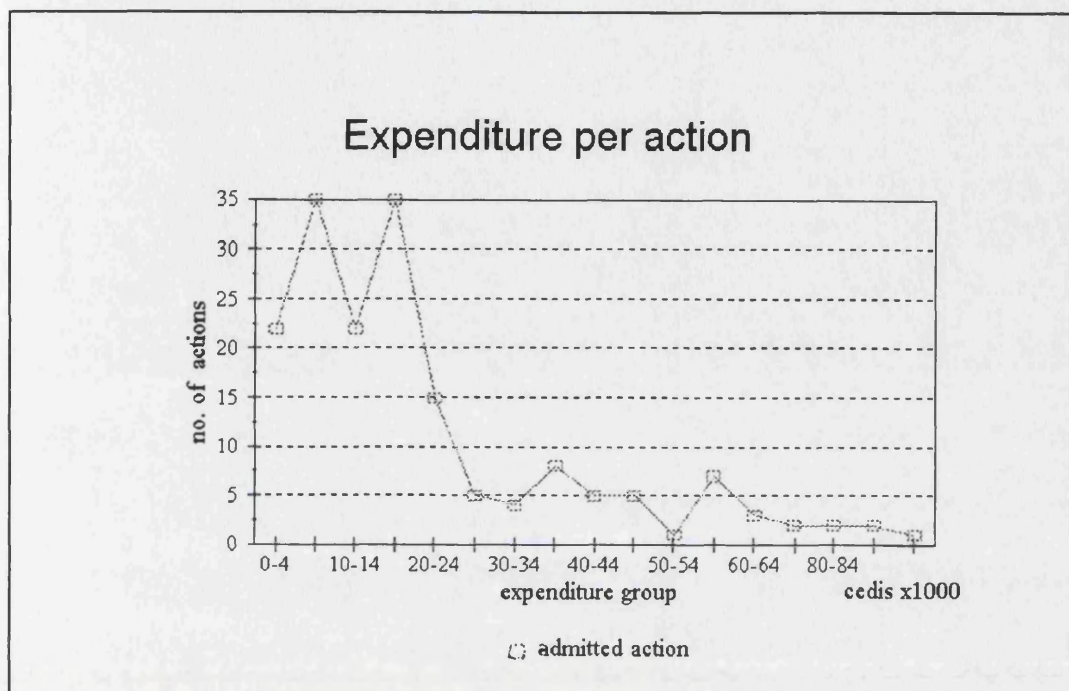
<sup>17</sup> In June 1993, one pound sterling = c1000 (One thousand cedis)



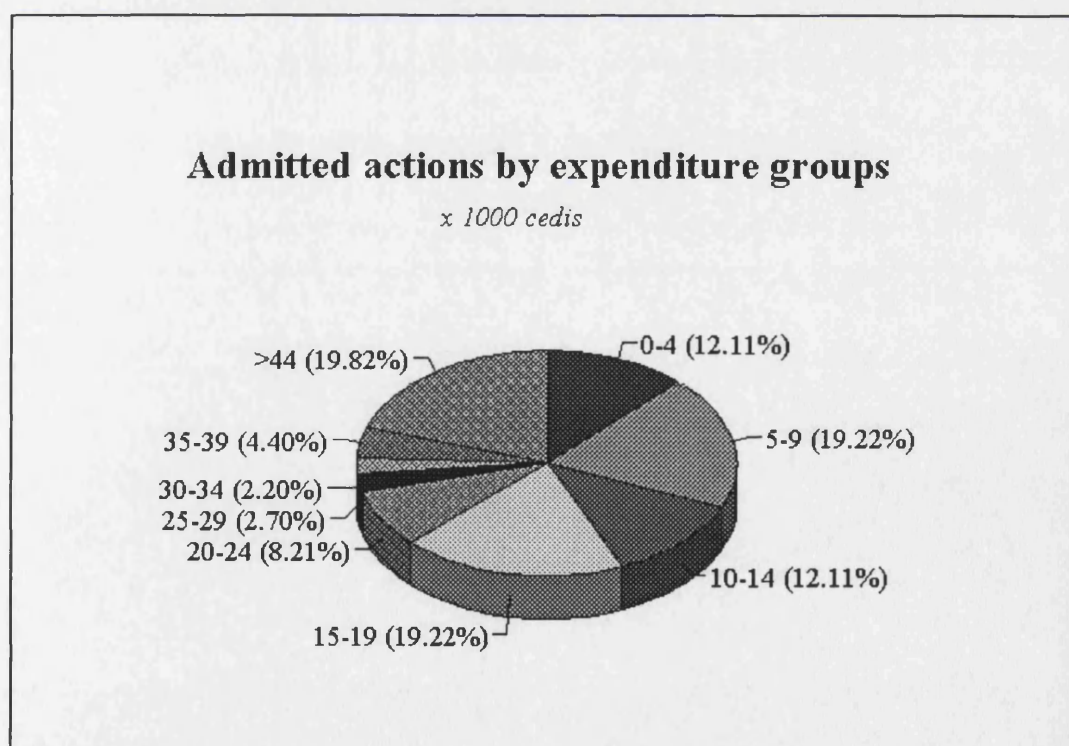
**Figure 7.5**



**Figure 7.6**



**Figure 7.7**



**Figure 7.8**

### Expenditure on actions involving different health care facilities

Tables 7.6 and 7.7 show the mean and standard deviation of expenditures for non-admitted and admitted respectively for different health care facilities. At 95 percent confidence level there was no statistical difference in the mean total expenditure per action in Battor and Akuse Hospitals. For example the mean expenditure on consultations and drugs per admission in these two facilities was almost identical: c14,256 in Battor and c14,702 in Akuse.

Table 7.6 Expenditure per Non-admitted action in 2, two-week recall periods (c1000)						
<i>Health facility type</i>	<i>Drugs and consultation</i>		<i>Transport</i>		<i>Total</i>	
	mean	Std. Dev	mean	Std. Dev	mean	Std. Dev
Akuse Hospital	3.112 (n=87) <sup>18</sup>	1.905	0.318 (n=91)	0.787	4.072 (n=83)	2.452
Battor Hospital	3.172 (n=118)	2.154	1.4 05 (n=121)	2.478	5.531 (n=118)	4.163
Local health Centre	2.316 (n=6)	0.828	0.166 (n=6)	0.408	2.483 (n=6)	1.116
Volu Health Centre	2.555 (n=20)	1.506	0.200 (n=20)	0.695	3.000 (n=20)	2.011
Asutura MCH Clinic	2.375 (n=8)	2.152	0. 000 (n=7)	0.000	2.800 (n=7)	2.516

<sup>18</sup> Differences in sample sizes between this table and Table 7.2 are due to missing variables.

Table 7.7 Expenditure per admitted action in 2, 6 month recall periods (c1000)						
<i>Health facility type</i>	<i>Drugs and consultation</i>		<i>Transport</i>		<i>Total</i>	
	mean	Std. Dev	mean	Std. Dev	mean	Std. Dev
Akuse Hospital	14.702 (n=92) <sup>19</sup>	15.111	1.757 (n=95)	2.927	21.245 (n=85)	20.008
Battor Hospital	14.256 (n=48)	12.907	3.648 (n=54)	5.002	26.393 (n=47)	24.007

### Expenditure by health care type

Table 7.8 shows the mean and standard deviation of expenditures for non-admitted actions by health care type used. Since this table uses the type of care rather than the facilities as the unit of analysis, it provides an indication of the differences in prices encountered when seeking care from different local professionals, non-local non-public providers and self-care. The costs incurred by households with respect to actions of self medication with western drugs were similar to those incurred when an illness was treated without admission at a primary health care facility. In spite of these similar costs, the frequency of self medication as a first action for an episode of illness was twice that of care at a primary health care facility. Although this may have been because minor illnesses were more common than those requiring professional care, it may have been because more time was required for travelling and waiting when attending PHC facilities than when purchasing drugs on the market.

Comparing total expenditure for care at the local hospitals with those of primary health care facilities shows a significant difference, the mean of the former being 61% and 22% greater for admitted and non-admitted actions respectively. Nevertheless, as Table 7.4 showed, aggregating wet and dry season episodes, in 44% of cases care at Battor and Akuse was the first action taken for an illness episode. The costs incurred when care was

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<sup>19</sup> Differences in sample sizes between this table and Table 7.3 are due to missing variables.

obtained from providers outside the mission/government sector and/or outside the subdistrict was similar to that of obtaining care from Battor and Akuse Hospitals.

The total expenditure for an action of obtaining health care could have various components. They included costs for drugs, consultation, transport, other direct costs such as costs of additional purchases including any special diet, and indirect costs such as that of maintaining a relative in the hospital to assist with the care of a patient. Households frequently incurred costs that were in addition to those of drugs, consultation and transport for admitted actions but rarely did so for non-admitted actions. Consequently, in the expenditure tables for admitted actions (Tables 7.7 and 7.9), the costs in the final columns exceed the sum of the second and third columns.

Table 7.8 Expenditure per Non-admitted action in 2, two-week recall periods (c1000)						
<i>Health care type</i>	<i>Drugs and consultation</i>		<i>Transport</i>		<i>Total</i>	
	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.
Self medication with traditional medicine	1.638 (n=57)	2.700	0.083 (n=60)	0.645	2.160 (n=56)	3.748
Self medication with western drug	2.594 (n=235)	2.941	0.757 (n=240)	1.895	3.849 (n=235)	4.245
Local hospital care - Battor and Akuse	3.112 (n=87)	1.906	0.318 (n=91)	2.012	4.072 (n=83)	2.452
Primary Health Care	2.193 (n=46)	1.548	0.133 (n=45)	0.504	2.533 (n=45)	1.891
Others	3.790 (n=63)	3.738	0.848 (n=66)	1.449	5.175 (n=62)	5.375



Table 7.9 Expenditure per Admitted action in 2, six-month recall periods (c1000)						
Health care type	Drugs and consultation		Transport		Total	
	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.
Self medication with traditional medicine	18.900 (n=3)	22.603	2.500 (n=4)	1.732	35.900 (n=3)	43.403
Self medication with western drug	11.920 (n=5)	22.423	.0000 (n=5)	.0000	13.320 (n=5)	25.551
Local hospital care-Battor and Akuse	14.549 (n=140)	14.348	2.443 (n=149)	3.903	23.078 (n=132)	21.568
Primary Health Care	12.875 (n=4)	21.425	1.000 (n=4)	2.000	18.900 (n=4)	32.752
Others	22.615 (n=32)	22.657	3.911 (n=34)	5.743	34.546 (n=30)	31.997

Table 7.10 Mean Expenditure for Drugs and Consultation by Care Type and Age (C1000)								
Health care type	Non-admitted in 2, two-week recall periods				Admitted in 2, 6-month recall periods			
	Children (< 15yrs)		Adults		Children (< 15yrs)		Adults	
	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.
Self medication with traditional medicine	1.310 (n=10)	1.644	1.708 (n=47)	2.884	-	-	18.900 (n=3)	22.603
Self medication with western drug	2.313 (n=76)	1.897	2.728 (n=159)	3.324	-	-	11.920 (n=5)	22.42
Local hospital care - Battor and Akuse	3.094 (n=38)	1.963	3.126 (n=49)	1.876	9.120 (n=51)	5.284	17.660 (n=89)	16.806
Primary Health Care	2.321 (n=28)	1.570	1.994 (n=18)	1.534	-	-	12.875 (n=4)	21.425
Others	4.004 (n=22)	4.518	3.675 (n=41)	3.301	12.437 (n=8)	14.555	26.008 (n=24)	24.070
All	2.574 (n=178)	2.415	2.758 (n=323)	3.321	9.569 (n=59)	5.284	18.430 (n=133)	18.511

Table 7.10 shows the mean expenditures for drugs and consultations for children and adults, by health care types used. For non-admitted actions, irrespective of the type of care sought, the mean expenditures were similar for adults and children. With respect to

admitted actions however, the mean expenditures for adults were approximately twice those for children, and approximately 6 times those for care not involving admission. A greater preference for adult health insurance cover as compared with children could be explained by these differences. The relatively high expenditures associated with adult admissions may be an important factor that encourages higher WTP for adults' insurance cover than for children.

## HOUSEHOLD INCOME AND EXPENDITURE ON HEALTH ACTIONS

Household Income and Wealth respectively. The upper income for the lowest quintile was c120,000 and the lower income for the highest quintile was c600,000 giving an inequality ratio of 5.0 (600/120). The income inequality is graphically represented in figure 7.9 by a Lorenz curve.

The graph (Figure 7.9) shows that the relative income share of the poorest quintile is approximately 8%. This is comparable to that reported by Fabricant for a rural area in Sierra Leone (Fabricant 1992). However, this level of inequality is less than that reported for rural and urban areas combined in Ghana in 1988-1989 (World Bank 1993) and is similar to that of some high income countries.

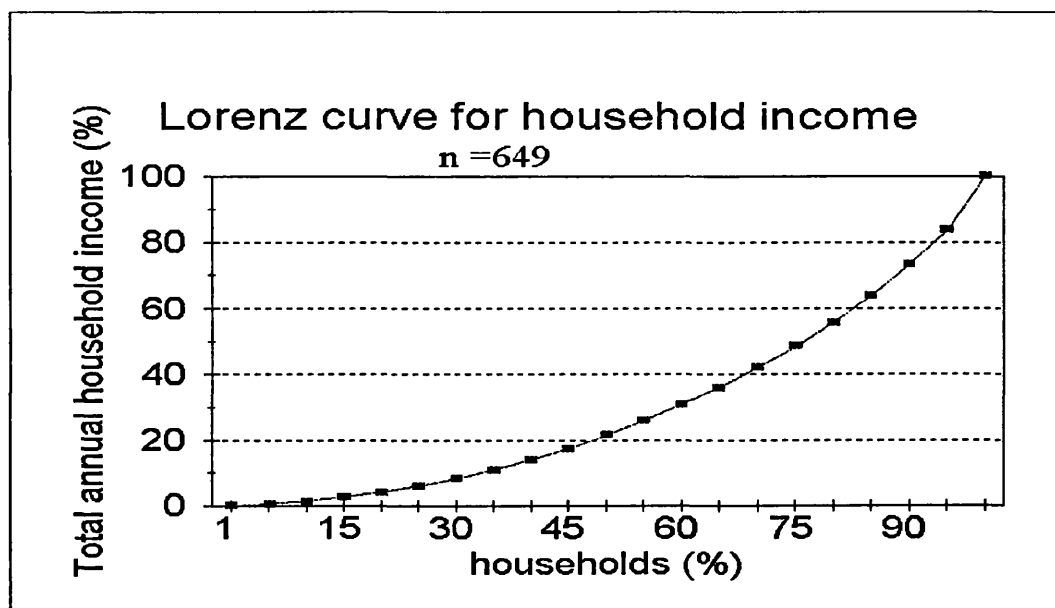
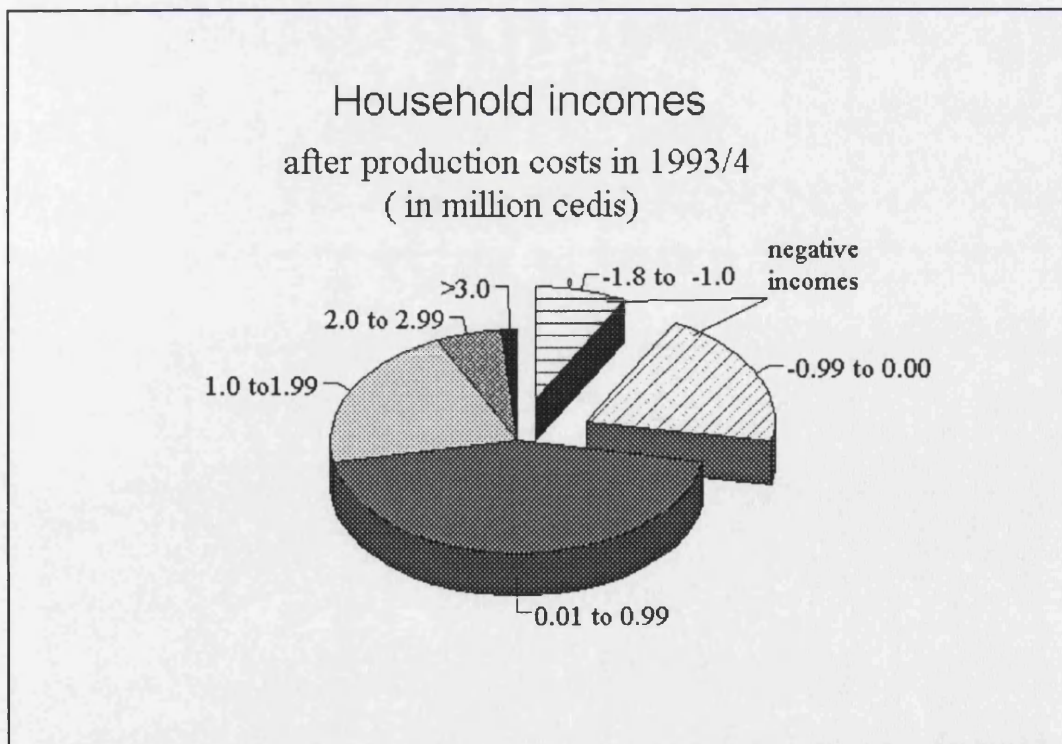


Figure 7.9

Household incomes were assessed using two approaches:

- 1) household heads were asked to estimate the annual income for their households,
- 2) estimations of agricultural outputs were obtained and added to earnings from non agricultural sources such as wages.

Six hundred and forty nine household heads (80% of sample) provided estimates of the annual incomes for their households. The mean annual household income for this self selected sub-sample was c369,800. The mean and modes were c300,000 and 200,000. The "total income after production cost ( $I_a$ )" was estimated for each household and represents resources available for household consumption and savings during the 12 months investigated. Figure 7.10 shows the proportion of households corresponding to different ranges of  $I_a$ . For 98.5% of households  $I_a$  ranged from negative c1.8million (ie household was in debt) to c3.0 million. Twenty eight percent of households had a negative total after the deduction of production costs (see methods section).



**Figure 7.10**

When households were grouped into income thirds on the basis of their stated incomes to give high, middle and low income classes, and also grouped according to a variable describing their most valuable household asset, the two groupings showed a strong association (Table 7.11). This suggested that the income variables were valid. The hypothesis that the most valuable household assets and the income class were independent was rejected (chi-square test  $p < 0.00001$ ). The correlation and the sensitivity between the most valuable asset and the household income class is illustrated by figure 7.11. The probability of the most valuable asset being a vehicle, farming machinery or a commercial property (prob. Veh/prop) or a TV or bicycle increased with income. Households in the high income class were three times more likely to own a vehicle, farming machinery or a commercial property (prob. Veh/prop) than households in other income classes. Although the probability of the most valuable asset being a fan or radio decreased with income the change with income was not marked.

#### Classification of households by income and wealth proxies

Table 7.11 Income Class by Most Valuable Asset					
income class	Vehicle/commercial property	TV/bicycle	radio/fan	none	Row total
high	36	90	27	66	219
					27.1%
middle	16	56	27	95	194
					24.0%
low	12	57	42	128	239
					29.5%
unknown	12	26	15	104	157
					19.4%
column total	76	229	111	393	809
	9.4%	28.3%	13.7%	48.6%	100%
Chi-Square	value	df	significance		
Pearson	76.21224	16	0.00001		
Likelihood	76.38738	16	0.00001		

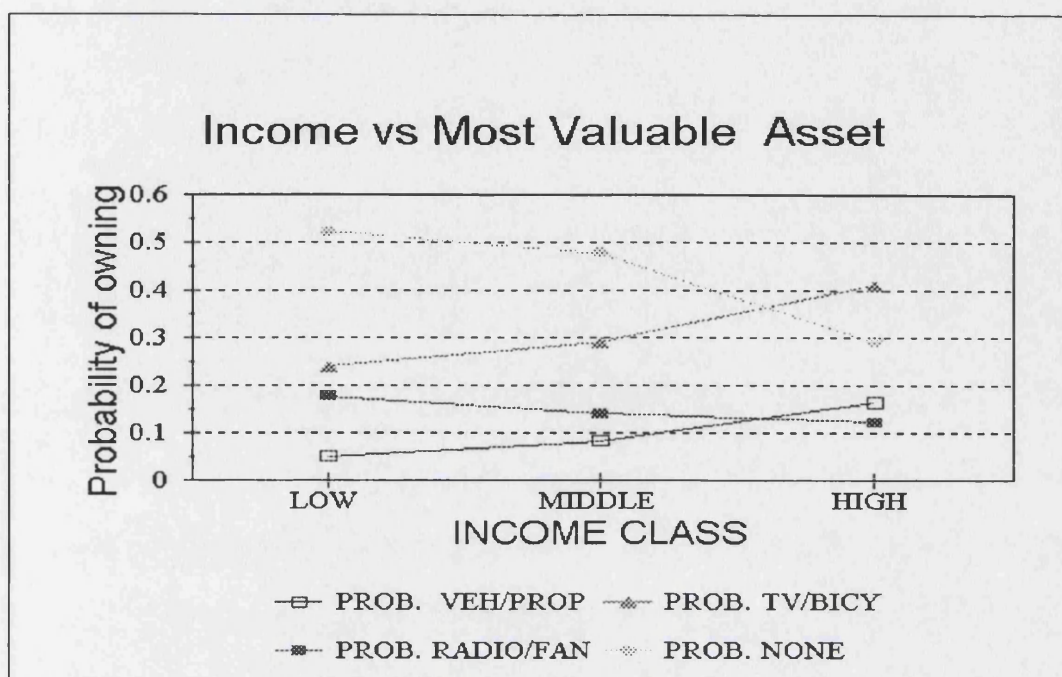


Figure 7.11

#### Transfers of Cash and Goods Into and Out of Households

Thirty five percent of households received cash transfers in the six months prior to the first round of data collection. The transfers ranged from c200 to c150,000 (mean c9,800). The source of transfer was a brother/sister or a child of the household head in 42% and 30% respectively. Friends had transferred cash to 15% of household heads. In approximately 90% of cases the purpose of the funds received was to supplement general costs of living. Transfers to pay health care costs was an infrequent finding. This might suggest that the extended family system is not always able to provide funds when required to hospital and clinic fees and therefore willingness to pay will be high. Although information on cash transfers out of the households was also obtained, some of these were not true transfers but rather represented funds used by the household head to purchase goods and services for other members of the household living elsewhere.

#### Household experience of and expenditure for actions

In a two week recall period 226 households of the 809 sampled had one or more non-admitted actions. The total expenditure on drugs and consultation for these actions was c927,000. On average the households experiencing a non-admitted action spent c4,102



(c927,000/226) on drug and consultation costs. In the 6 months recall period 125 households had one or more admitted actions. The total expenditure for drugs and consultations associated with these actions was c3,766,000 and so on the average the households in which admitted actions occurred, spent c30,128 (c3,766,000/125) on drugs and consultation. The estimates of household risk and average losses are shown in Table 7.12 below.

Table 7.12 Drug and consultation expenditure associated with illness related actions (cedis)				
	total drug and consultation expenditure	households involved	household risk	average loss
Non-admitted actions	927,000	226	0.279*	4,102
Admitted action	3,766,000	125	0.1545**	30,128

\* monthly risk : see p158 for definition

\*\* annual risk : see p158 for definition

Table 7.13 shows the average household expenditure (for drugs and consultation in one month) by income class, for outpatient care among households in which outpatient episodes occurred. Households with “high incomes” (above c420,000) spent an average of c 4,646, as compared to c2,589 spent by “low income” households (below c200,000) respectively. There was no significant difference between high and middle income groups in this respect. The average annual expenditure for inpatient care was highest among the low income households whose members were treated as inpatients.

Table 7.13 Household income and expenditure for OPD and inpatient care by income group

(a) income group	(b) households No      Mean income (c x1000)		EXPENDITURE ON DRUGS AND CONSULTATIONS (c x 1,000)			
			(c)		(d)	
			expenditure for opd care*		expenditure for inpatient care**	
			mean	Std Dev.	mean	Std Dev.
“Low” =<c200,000	237	121	2.589 (n=59)	2.906	40.604 (n=22)	33.134
“middle” c200,000-420,000	193	322	4.742 (n=52)	5.829	27.417 (n=29)	17.491
“High” >420,000	219	680	4.646 (n=69)	5.638	34.136 (n=38)	26.283
unknown	160		3.560 (n=46)	5.522	23.773 (n=36)	28.833
Total	809		4.102 (n=226)	5.194	30.127 (n=125)	29.777

\* in a four week period    \*\* in a one year period    n = number of households in which actions occurred

Table 7.14 presents the expenditure on drugs and consultation per non admitted action for those illness episodes reported to have occurred in the two 2-week recall periods, and for which respondents were able to provide expenditure information. The low income patients had the lowest mean expenditure on drugs and consultations for self medication with western drugs, hospital care and others. However, where the health care consumed involved self medication or primary health care the middle income group had the lowest means. In Table 7.15 the mean expenditures on drugs and consultations for illness reported in the same recall periods are presented for admitted actions and they range from c29,173 to c37,650 for care received at the two local hospitals Battor and Akuse. The highest mean occurred among those households in which the income was unknown. In the twenty-three actions in which the health care type was “others” the range was c 23,900 to 59,542 and the low income group had the highest.

Table 7.14 Expenditure on drugs and consultation per non-admitted action in two week recall period								
<i>Health care type</i>	<i>Low income</i>		<i>Middle income</i>		<i>High income</i>		<i>Unknown</i>	
	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.
Self medication with traditional medicine	1.770 (n=10)	2.128	0.836 (n=11)	1.454	2.047 (n=17)	3.798	1.668 (n=19)	2.422
Self medication with western drug	0.757 (n=21)	0.637	1.996 (n=26)	2.158	1.924 (n=25)	2.030	2.651 (n=45)	5.062
Local hospital care -Battor and Akuse	3.091 (n=24)	1.452	4.048 (n=27)	2.535	4.044 (n=34)	2.184	2.701 (n=120)	1.854
Primary Health Care	2.357 (n=7)	2.312	2.127 (n=11)	1.687	2.333 (n=9)	1.539	1.241 (n=19)	1.241
Others	2.850 (n=10)	1.150	4.133 (n=6)	3.388	5.266 (n=15)	5.121	3.504 (n=32)	3.504
All	2.064 (n=74)	1.731	3.007 (n=82)	3.750	3.173 (n=101)	3.226	2.578 (n=245)	2.956

Table 7.15 Household expenditure on drugs and consultation for admitted actions in 2, two week recall period								
<i>Health care type</i>	<i>Low income</i>		<i>Middle income</i>		<i>High income</i>		<i>Unknown</i>	
	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.	mean	Std. Dev.
Local hospital care - Battor and Akuse	30.940 (n=10)	13.778	29.173 (n=15)	16.469	31.150 (n=24)	19.135	37.650 (10)	46.372
Others	59.542 (n=7)	49.881	23.900 (n=4)	13.628	46.457 (n=7)	49.090	47.800 (n=5)	25.121



## DIFFICULTIES IN PAYING FEES ASSOCIATED WITH OBTAINING HEALTH CARE

Participants in the focus group discussions said that individuals in their communities who were in need of hospital or clinic health care faced the problems of i) insufficient cash to pay fees and transport costs, and ii) unavailable or inadequate transportation. This led to delays in obtaining care and sometimes deaths.

“We try to care for the sick person at home for a while because we do not have the money to go to the hospital”

“We don’t have a clinic nearby so sometimes by the time we get transport to the far away hospital or clinic it’s too late”

“Those who live near to the hospital are always there early in the day and those who come from far away get seen after a long delay”

“There is the lack of transport and the other problem is that the roads are very bad”.

The lack of cash was attributed to the types of occupations in the community and underemployment:

“We are farmers and at times when the season fails us in terms of good rainfall there is a lot of financial problems”

“The money we use in trading is very small so it is not able to bring large profits”.

Eighty four percent of households reported that in the past they had difficulties paying the fees associated with obtaining clinic or hospital care (Table 7.16). Twenty one percent of households reported that this situation had occurred often and 47% had experienced difficulties within the previous six months. Within the previous six months, 23% and 18%

of households had difficulties funding health care expenditures of c100-c5,000 and c5,000-c20,000 respectively. Forty-two households had bills of over C20,000 that they found difficult to pay. The association between experiencing difficulties in paying health care costs and income group was not statistically significant. The Chi-square test accepted independence of these two variables and difficulties in paying to be statistically as common in high income groups as in low income groups.

Table 7.16 Difficulty in Paying Health Fees in the Past

<u>Difficulty in paying frequency</u>	no of households	% of sample
Many times	168	20.8%
Sometimes	348	43.1%
Infrequently	166	20.5%
Never	126	15.6%
<u>Frequency of difficulty in previous 6 months</u>	no of households	% of sample
Difficulties in the previous 6 months	376	46.8%
No difficulties in the previous 6 months	413	51.4%
No answer	3	0.4%
Unable to recall	12	1.5%
Missing data	4	
<u>Level of fees “not afforded” in previous 6 months</u>	no of households	% of sample
Very high fee (c100,000-c500,000)	2	0.2%
High fee (c20,000-c100,000)	40	5.0%
Moderate fee (c5,000-c20,000),	148	18.4%
Low fee (c100-c5,000)	182	22.6%

## SUMMARY OF FINDINGS ON MORBIDITY AND HEALTH CARE EXPENDITURE

The majority of household heads were Christian farmers of whom 45% were members of solidarity groups or associations. Approximately a third of households experienced illness that they treated as outpatient cases in 2, two-week recall periods. In 15% of households one or more members received inpatient treatments for illness. In the wet season frequency of self medication as a first treatment choice was equal to that of care at the local hospital but in the dry the hospital treatment as a first choice was almost three times more frequent than self medication. Mean total expenditures arising from self medication and care at the local hospitals were similar and were greater than those paid to PHC facilities and smaller than the costs of seeking care outside the mission/government sector or outside the subdistrict. Expenditures incurred with self medication with traditional medicine were not different from the expenditure for care in PHC facilities.

The average household expenditure (for drugs, consultation and transport) for episodes of illness treated as outpatients increased with the income level of the household. However, the average expenditure for inpatient care was not significantly different for the different income groups. Almost half of the households had experienced difficulty in paying health care costs during the six months prior to the study.

## Chapter 8: Willingness to Pay Findings, Affordability and Revenue Predictions

### INTRODUCTION

The first part of this chapter is devoted to willingness to pay results and qualitative findings about the characteristics of a rural insurance scheme preferred by the study population. Providing such data fulfills the first objective of the fieldwork in Ghana “to determine the preferred specifications of community-based risk sharing for health care and the “Willingness to Pay” - WTP (the maximum premiums/contributions that households would be willing and able to pay)”, stated in Chapter 4.

The chapter also focuses on two other stated objectives of the Ghana study, which are:

- a) to estimate two sets of fair community rated premia using different approaches;
  - i) with the aim of obtaining a contribution revenue equal to the total revenue currently raised from user fees and drug fees from the population, and ii) with the aim of obtaining a contribution revenue equal to a stipulated percentage of the cost of providing care at specified facilities to members enrolled in the insurance schemes;
- b) to estimate the external subsidy from government and/or donor agencies that may be required to make the preferred schemes financially viable.

Calculations of the fair community premiums using the two approaches described above rely on estimates of the proportions of the households who would seek western type health care annually, if such care were physically accessible and affordable (the community risk). Chapter 7 provided estimates of community risks with respect to outpatient and inpatient care and these estimates are combined with the average household financial loss associated with ill health to arrive at one set of fair community premiums. (These financial losses were also calculated and presented in Chapter 7). The second set of fair premiums, using approach b, combines the community risk with health facility treatment costs presented in this chapter.

The affordability of the premiums calculated using the above approaches can be assessed by relating them to the WTP stated by household heads. Some households' WTPs will be below the estimated premiums, and therefore a trade-off between achieving the revenue objectives underlying the premium calculation and making the premium affordable to the majority of households, will be required. Finally, to explore the need for subsidies from government to sustain the scheme, the willingness to pay data is then used to predict affordability and revenue implications associated with each premium.

## PERCEPTIONS ABOUT HEALTH INSURANCE

A key finding of exploratory discussions was that the term "Health Insurance" appeared to be unfamiliar or not understood as a risk sharing mechanism by people in the study communities. This may partly be because, in the absence of clear descriptions and/or definitions by the mass media when reporting the debates surrounding the possible introduction of a national health insurance scheme, people had adopted a variety of different meanings. However, in spite of the marked differences in the descriptions of "Health Insurance" given by members of the communities, most considered it to be a product purchased mainly by the urban elite. Risk sharing arrangements that were familiar to the communities were conceptualised and described as being solidarity schemes, ie "associations of people who assist each other in events of specific needs".

## WILLINGNESS TO PAY FOR FREE ACCESS TO EXISTING CARE: ROUND 1

Almost all household heads (98%) said they would be willing to pay an annual premium/contribution to obtain free access to existing locally available care, at the time of need, for all persons in their households. Figures 8.1, 8.2 and 8.3 show the amounts households heads were willing to pay to have access to existing care types (ie to obtain different health insurance benefits). Demand is expressed in 1000s of cedis per year that the household was willing and able to contribute to be a member of an association that entitles its members to different care benefits. The benefits differed in the type of care covered (outpatient only and inpatient only), and in the provider (Battor Mission Hospital,

Akuse Government Hospital, health posts and the nearest community clinic).

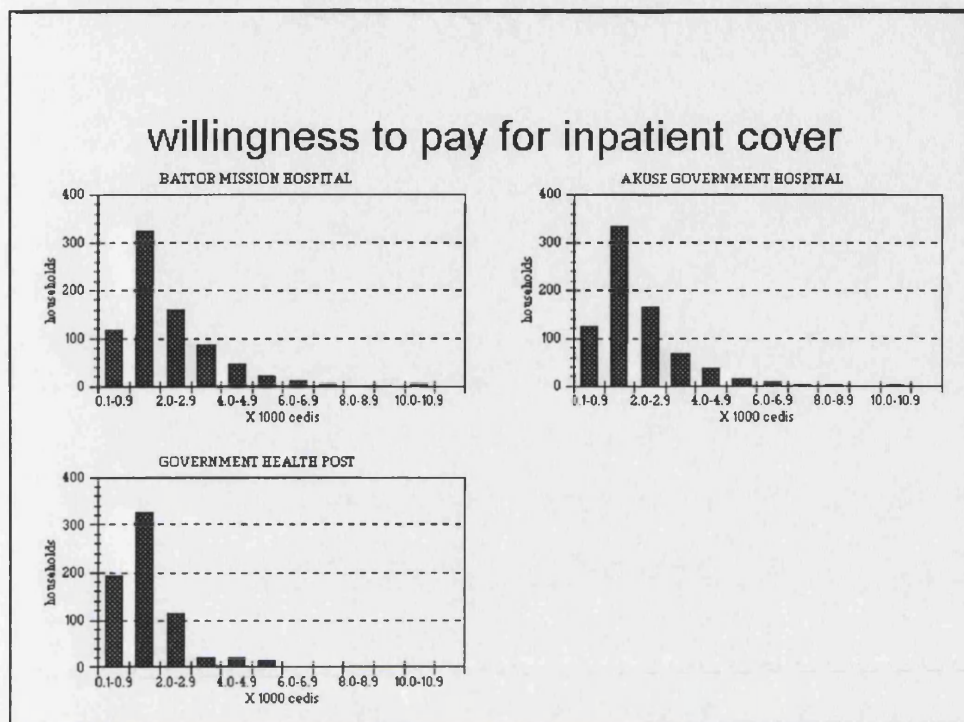


Figure 8.1

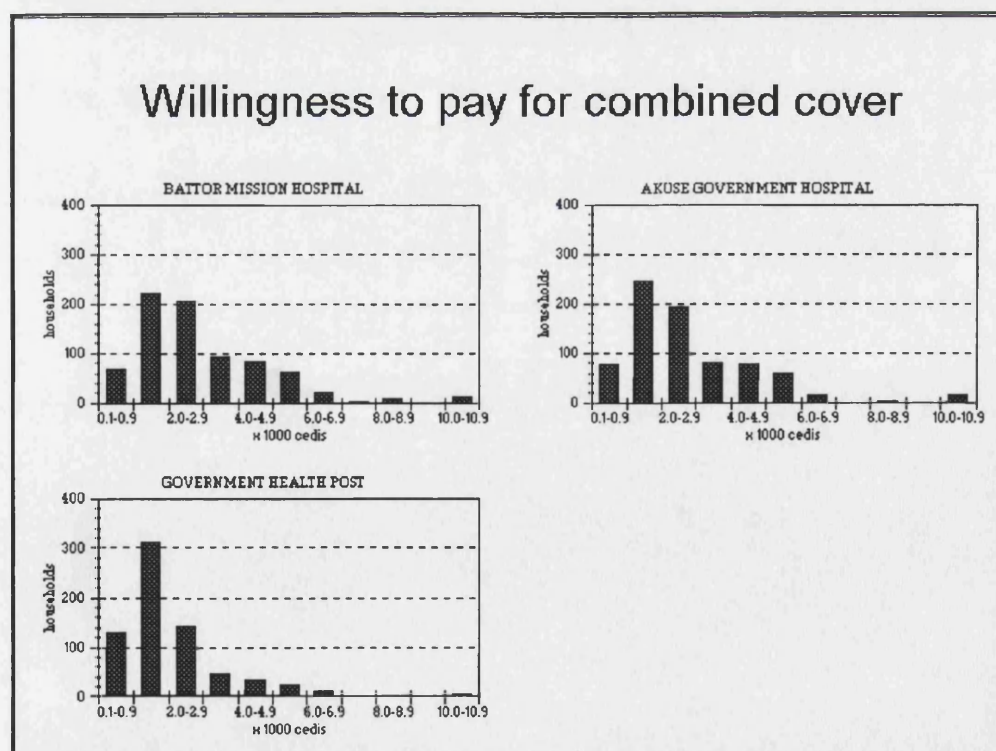
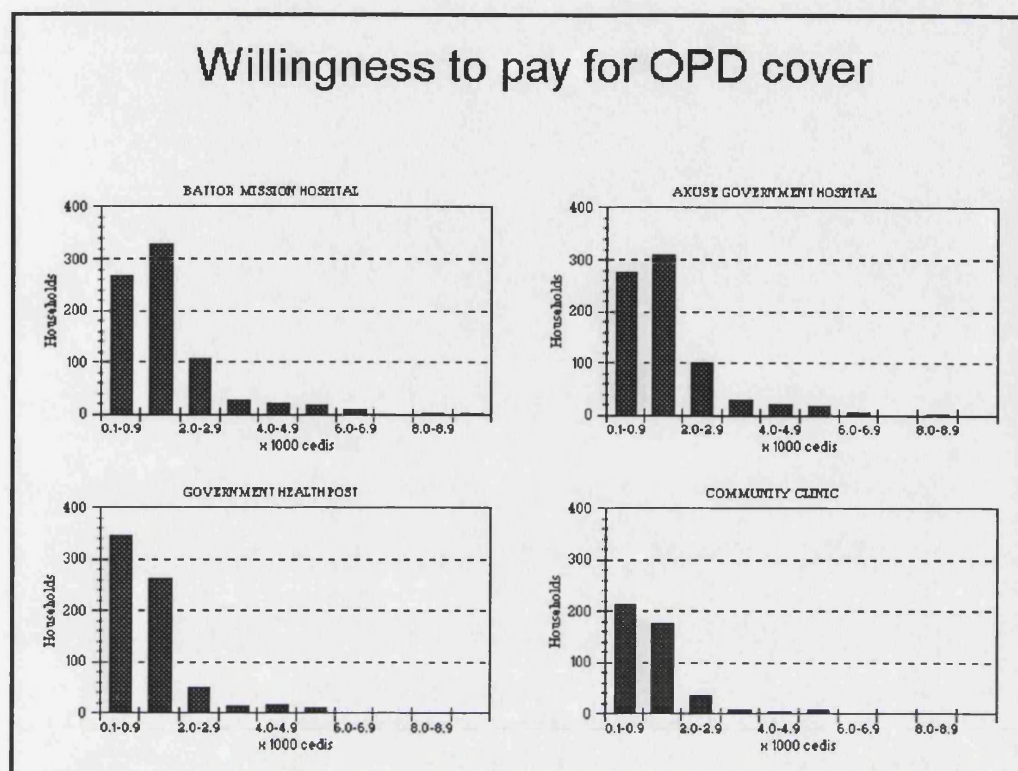


Figure 8.2



**Figure 8.3**

Approximately 20% of households did not state a demand in terms of money that they would be willing to pay for membership that provided free treatments at health posts only and, similarly, 20% did not state a demand for membership that provided combined outpatient and inpatient care at Akuse hospital<sup>20</sup>.

#### WILLINGNESS TO PAY FOR PROPOSED HEALTH INSURANCE COVERS: ROUND 2

Each household respondent was given descriptions of three hypothetical goods - three health insurance options linked to membership of an association. He or she was also given some details of the hypothetical market for these goods, in particular that payment is by instalment and that management of the clinic providing the care under the insurance cover would be undertaken jointly by members of the association. The three options described

<sup>20</sup> This was difficult to understand since there was not a similar percentage of household heads who expressed zero/"non demand" for inpatient-only or outpatient-only packages provided at Akuse hospital.

were (see page 4 round 2 questionnaire):

- a) clinic outpatient care that satisfied the conditions specified during the focus group discussions (see Preferences Associated with WTP values below);
- b) inpatient care at Battor Hospital;
- c) clinic outpatient care as in (1) combined with inpatient care at Battor Hospital.

The respondent was then asked to state the maximum that he or she would be willing and able to pay per adult and per child - that is their demand for each cover option provided to an adult and a child in their household. Table 8.1 shows the mean, mode and median of these WTPs and the mean, mode and median implied household contributions, calculated from the age composition of the respondents' households. The respondent was then provided with an average annual risk of requiring OPD care and hospital admission for an adult and a child in the community. This risk was estimated as the average frequency of treatment-seeking actions in the first round. He or she was also given the average expenditure for outpatient and inpatient care for an adult and for a child, again these were estimated from the data collected in the first round. Finally the respondent was asked to state the maximum that he or she would be willing and able to pay - that is their demand for each type of cover in the light of the new information they then possessed.

The percentage of household heads who revised their WTP per adult for options after they had been provided with the frequencies of illness and the average expenditure per illness obtained in round 1 of the survey were: outpatient at a clinic, 21%; inpatient care at Battor Hospital, 17%, and outpatient at the clinic/inpatient at Battor Hospital, 12%. The corresponding percentages for WTP per child were 24%, 18% and 12%. Although the majority who revised their WTP did so upwards, the increases were modest and the effect on the overall pattern of WTP for the groups was insignificant.



Table 8.1 Willingness to pay for different benefit options

insurance cover type	mean willingness to pay (mode, median) cedis x 1000		implied per household
	per child	per adult	
OPD at clinic (option a)	2.5 (1.0, 1.5)	3.67 (2.0, 2.4)	13.09 (12.0, 9.0)
inpatient at Battor Hospital (option b)	4.33 (2.0, 2.1)	7.84 (6.0, 4.1)	23.07 (8.0, 13.0)
OPD and inpatient at Battor Hospital (option c)	5.22 (2.0, 3.2)	7.84 (6.0, 5.2)	28.18 (12.0, 15.0)

Table 8.2 WTP for individual for insurance option c (1,000)

income group	mean		mode		median	
	child	adult	child	adult	child	adult
high	5.224	8.439	3.000	6.000	4.000	6.000
middle	6.551	9.059	2.000	5.000	4.000	7.000
low	4.621	6.870	1.000	2.000	3.200	5.150
unknown	4.250	5.150	2.000	3.000	3.000	6.000

The central measurements for the willingness to pay results were all lowest for the low income group. It was however common for the mean and median to be higher for the middle income group than the high although the difference was often not statistically significant. This overall picture is illustrated using the WTP per adult and per child for insurance option c (Table 8.2).

Table 8.3 WTP per individual for insurance option c (1,000)						
sex of household head	mean		mode		median	
	child	adult	child	adult	child	adult
Female	4.039	6.175	3.000	6.000	3.000	5.000
Male	5.893	8.791	5.000	10.000	5.000	7.000

Thirty four percent of household heads were females (Table 8.3). Their mean WTP for adults and children were lower than male heads, the difference being statistically significant ( $p < .001$ ) and smaller for children than for adults. Since females in the sample were less educated than males and there was some correlation between education and income, this finding was probably the combined effect of education and income.

Table 8.4 WTP per capita for insurance option c						
household heads level of education	mean		mode		median	
	child	adult	child	adult	child	adult
Professional	7.171	10.706	1.000	5.000	5.000	9.000
Secondary/vocational	6.605	9.263	4.000	6.000	5.000	8.000
Primary /middle	5.329	8.052	3.000	5.000	4.000	6.000
none	4.737	7.173	2.000	4.000	3.400	6.000

The median WTP for different options increased with the education level of the head of the household (Table 8.4). For adults, household heads who attained secondary or vocational school were willing to pay almost 50% more than household heads who had receive no schooling. Although increased knowledge of the concept of insurance among the educated may account for this finding it may also be the effect of income since households with higher education are more likely to have additional sources ie from formal employment. The modes however did not show an association with the level of education. For all educational groups the WTP central values were higher for adults than children.

Table 8.5 WTP per capita for insurance option c						
Response to “past difficulty in paying for health care?”	mean		mode		median	
	child	adult	child	adult	child	adult
many times	7.698	10.570	2.000	5.000	5.000	8.000
sometimes	4.247	6.857	3.000	6.000	3.000	6.000
infrequently	3.816	6.337	2.000	4.000	3.000	5.000
never	6.617	9.045	5.000	6.000	4.500	8.000

Households heads who reported having had difficulties paying health care charges “many times”, had the highest mean WTP for children and adults (see Table 8.5) compared with households who sometimes, infrequently or never had such difficulties. The next highest group mean was that of the group who said they never had difficulties. It is understandable that households who have already found constraints in meeting health care bills may be more willing to purchase health insurance cover. The relatively high willingness of those who have never faced such problems is likely to be due to an income effect (“never” households are likely to be wealthiest).

## PREFERENCES ASSOCIATED WITH WTP VALUES

The expandatory focus group discussion confirmed the findings of the household survey, that household heads overwhelmingly preferred the option of making regular membership payments to a solidarity association that provided protection against financial consequences of ill health rather than pay out of pocket user charges at the time of illness. In addition these discussions produced the consensus that such an association should be locality-specific/decentralised and should have direct managerial and financial links with the health facilities that contracted to provide health care to association members.

The focus groups envisaged that the association would set its annual membership dues equal to or above the percentage of the expected average costs of health care per household to be borne by the consumer. The association, by investing membership contributions in local health facilities, would act as a co-financier of government health

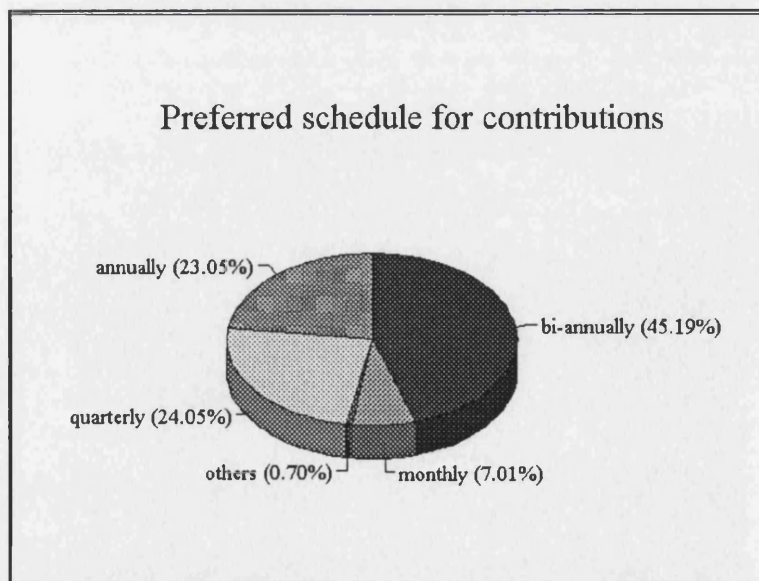
facilities in the district and provide a risk sharing mechanism for its members.

#### Conditions required for Willingness to Pay

The money contributions that households were willing to make were on the condition that the plans gave access to health care of acceptable quality. The indicators of quality used by the focus groups were, the availability of drugs at facility dispensaries, the availability of basic equipment for physical and laboratory examinations and the expedient and friendly response of health staff to patients. The staff are expected to be professionals rather than trained community members. Proximity of the participating health facility to household residence was the factor that would most influence household heads' decision to select a particular facility-linked health insurance plan. Thus the facilities available to association members must be geographically located to provide acceptable accessibility to the majority of the districts' population.

#### Schedule of payment

The most preferred schedule of payments was bi-annually. Figure 8.4 shows the percentage of households that selected each of the payment schedules. Forty five (45%) of households preferred to make payments bi-annually, 24% quarterly and 23% annually. Only 7% selected monthly payment as their preferred option.



**Figure 8.4**

## COST OF OUTPATIENT AND INPATIENT CARE AT A REPRESENTATIVE MISSION HOSPITAL

Holy Family Hospital, Berekum's expenditure data for 1992 financial year was adjusted for inflation and used to calculate the total and the non-salary recurrent cost of each OPD and inpatient episode (Table 8.6)<sup>21</sup>.

Table 8.6 Cost of Outpatient and Inpatient episodes at a Representative Mission Hospital (Holy Family Hospital Berekum, Ghana)

Patient numbers		
new OPD cases	52,973	
OPD re-attendances	12,903	
total OPD	65,876	
admissions	7,691	
total cases	73,567	
% reatt. OPD	0.196	
% new OPD	0.804	
Expenditure	cedis 1992	cedis 1993
total expenditure	274,500,904.00	356,851,175.20
total personal emoluments	148,203,416.00	192,664,440.80
non salary expenditure	126,297,488.00	164,186,734.40
Unit costs		cedis 1993
non salary recurrent cost per new OPD		398
non salary recurrent cost per reattend OPD		1,593
non salary recurrent cost per admission		15,932

Studies in another low income African country, Malawi, by Adu Boahene, Mills and others have shown the relationship between recurrent cost per OPD visit and inpatient

<sup>21</sup> Attempts to use similar data from Battor Hospital to obtain unit costs per patient were unsuccessful because of the difficulty of obtaining the value of donated supplies. Data of the inputs in providing care for a sample of patients from this hospital has been collected and will also be used to calculate unit costs.

admission to range from 1:34 to 1:55 (Mills *et al* 1993)<sup>22</sup>. Applying the mean of the ratios found in six Malawian hospitals to the expenditure and patient numbers in Berekum Hospital in 1993, gave the non-salary recurrent cost per new outpatient visit, reattendance outpatient visit and inpatient admission as c398, c1,593, and c 15,932 respectively. In these calculations it was assumed that a reattendance was four times more expensive than a new OPD because this was the approximate relationship observed for a small sample of patients attending Battor Hospital.

## AFFORDABILITY AND REVENUE IMPLICATIONS OF TWO LEVELS OF PREMIUMS

A health insurance scheme in Dangme-West could set premiums/annual contributions to achieve one of the following objectives:

1. to obtain a total contribution revenue equal to the total revenue currently raised from user fees and drug fees from the population;
2. to obtain a total contribution revenue equal to a stipulated percentage of the cost of providing care at specified facilities to members enrolled in the insurance schemes.

The premiums obtained from either of these approaches must then be related to the WTP stated by household heads. Since some households' WTPs will be below the estimated premiums, a trade-off between achieving the objectives and making premiums affordable to the majority of households, will be required. The next section considers the affordability and the revenue consequences of each of these approaches in order to assess the financial feasibility of an insurance scheme in the study area.

- 1 Estimating fair household premiums such that the total contribution revenue equals the current revenue from user fees, makes use of the average household risk (ie a community based risk) and the average value of the loss. This premium is equivalent to the expected value of the loss/expenditure per household. It is

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<sup>22</sup> Similar data for Ghana was not available at the time of the study.

calculated as follows:

For OPD only cover:

$$P^1_{\text{opd}} = R_{\text{opd}} \times V_{\text{opd}}$$

Where

- $P^1_{\text{opd}}$  = annual household " revenue recovery " premium for OPD cover  
 $R_{\text{opd}}$  = average household risk of requiring OPD care in a year  
 $V_{\text{opd}}$  = average value of loss, that is the average expenditure for households that require OPD care.

In a four week period, consisting of two weeks dry and two weeks wet season, out of a sample of 809 households, 226 had a positive OPD experience, the average monthly household risk for OPD being  $(226 / 809) = 0.279$ .

The total consultation and drug expenditure for the non-admitted, incurred by the 226 households, was c927,000. The average value of the loss associated with a positive OPD experience was  $c927,000 / 226 = c4,102$ .

Therefore

$$P^1_{\text{opd}} = 0.279 \times 12 \times c4,102 = c13,733$$

For inpatient admission cover only

$$P^1_{\text{inp}} = R_{\text{inp}} \times V_{\text{inp}} = (125 / 809)(3,766,000/125) = 0.1545 \times 30,128 = c4,655$$

Where

- $P^1_{\text{inp}}$  = annual household "revenue recovery " premium for inpatient admission cover  
 $R_{\text{inp}}$  = average household risk of requiring admission care in a year  
 $V_{\text{inp}}$  = average value of loss, that is the average expenditure for households that required admission

The household risks of opd and admission are overstated in these estimations because all current levels of self medication are included as occasions where formal treatment at clinic or hospital will be sought. However this over-estimation may partly be cancelled out by the effect of moral hazard.

The total annual premium for health providers to recover the current consultation fees and drugs costs paid by the population would be c18,388 for an average household. This "revenue recovery annual premium" exceeds the mode and median annual willingness to pay (WTP) for option c. For associations that ensured OPD at a clinic and inpatient care at Battor Mission Hospital, the mean and median WTPs per adult were c7,840 and c5,200 respectively. The WTPs per adult and per child stated by households, taken in conjunction with the age composition of households, make it possible to derive the mean and median household WTP of c28,180 and c15,000 respectively (Table 8.7) and a household demand curve for option c (figure 8.5). For a district with a population of 150,000 (27,270 households) the household demand curve, derived from the willingness to pay findings, indicates that the expected household participation rate would be approximately 45% percent, and thus the expected revenue approximately c220,000,000 (figure 8.5).

**Table 8.7 Willingness to pay and premium levels**

insurance cover type	mean willingness to pay (mode, median) cedis x 1000 per household	household "revenue recovery" premium <sup>a</sup>	household "cost recovery" premium <sup>b</sup>
OPD at clinic (option a)	13.09 (12.0, 9.0)	13.73	-
inpatient at Battor Hospital (option b)	23.07 (8.0, 13.0)	-	2.71
OPD at clinic and inpatient at Battor Hospital (option c)	28.18 (12.0, 15.0)	18.38	5.04
<sup>a</sup> premium providing a contribution revenue equal to current health fees paid to all providers <sup>b</sup> premium providing full recovery of non-salary recurrent costs			



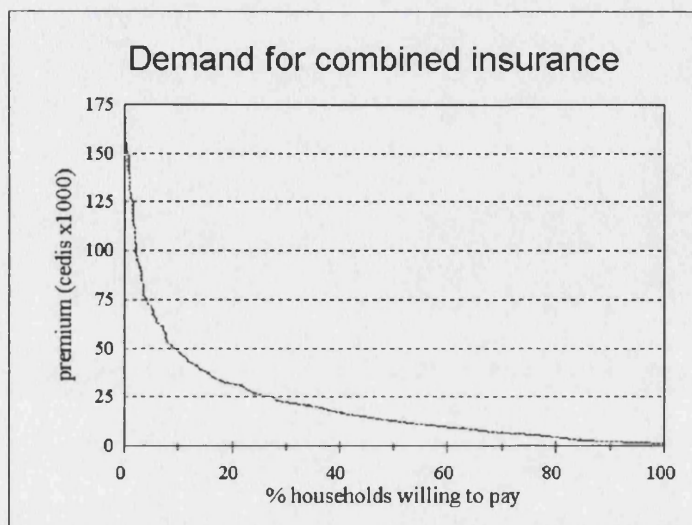


Figure 8.5

Figures 8.6 and 8.7 show the demand curves for options a and b.

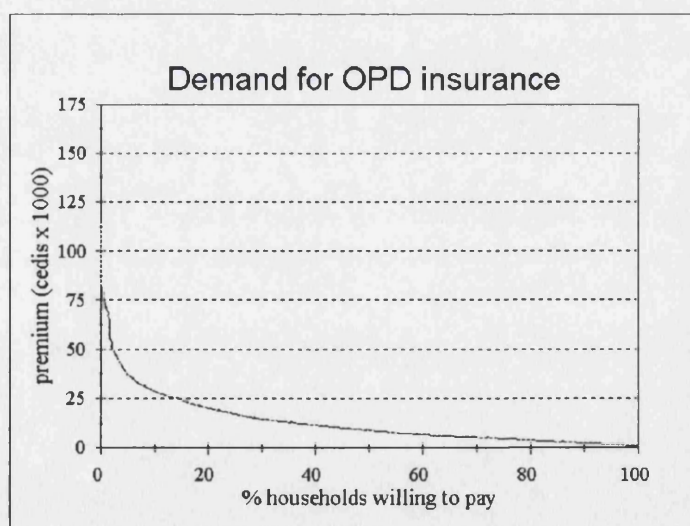
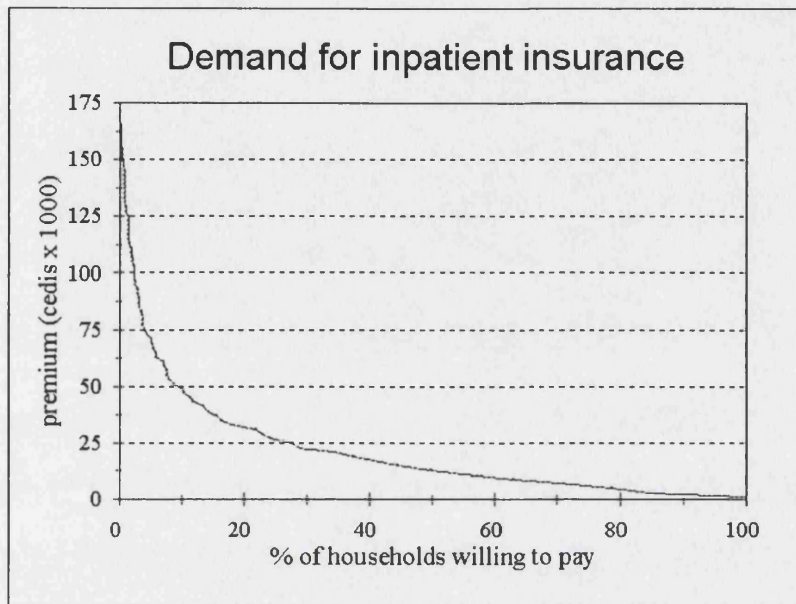


Figure 8.6



**Figure 8.7**

- 2 Estimating fair household premiums such that the total contribution revenue provides 100 % nonsalary recurrent cost recovery of outpatient (OPD) costs and 100% non salary recurrent inpatient costs (using Berekum Hospital as representative provider). Using the basic cost data from this hospital, it is possible to calculate the premium that would be required per household to provide cost recovery. The widely quoted highest cost recovery rate achieved in Ghana is 15% of the recurrent cost of the Ministry of Health. For the illustration below, the cost recovery objective has been set at 100 % recovery of non-salary cost for OPD and 100% recovery of non-salary costs for inpatients at Berekum hospital.

For OPD only cover

$$\begin{aligned}
 P_{\text{opd}}^2 &= R_{\text{opd}} \times V_{\text{opd}} \\
 &= 0.279 \times 12 \times \text{c}632 = \text{c}2,120
 \end{aligned}$$

Where

$$P_{\text{opd}}^2 = \text{annual household "cost recovery" premium for OPD cover}$$

$R_{\text{opd}}$  = average household risk of requiring opd care in a year

$V_{\text{opd}}$  = average value of loss, that is the average non salary costs involved in treating an OPD episode, calculated as (% of new OPD x non salary cost per new OPD) plus (% of reattendance OPD x non salary cost per reattendance OPD). Table 8.6 provided these data.

For inpatient admission cover only

$$P^2_{\text{inp}} = R_{\text{inp}} \times V_{\text{inp}}$$
$$= 0.1545 \times \text{c}15,932 = \text{c}2,462$$

Where

$P^2_{\text{inp}}$  = annual household "cost recovery" premium for inpatient admission cover

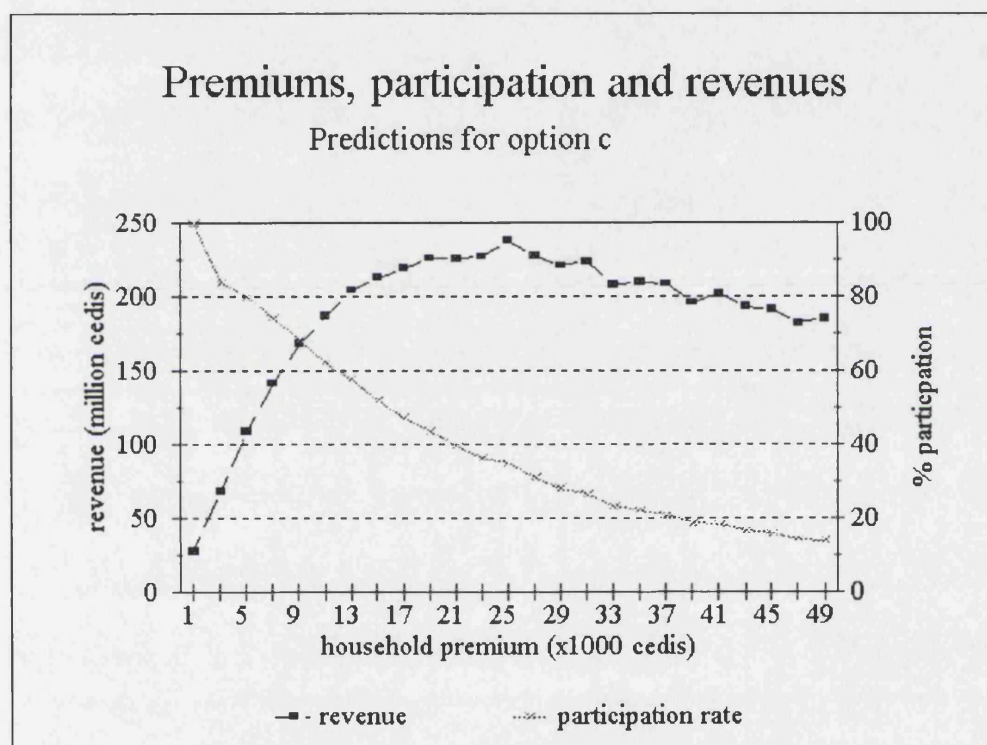
$R_{\text{inp}}$  = average household risk of requiring admission care in a year

$V_{\text{inp}}$  = average value of loss, that is the non salary recurrent cost per admission

As with the calculation of the "revenue recovery", the household risks of OPD and admission are also overstated in these estimations. Again, the reason is that all current levels of self medication are included as occasions where formal treatment at clinic or hospital will be sought. The total annual fair premium for combined outpatient and inpatient cover would be c4,581 per household. It is important to recognize that a fair premium does not include "loading" for administrative costs and profit. Assuming 10% of this will be required for administrative costs, the "loaded premium" for combined outpatient and inpatient cover would be c5,039. These estimates of premiums presume that the type and quantities, and also relative costs of the production inputs used to deliver inpatient and outpatient care are the same as those in Malawi (the unit costs were calculated using ratios observed in this country, see Appendix 4). Secondly, for cost recovery to be achieved the hospital must be used by other communities so that the current average costs are maintained.

For a district with a population of 150,000 (27,270 households) the demand curves, derived from the willingness to pay findings, indicate that at the premium rate of c5,000,

the expected household participation rate would be approximately 80% per cent and the expected revenue c109,000,000 (figure 8.8). This implies that a premium that is affordable to more than 80% of households would recover almost all non-salary recurrent costs. By setting the recovery target at less than 100% of non-salary costs (establishing a trade/off between achieving high revenue objectives and making premiums affordable to the majority of households), the expected participation rate would approach 100% of households.



**Figure 8.8**

The substantial difference between the "revenue recovery" premium and the "cost recovery" premium (the latter is 28% of the former) suggests that the study population is currently paying high health care prices for consultation and drugs due to one or more of the following reasons:

- 1) the unavailability of drugs at government facilities, leading patients to purchase drugs on the open market at inflated prices;
- 2) some households using expensive private health facilities, possibly because of

better quality and/or accessibility;

- 3) some households being charged high “informal” charges at government hospitals.

### Revenue versus participation

Figure 8.8 shows the expected participation rates and, hence, the expected revenues (assuming a district population of 150,000) at different levels of household premiums for option c. The highest revenue is predicted at the premium level of approximately c25,000 and corresponds to a low participation rate of 35% of the population. Above this premium level the total revenue starts to decline along with a falling participation rate.

The marginal rate of increase in revenue starts to decline at a lower level, approximately c11,000, in that the rise in total revenue, as the premium is increased, begins to slow down while the drop in participation remains steep. If both a) revenue from the scheme and b) utilization of health care by individuals and hence participation, enter into the utility function of decision maker(s), then setting the household premium level above c11,000 would not be rational. The fall in participation would not be compensated by the rise in revenue and total utility would start to fall. On the other hand, below this level a particular utility may be obtained with different premiums and therefore different participation rates. The optimum premium will then depend on the relative values of revenue and utilization and hence the relative revenue and participation. Introducing a concern for consumers' own utility and their incomes leads to a lower premium, depending on the inequality of incomes.

The basis for this approach to setting the premium level assumes that the health system decides on the number and type of health facilities to operate, and the services to provide, irrespective of the revenue that can be obtained from consumers. This implies that price does not determine the supply. Starting from this premise, and assuming both revenue and utilization to be part of the utility function of the decision maker, also leads to low user fees (Musgrove 1989).

### Premium verses income levels

The mean household income was c369,800 and the median was c300,200. Table 8.8 shows the mean annual incomes by quintile of the population. These estimates are based on the answers provided by 80.2% of respondents when they were asked to estimate the annual incomes for their households. (The remaining respondents either said they did not know the household income or declined to provide this information.)

**Table 8.8 Annual Household incomes and premium levels**

income group	mean income ( i ) (X 1000 cedis)	"revenue premium" as % of i	"recovery premium " as % of i
lowest 20%	80.84	22.25	6.2
Second quintile	118.61	15.17	4.2
third quintile	310.30	5.79	1.6
fourth quintile	495.30	3.63	1.0
highest 20 %	871.00	2..07	0.6

Table 8.8 also shows what percentage of the mean income for each of the groups is required to pay a) the "the revenue recovery" premium and b) the "cost recovery" premium. For the average household in the lowest 20%, the former premium would clearly be unaffordable and the latter would constitute 6% of the annual income. It is reasonable to deduce that households in this quintile make up the bulk of the 20% whose WTP was below c5,000. This implies that access to the scheme for very poor households could only be achieved by setting the revenue target at less than 100% of non-salary recurrent costs and/or implementing exemption or subsidy mechanisms. One of the suggestions to improve the CAM system, stated by women who took part in the focus group discussions, was to provide exemptions for the very poor and widows.

Almost a third of households were estimated to have had total incomes, after deduction



of production costs, that were negative (figure 7.10) for the 12 months under investigation. So even households in the two highest quintiles, for whom the "cost recovery" premium constitutes less than 4% of annual income, may be unable to purchase cover if the time of registration is after investments in production inputs have already been made.

## CONCLUSIONS OF WILLINGNESS TO PAY AND PREDICTED REVENUES

### Willingness to pay and Affordability

Households in the study had preferences which could be interpreted as conditions attached to their WTP answers. These preferences were in three broad areas; the quality of care provided under the insurance policy, the schedule of premium contributions, and the role of officials managing the scheme with respect to management of the health facilities providing care to insured persons. It was assessed that the affordability of two sets of fair community rated premiums, derived with two explicit revenue goals, differed substantially. The goals were a) to recover the recurrent cost (excluding salary) of the predicted health care consumption of the insured households and b) to extract from each insured household the average annual expenditure for consultation and drugs found in the study. Based on the WTP findings, the premium derived from the former goal was affordable by 80% and that of the latter goal by only 45%.

### Predicted revenues and financial feasibility

The above indicates that a health insurance scheme offering policies at the "cost recovery premium" to the study population would achieve 80% of the non-wage recurrent costs of caring for the households in the district. In view of the financing situation in Ghana, the ability to fund 80% of the non wage recurrent budget from an insurance scheme would be an attractive financing option and therefore when considered in context, the schemes seem to be financially feasible. The prediction is that the scheme would lead to a substantial increase in the percentage of the recurrent budget funded directly by households in the district. This statement is supported by the following observations about health financing in Ghana (see the review of health financing in Ghana in chapter

5); a reasonable extrapolation, is that at the time of the study the percentage of the recurrent budget used on non-wage expenditure was in the region of 45%; user fee revenue, having peaked in 1987 at 15% of the recurrent budget, was 7.9% for 1992, the year prior to the study (MOH, Ghana 1994) and therefore, non-salary recurrent items in MOH districts were funded mostly from the Government budget allocation channelled through the regions. Applying the above reasoning, a health insurance scheme offering policies at the “revenue recovery” premiums to the study population would also be financially feasible. However, it would differ from the first scheme in that it would exclude more than half of the households in the district. The predicted revenue from a “low premium-high affordability and therefore high participation” scenario was 50 % less than that of a “high premium-low affordability and low participation” policy.



## **Chapter 9: Factors Influencing WTP for Health Insurance in Osudoku, Ghana**

### **INTRODUCTION**

The purpose of this chapter is to present the method and the findings of statistical selection of household and household head's variables that determine households' WTP for one of the insurance options in Osudoku. The aim was to choose a small set of models which best explain the WTP valuations as it has been stressed in the literature that a single model is unlikely to dominate all others in all the criteria used to select models and therefore the focus was developing a set of models and not a single model (McCullagh & Nelder 1983). Another objective was to assess the proportions of the variations in the WTP findings explained by these household and household head's variables. A comprehensive and accepted list of explanatory variables for the demand for insurance policies that could be used to evaluate WTP for insurance cover has yet to emerge from the literature. Therefore, it was envisaged from the onset that the analysis would be exploratory.

The impact of uncertainty is likely to be one reason why an established list of independent variables for health insurance demand is currently absent from the literature. Uncertainty affects the utility provided by insurance, making the demand for insurance different from that of demand for other goods. Secondly, the consumer's risk aversion plays an important role but is difficult to measure. In view of these problems, in attempting regression models of WTP, the implicit assumption being made was that all the independent variables for WTP had been collected by the Osudoku study. However, as time and travel costs of obtaining inpatient care for those insured under two of the options did not form part of the data, this assumption was only realistic in the remaining option, option a, (insurance for OPD at a nearby clinic). Hence there was justification for attempting to use the data available to estimate models for option a, but not for the others.

Beside the objectives stated above, the rationale for attempting the econometric analysis included that it would illustrate how the results presented in the previous two previous

chapter could be summarised statistically. Secondly, it was a means of investigating whether or not a statistics-based test of validity and reliability of the WTP findings would support the confidence placed in the findings based on more subjective tests. These subjective tests mainly involved comparing WTP findings with socio economic data to judge plausibility (chapter 7 and 8) and comparing respondent answers to very similar questions (methodological section of chapter 10). It was reasoned that if the objective test indicated that respondents' answers for one option were valid and reliable, then it would be irrational not to assume that this applied to answers given for other options. Consequently, the fact that the constraints of the data made it meaningful to attempt econometric analysis for only one option would not prevent this aim of testing validity and reliability from being realised. Furthermore, limiting the regression analysis to one of the three insurance options accords with the fact that modelling the demand for rural health insurance per se was not one of the objectives of the research.

The first part of the chapter conceptualizes models of WTP and reviews briefly the literature on models of the demand for insurance. The second part presents the regression models of WTP for option a (cover for OPD care at nearby clinic).

## PREDICTORS OF WTP AND MODELS OF WTP/DEMAND FOR HEALTH INSURANCE

The decision about how much to pay for insurance cover in the period  $t$  ( $W_t$ ) depends on price in period  $t$  ( $P_t$ ), the income in period  $t$  ( $Y_t$ ), illness occurrence and health expenditure in previous periods  $t-1$  ( $E_{t-1}$ ), and perceived risk/need in period  $t$  ( $R_t$ ). That is

$$W_t = f(P_t, Y_t, E_{t-1}, R_t)$$

In reality precise measures of perceived risk/need are not available and proxies for this variable must be used instead. Therefore, how much an individual is willing to pay for an insurance cover may also be represented by the following

$$W_t = f(P_t, Y_t, E_{t-1}, (x, p, z)_t)$$

where  $x$ ,  $p$ ,  $z$  are proxies for perceived risk/need.

Since WTP is a measure of demand for insurance, it is useful to consider what models of demand for insurance have been developed. The literature on empirical research in this area emphasizes that the demand for health insurance is conditioned by the insurance status of the consumer (Cameron *et al* 1988). Due to uncertainty, the expected utility of insurance with respect to the consumer's a priori distribution of health states should be included as an independent variable in a joint demand model for insurance and care. The econometric implementation of such a model is difficult. Consequently a recent study in Australia designed to determine whether insurance led to significant overconsumption of services relied on a reduced form model (Cameron *et al* 1988). The authors argued that a "tractable structural model for insurance demand is (therefore) virtually impossible".

Other empirical studies have attempted to model the demand for health insurance in developed countries as functions of co-payment rates and deductibles (Propper 1987). Commonly the researchers are not able to observe individuals' maximum evaluation for an insurance policy and consequently they have modelled the decision to buy or not to buy using logit or probit regressions.

## ESTIMATING WTP MODELS FOR STUDY AREA

### Reliability of WTP data

Model specifications for the demand for non insurance goods, for example health care, have been developed and are widely available in the literature. In addition the variables in these models have been established and are generally readily measured. Therefore in the literature, WTP for such goods is equated to demand, and regressing the independent variable in these models with WTP as the dependent variable is expected to provide a reasonable goodness of fit. The rule of thumb for assessing the reliability of contingent valuation measures for these goods is that the adjusted  $R^2$  for an OLS regression of the

independent variables be at least 0.15 (Cameron *et al* 1995). However, with regard to the demand for insurance, independent variables and their measures have yet to be established and therefore applying this rule of thumb is problematic. The high possibility of measurement errors, for risk aversion in particular, means the adjusted  $R^2$  may be lower than 0.15 even when WTP is reliable and equal to the demand for health insurance cover. Nevertheless, the performance of data on WTP for insurance in this test should provide supportive secondary evidence for evaluating reliability.

#### Conceptualizing a model of household WTP for insurance cover

The starting point of the model is that the decision to purchase insurance cover is dependent upon the indirect utility and expected health care consumption (Cameron *et al* 1983). In developing the model it is assumed that the consumer makes a choice between the two prospects - insurance and no insurance- on the basis of expected utility of the two alternatives. Uninsured individuals may obtain care by paying the full cost out of pocket (user fees). As insurance financed care can only be used in certain states of health (ie illness), the expected utility of no insurance relative to insurance is a function of the expected distribution of states of health.

The expected utility of the two prospects will also depend on the costs and benefits of treatment obtainable in the prospects. In the proposed market the insured person does not gain access to care that is quantitatively different from that accessed by the uninsured person<sup>23</sup>. The difference is therefore in the costs. The uninsured faces the indirect costs, such as transport fares and waiting, and direct financial costs. The insured is constrained by only the indirect costs of seeking care.

The household is assumed to be the choice-making unit because the insurance policies to be offered are household premiums and the health of one member of the household will affect the utility of other members. The WTP variable for each household provides a continuous variable that measures the expected utility of the insurance prospect.

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<sup>23</sup> It could be argued that the insured will have improved quality of care if for example they have access to drugs that are unaffordable to the uninsured but this effect is incorporated in the difference in costs faced by insured and uninsured.

Based on the above outline of the theory underlying WTP, in developing the model it was anticipated that the demand for insurance will be positively related to the level of direct cost (fees for drugs and consultation) faced without insurance. It was also envisioned that the utility of insurance relative to no insurance (WTP) was a positive function of the risk aversion, and a positive function of perceived risk of loss. The perceived risk of loss was anticipated to be positively related to a) the extent to which the mass of the distribution of the health states is expected to concentrate in the set of states for which insured care is available and b) the expected health expenditure in the absence of insurance. Finally, since formal credit is relatively unavailable to these households it was postulated that the ability of the household to cope with unexpected expenditures (the robustness of cash flow) as perceived by the decision maker in the household, would also affect the household's demand for insurance.

From the above conceptualization of WTP, in theory six WTP models could be estimated from the data obtained in the study employing the equation

$$W_t = f(P_t, Y_t, E_{t-1}, (x, p, z)_t)$$

(W<sub>t</sub>) is how much to pay for insurance covers in the period t

(P<sub>t</sub>), is the price in period t

(Y<sub>t</sub>) is the income in period t

(E<sub>t-1</sub>) is illness occurrence and health expenditure in previous periods t-1

(x, p, z)<sub>t</sub>) are proxies for perceived risk/need in period t

The possible models are as follows:

1. for insurance policies to cover adults for outpatient care at nearby clinic;
2. for insurance policies to cover children for outpatient care at nearby clinic;
3. for insurance policies to cover adults for inpatient care at Battor Mission Hospital;
4. for insurance policies to cover children for inpatient care at Battor Mission Hospital;

5. for insurance policies to cover adults for inpatient care at Battor Mission Hospital and outpatient care at nearby clinic;
6. for insurance policies to cover children for inpatient care at Battor Mission Hospital and outpatient care at nearby clinic.

The dependant variable  $W_i$  in each equation would be the amount that households were willing to pay per adult or child for that cover type. For example in the equation for option *a*,  $W_i$  was the WTP per child for free outpatient care at a nearby clinic or WTP per adult for free outpatient care at a nearby clinic. This regression did not require inclusion of the distance of the respondent's home to health facility because although this is a measure of the indirect cost associated with the utility of the insured, since option *a* states "nearby clinic", the distance is a constant for all respondents. The distance however would be an important variable in models explaining WTP valuation for options *b* and *c*, because the cover provided by these options included care only available at one central facility, Battor Hospital. However, the distance from each household to Battor Hospital was not collected and therefore only the regression results for option *a* are presented in this thesis.

#### The data set

Given the above proposed model the research sought to generate a data set that included information on the following measurable variables

- willingness to pay for insurance cover (dependent)
- the household income
- education and sex of household head
- number of adults and children in the household
- illness occurrence (as an indication of perceived risk of ill health)
- past expenditure on health care in a previous month and previous year
- difficulty in paying health care charges.

Proxies were included in questionnaires that attempted to measure variables central to the theoretical model that could not be measured directly. Smoking, immunization of children

less than five years, and past participation in solidarity associations were proxies to measure risk aversion. The perceived "robustness of cash flow" was proxied by the frequency of past difficulty in paying health care fees.

#### Selection process for study area models

Collinearity between some independent variables was considered likely because socio-economic data tend to be associated. Before the econometric analysis, intra- household variables were tested for association. The variables were grouped in the following sets: income, illness occurrence and health expenditure, risk/need proxies, and correlation matrixes were produced for each set. No variable pair correlation coefficient was greater than 0.5.

Models were selected on the basis of theoretical validity, model fit statistics, the outcome of evaluations for heteroscedasticity <sup>24</sup> and the Durbin-Watson test for serial correlation of the residuals (Pokorny 1997). The model fit statistics used were the multiple R, R squared and adjusted R squared, standard error of the estimate, and an analysis-of-variance table. Past expenditure was hypothesised to be an important determinant of WTP and therefore two approaches to specifying this variable were tested.

The two approaches to specifying past expenditure produced two models. For these two models, Table 9.1 shows descriptive statistics for the independent variables and the hypothesised relationship between variable and WTP. In model 1 two variables were used to specify past expenditure variables: a) household expenditure on drugs and consultation for out patient care in the previous 12 months; and b) dummy variable for whether or not households incurred an OPD episode in the previous 12 months. Model 1 was therefore constrained that the expenditure on drugs and consultation for OPD episodes in the period being available and greater than zero. Since in only about 45% of households were both consultation and drug fees for OPD known for the period, the number of observations in the model was significantly lower than the total sample, ie sample = 809 and n=326. In

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<sup>24</sup> Heteroscedasticity refers to situations in which the variances of the disturbance terms are not all equal so that one of the assumptions for the simplest form of model specification is broken.

model 2 this constraint was removed by omitting the former variable and all other variables in the table were used as independent variables; the resulting sample size in model 2 was 633 households.

The hypothesis that WTP depended on income, illness occurrence, health expenditure, and perceived risks of requiring health care meant that many independent variables were used in the model estimations. With the exception of income, the means and the standard deviations were for the constrained and the unconstrained models. The mean income for households in model 1 (ie those who had an OPD expenditure in the previous 12 months) was slightly higher than those in model 2 (households who had and had not had OPD expenditure in the previous 12 months).



Table 9.1 Descriptive statistics of independent variables with hypothesised relationship between variable and WTP

Variable	label	model 1 Mean n=326	Std Dev	Model 2 Mean n=634	Std Dev	Expected sign
income	annual household income+	481.82	348.49	461.58	344.44	either
totdif	health expend. difficult to pay +	392.36	383.97	416.42	382.62	either
age	household head's age	45.55	17.64	43.36	17.21	none*
opdexcd	annual expend. OPDconsult.& drug	6.63	8.50	-	-	+ve
hsize	number of people in household	3.91	2.03	3.68	1.96	none
assdmy	dummy of associations needed	0.98	0.14	0.98	0.12	+ve
christ	dummy Christian household head	0.71	0.45	0.73	0.45	+ve
sexdmy	dummy for male head of household	0.67	0.47	0.67	0.47	none
opdxdm	dummy for positive OPD expenditure in last year	-	-	0.46	0.45	either
memass	dummy for member of saving association	0.49	0.50	0.46	0.49	+ve
adhealth	dummy for member adult healthy compared to other households	0.41	0.4	0.45	0.50	-ve
neverdif	dummy for never had difficulty paying for health care	0.13	0.34	0.15	0.36	-ve
manydif	dummy for difficulty many times in paying for health care	0.21	0.41	0.21	0.40	+ve
secbvdmm	dummy for household educated to level of secondary schooling or above	0.15	0.36	0.15	0.35	+ve
smoked	dummy for household head ever smoked	0.15	0.36	0.14	0.35	-ve
chhealth	dummy for children healthy compared to other households	-	-	-	-	-ve
islam	dummy household head follows islam religion	-	-	-	-	none

+ in thousands of cedis

\* none = no hypothesis to be a determinant (considering evidence from literature review and findings in chapters 7 and 8)

## REGRESSION RESULTS

Tables 9.2 and 9.3 compare models 1 and 2 for WTP for an adult cover and WTP for child cover respectively. Although the pattern of coefficient estimators is largely similar for the two models, the multiple R, R squared and adjusted R squared were slightly poorer in model 2. A third specification (model 3) was also attempted in which variables were picked by a statistical computer package (SPSS) using stepwise selection and is also presented in Tables 9.2 and 9.3. The signs and magnitude of the parameter estimates were similar for several models irrespective of whether they used all the variables or selection of them.

### Model fit statistics

The multiple Rs indicate that correlations between the natural logs of the observed WTPs and the predicted values based on the regression models are low (ranging from 0.35 to 0.45). Similarly, the R squares were low for all the models estimated, their values ranging from 0.11 to 0.18. Although low R squares are to be expected because of the discrete nature of many explanatory variables, they also strongly suggest that variables fully capturing risk aversion and demanders perceptions of differences in the care for insured and uninsured, if this were the case, were important missing variables. From the analysis of variances of the models the overall regression F test rejected the null hypothesis that there is no linear relationship between the WTP for option  $\alpha$ , and the independent variables included in the model. This in turn is strongly suggestive that the WTP observations are reliable though the adjusted R squared exceeded 0.15 in only one estimate.

### Evaluations for heteroscedasticity

To evaluate the models for violations of the assumptions of linearity and equal variance (homoscedasticity) scatterplots were produced (see Appendix 4) (Norusis 1990). A scatterplot of predicted and observed values of natural log of WTP for model 2 showed the distribution around a straight line to be even, suggesting that a linear model was an appropriate choice. On the whole in this model, for observed values of WTP, the range

of predicted values were similar, indicating that the assumption of equal variance was not seriously infringed. When residuals were plotted against the predicted WTP for adult care in model 2 most of the residuals fell in a horizontal band around zero (Appendix 4).

In the constrained model, however, at high observed WTP, the range of predicted values was narrower. This may have reflected the fact that there are possibly maximums that households are prepared to pay for health insurance irrespective of how high positively associated variables rise. In any case it does suggest that heteroscedasticity may have been a problem in the model and that it was probably inferior to model 2.

#### The Durbin-Watson test

This is a test for serially correlated (or autocorrelated) residuals (Kmenta 1986). An assumption of regression analysis is that the residuals for consecutive observations are uncorrelated. If this is true, the expected value of the Durbin-Watson statistic is close to 2. Values less than 2 indicate positive autocorrelation and values greater than 2 indicate negative autocorrelation. For the estimated model the value ranged from 1.726 to 1.903 and therefore autocorrelation was not seen as a problem.

#### Variables Influencing WTP

Although only 14% of household heads had secondary education or above, this level of education relative to lower levels or no education was a strong positive determinant of the observed WTP. Experience of difficulty in paying health care charges, where notable in frequency ie difficulties had been experienced many times, had significant coefficients for all adult and child models estimated. Regarding having never had difficulty paying, it was significant in the unconstrained models. Being a male, rather than a female, head of household was a significant positive determinant of WTP and being a Christian was also significantly positive though to a lesser extent in model 2.

Table 9.2 OLS regression results (adult) showing influence on willingness pay for option a

VARIABLE	MODEL 1 (opd expenditure>0)		MODEL 2 (unconstrained )		MODEL 3 (stepwise selection)	
	Coefficient (b)	SE B	Coefficient (b)	SE B	Coefficient (b)	SE B
annual household income+	-	-	6.304E-05	8.367E-05	-	
annual consult. & drug expend for OPD+	0.008	0.004	-		-	
number of people in household	-0.002	0.022	.007	0.016	-	
dummy of associations needed	0.537**	0.264	0.400*	0.226	-	
dummy for Christian household head	0.176**	0.010	0.148**	0.067	0.161**	0.064
dummy for male head of household	0.451***	0.086	0.278***	0.064	0.295***	0.061
dummy positive OPD expenditure in last year	-	-	-0.041	0.057	-	-
dummy for member of saving association	0.115	0.077	0.070	0.057	-	-
dummy adult healthy compared to others	-0.076	0.079	-103*	0.050	-	-
dummy never had difficult paying for health	0.197	0.124	0.251**	0.087	0.259**	0.085
dummy difficulty many times paying for health	0.307**	0.010	0.380***	0.075	0.389***	0.075
dummy head educated secondary or above	0.348**	0.114	0.348***	0.084	0.362***	0.089
dummy for household head ever smoked	-0.102	0.115	0,066	0.087	-	
health expenditure difficult to pay+	-5.470E-05	1.142E-04	-1.829E-04**	8.452E-05	-1.838E-04***	0.316E-05
household heads age	-6.532E-04	0.003	-0.002	0.002		
constant	-0.072	0.315	0.309	0.263	0.634	0.076
Multiple R	0.457		0.398		0.381	
R <sup>2</sup>	0.209		0.158		0.145	
n	326		633		633	
Durbin Watson statistic	1.72240		1.81073		1.79801	

+ in cl,000 \*p&lt;0.10 \*\*P&lt;0.05 \*\*\*p&lt;0.005

Table 9.3 OLS regression results (child) showing influence on willingness pay for option a

VARIABLE	MODEL 1(opd expenditure>0)		MODEL 2(unconstrained )		MODEL 3 (stepwise selection)	
	Coefficient (b)	SE B	Coefficient (b)	SE B	Coefficient (b)	SE B
annual household income+	-1.245E-05	1.345E-04	-4.460E-06	1.005E-04	-	-
health expenditure difficult to pay +	9.784E-05	1.383E-04	-8.334E-05	1.013E-04	-	-
household heads age	9.738E-04	0.003	9.335E-05	0.002	-	-
annual consult. & drug expend for OPD+	0.005	0.0056	-	-	-	-
number of people in household	3.205E-04	0.026	0.003	0.019	-	-
dummy of associations needed	0.551	0.316	0.454	0.270	-	-
dummy for Christian household head	0.199*	0.109	0.160*	0.080	0.169**	0.076
dummy for male head of household	0.421***	0.104	0.302***	0.077	0.309***	0.073
dummy positive OPD expenditure in last year	-	-	-0.089	0.068	-	-
dummy for member of saving association	0.150	0.093	0.035	0.069	-	-
dummy adult healthy compared to others	-0.204	0.094	-0.213**	0.068	0.199***	0.067
dummy never had difficult paying for health	0.112	0.148	0.246	0.104	0.218**	0.095
dummy difficulty many times paying for health	0.365**	0.120	0.441***	0.090	0.469***	0.086
dummy head educated secondary or above	0.434**	0.139	0.401***	0.100	0.395***	0.098
dummy for household head ever smoked	-0.135	0.138	0.044	0.010	-	-
constant	-0.681	0.382	-0.282	0.314	0.107	0.085
Multiple R	0.404		0.364		0.353	
R <sup>2</sup>	0.163		0.133		0.125	
n	326		630		630	
Durbin Watson statistic	1.90376		1.72612		1.73675	

+ in c1,000 \* p&lt;0.10 \*\*P&lt;0.05 \*\*\*p&lt;0.005

In three of the four estimates where all variables were entered, “adults perceived as healthy compared with those in other households” had a significant negative effect on WTP. When variables were entered stepwise, this variable was a significant explanatory variable of WTP for child cover but not for adult cover. In preliminary estimates the dummy variable “children perceived as healthy compared with those in other households” reduced the fit statistics for all models and was therefore excluded. Another variable excluded for this reason was the dummy variable for household head following Islam.

The results failed to demonstrate that WTP is affected by past expenditures for the type of care to be covered by the insurance, ie OPD expenditure in this model. The significance of the variable, measured by the drug and consultation expenditure, could only be assessed in model 1. Model 1 also differed from others in that a positive answer to the question “are associations that help individuals with costs of funerals and other such unexpected costs needed in this community?” was found to be a significant determining variable of WTP for adult cover. (Apart from these two exceptions the magnitudes of all other coefficients were stable for different specifications.)

Several other statistically insignificant findings are particularly noteworthy. In all models estimated income and household size (number of individuals in the household) coefficients were insignificant in explaining the WTP. In addition being a member of saving and/or solidarity associations did not significantly influence WTP. Current and past smoking of respondents used as a proxy for “risk loving”, though hypothesised to be correlated with willingness to take risk with health and therefore lower WTP, was rejected as a determinant by all the estimated models.

#### Confirmation of a hypothesised relationship between variables and WTP for adult cover

Table 9.4 shows whether or not the hypothesised relationship between variables and WTP for adult cover was confirmed by the sign and significance of the coefficient found in each of the three models. On the whole the models confirmed the sign and significance of three variables: dummy for difficulty paying health charges many times (manydif), dummy for household educated to secondary level or beyond (secbvdn), the total expenditure on

drugs and consultations for OPD care that was difficult to pay in the past (totdif), household head a Christian (Christ). Although the hypothesised relationships for three variables (assdmy, memass, smoked) were that they were significant determinants, they were insignificant. Models 2 and 3 found the dummy for “never had difficulty paying health care” a positive determinant whereas the hypothesis was that it would be negative. One possible explanation is that households in which such difficulties had not been experienced envisaged themselves as being more “able to pay” insurance contributions, rather than not requiring such measures. The hypothesised relationship was based on the assumption that the latter would be true. As described above the models were inconsistent regarding the role of the dummy “adults perceived as healthy compared with those in other households” (adhealth) in influencing WTP per adult for OPD cover, ie option a.

## CONCLUSIONS FROM REGRESSIONS ON THE FACTORS INFLUENCING WTP IN STUDY AREA

Overall, the results of the econometric analysis for option *a* (OPD insurance cover) suggest that in the study area household WTP is influenced positively by a) past difficulties in paying health care fees, b) sex of household head being male, c) secondary education and above of household head, and d) household head being a Christian. The perception by a household head that adult members of his household were healthier than those in other households, however, had a negative effect on the willingness to pay for OPD insurance. The stated annual household income was not a statistically significant determinant of WTP for this type of cover in the study area.

**Table 9.4 Model confirmation of hypothesised relationships between variables and WTP for adult cover**

Variable	label	model 1	model 2	model 3	Expected sign
income	annual household income(c1000)	n/a	n/a	n/a	either
totdif	health expenditure difficult to pay	no	yes	yes	-ve
age	household heads age	n/a	n/a	n/a	either
opdexcd	annual consult. & drug expend for OPD*	no	n/a	n/a	+ve
hsize	number of people in household	n/a	n/a	n/a	either
assdmy	dummy of associations needed	yes	no	no	+ve
christ	dummy for Christian household head	yes	yes	yes	+ve
sexdmy	dummy for male head of household	n/a	n/a	n/a	either
opdexdm	dummy for positive OPD expenditure in last year	n/a	no	no	+ve
memass	dummy for member of saving association	no	no	no	+ve
adhealth	dummy for member adult healthy compared to other households	yes/no+	yes	yes/no+	-ve
neverdif	dummy for never had difficult paying for health care	no	no++	no++	-ve
manydif	dummy for difficulty many times in paying for health care	yes	yes	yes	+ve
secbvdm	dummy for household educated to level of secondary schooling or above	yes	yes	yes	+ve
smoked	dummy for household head ever smoked	no	no	no	-ve
islem	dummy household head follows islem religion	n/a	n/a	n/a	+ve

+ no for adults yes for child    ++ sign was positive rather than negative



## **Chapter 10: Discussions of Methods and Findings**

### **INTRODUCTION**

This chapter is divided into three parts. The first part considers the strengths and limitations of the research design. In particular it discusses the appropriateness of, and the success achieved in, using focus group discussions and contingent valuation questions to determine the perceptions of and the demand for health insurance in the study areas. The second part discusses the findings of the two case studies, and the third addresses some aspects of the findings of the feasibility study in Ghana that were not discussed in chapters seven and eight. Parts two and three also include comments on the relationship between findings and policy decisions involved in implementing health insurance in a rural African setting.

#### Methodological Issues: Study limitations and strengths

In this research four types of instrument were used to collect data in the field studies: a) household surveys, in which household heads (those responsible for the welfare of family members residing in one compound) were individually interviewed using a questionnaire; b) focus group discussions involving 6-12 participants; c) retrospective outpatient surveys in health facilities; and d) review of health facility financial records and reports.

#### Household surveys

In Burundi the questionnaires were written in the local language (Kirundi), thus avoiding potential distortions due to incorrect translations and so increasing the reliability of the answers to the survey questions. In the other two sites, as several African languages were used in the study areas (in Guinea Bissau two main languages were spoken and in Ghana households were fluent in either Ga-Adanbe, Twi or Ewe) this approach was not possible. Therefore, to reduce problems associated with poor comprehension by respondents, in these two countries, the questionnaires were first written in the official languages (Portuguese in Guinea Bissau and English in Ghana). Interviewers were then carefully selected so that they were literate in the official language and fluent in all the common

local languages. In addition, the training of the interviewers involved role play of different interviewing scenarios in which translations of questions by interviewers were assessed and improved by using peer review techniques.

In the CAM study the main limitations arose from its cross-sectional design. Projections of annual household illness rates were made based on illnesses reported to have occurred in the four weeks preceding the study. The findings of the household survey may therefore be subject to some degree of recall error, and any seasonal variations in illness occurrence will not be reflected. A four-week recall period was adopted to facilitate the estimation of illness incidence and health care utilization rates, that could be projected to annual rates and then meaningfully related to annual CAM revenue.

Household heads in Gabu, Guinea Bissau, were required to recall few details in their interviews because the study had hoped to obtain health care utilization rates and levels of fees paid from health providers. In Ghana, the likelihood of recall error was reduced by using a two-week recall period for health seeking actions that did not involve admissions. For admitted episodes, however, a six-month recall period was used because it was assumed that such events would be unusual and sufficiently significant (distressing and disruptive of normal life) for household heads to remember details for a long period. Furthermore, prior to the study it was estimated that a two-week recall would have provided only a small sample of actions involving admissions and this was borne out by the low admission rate found. An attempt to take account of seasonal variations was made in the Ghana study by collecting the data in two rounds, in the dry and rainy seasons.

Besides illness occurrence and health care expenditure, the other major component of the survey questionnaires was the questions on willingness and ability to pay for health insurance. In the two case studies this was assessed by respondents' past decisions whether or not to participate in the existing scheme. In addition, they were asked how much more they would be willing to pay for improvements in the CAM and Abota studies. Respondents in non-Abota villages in Guinea Bissau were asked how much they would

be willing to pay for schemes to be initiated. The increases in the contribution that respondents stated they would be able and willing to pay were their evaluations of the improvements being offered. The highest total contribution stated provided the amount that the respondent was willing and able to pay for a new hypothetical good - health insurance organized as that of existing schemes but of different quality. The new good was only partially hypothetical and so the approach used to elicit a response did not have to follow the strict guidelines suggested by other researchers and reviewed in chapter 3. Therefore it is likely that the responses are reliable and valid valuations and not subject to the problems associated with true contingent valuations.

## CONTINGENT VALUATION QUESTIONS

### Open versus closed

In the study in Ghana different approaches to valuation of contingent demand were used. In round one an open question was asked first, followed by a closed question in which the premium was approximately equal to a fair recovery premium. This was one way of ensuring that if the respondents' answers to open questions did not take into account existing/real prices, they could revise their answers in the light of the additional information. The differences in the WTP values obtained are illustrated using insurance for inpatient and outpatient care at Battor Hospital. The percentage of households willing to pay c1,000, c4,000 and c8,000 from the open questions were 65%, 15%, and 2% respectively. However the closed question found that a much higher percentage of households, approximately 75%, were willing to pay c4,000 for this insurance option.

Russell (1995) notes that open contingent valuation questions are associated with the following problems:

- a) they produce an unrealistic scenario, since in normal circumstances people face given prices for goods and are rarely asked to place a monetary value on a good or service;
- b) respondents often find it difficult to state the maximum they are willing to pay without the assistance of a price "label";

- c) compared with other elicitation methods, open-ended questions offer the respondent the opportunity to over or understate WTP in a strategic attempt to influence future pricing.

The above differences in the WTP for open-ended and closed questions could have been due to any of the above.

For the above reasons it is likely that the initial answers to the open-ended questions did not reflect true household willingness to pay, although they will have provided the order of preference. For example, they gave an indication that households would be willing to pay more for an insurance policy providing care at Battor Hospital than one providing care at a local health centre. In the first round the problems associated with open-ended questions were probably further aggravated by the fact that the questions were asked before the respondent was reminded of prices paid for health care in the past and the constraints on their household budgets. (Questions about health care expenditure in the previous two weeks and six months were asked after the open-ended contingent valuation questions.)

On the whole, it is unlikely that the inadequacies with the contingent valuation questions in round one adversely affect the study as these initial WTP findings were used only to guide the specification of the health insurance options offered to respondents in round two. In round two, since the respondent had gained price information from the previous interview and had the time to consider the issue of health insurance compared with user fees, it was reasonable to expect that the open-ended questions provided unbiased WTP values. Although they were not followed by closed questions, the respondent was provided with new information to help in the way a “price label” would have. They were told the average annual risks of requiring OPD care and hospital admission for an adult and a child in the community. These risks were estimated as the average frequencies of treatment-seeking actions in the first round. He or she was also given the average expenditure for outpatient and inpatient care for an adult and for a child, again these were estimated from the data collected in the first round. Finally respondents were asked to

state the maximum that they would be willing and able to pay - their demand for each type of cover in the light of the new information they then possessed.

The percentage of household heads who revised their WTP per adult for options, after they had been provided with the frequencies of illness and the average expenditure per illness obtained from round one of the survey, were: outpatient at a clinic, 21%; inpatient care at Battor Hospital, 17%; and outpatient at the clinic/inpatient at Battor Hospital, 12%. The corresponding percentages for WTP per child were 24%, 18% and 12%. Although the majority who revised their WTP did so upwards, the increases were modest and the effect on the overall pattern of WTP for the groups was statistically insignificant.

#### Partial hypothetical versus full hypothetical questions

As stated, in both rounds of data collection open contingent valuation questions were used, but the nature of the questions was different in the two rounds. In round one the health insurance was only partially hypothetical because, although premiums rather than user fees were the form of payment for health care, the quality of care that would be received was not hypothetical or new to the consumer. (The consumer was asked for his willingness to participate in risk sharing associations that provided access to health care whose characteristics were known, ie existing care from existing facilities.) The demand in round two however was truly hypothetical as contingent valuation questions provided a concise description of the services available if the respondent purchased the insurance. Below is an example of descriptions provided.

“This clinic would be within an hour of walking and be staffed by nurses. Equipment for physical and laboratory examination would be available. Drugs would also be available at the clinic. Members of the association would help manage the clinics.”

Insurance for care at Battor Hospital in round one and insurance option b in round two are identical goods/services, and therefore, the WTP responses are compared in Table 10.1. The purpose of this comparison is to provide information about the difference that the two approaches may have made to the answers given by respondents. The dramatic

increase in the willingness to pay for this type of insurance in round two, when the good was fully specified in hypothetical terms (before additional “price label” information had been provided), may also be because other changes occurred in the time intervening. However, it seems that revision may have occurred because of the effect of participating in the initial interview and, for some respondents, in the focus discussions. In addition, the low WTP value in round one may be due to the larger number of options offered to the respondents in round one compared with round two. Although it is very difficult to be sure why these changes occurred, it suggests that contingent valuation questions should be repeated to respondents after a suitable time interval to allow them to become familiar with a new service or good. Also, the WTP should be sought for only a limited variation of the good in one interview.

Table 10.1 WTP in round 1 and 2 for insurance providing inpatient care at Battor (1,000)			
	mean	mode	median
inpatient at Battor Hospital round 1	1.92	1.0	1.5
inpatient at Battor Hospital option b - round 2	23.07	8.0	13.0

#### Validity and reliability of WTP measures

In general the WTP results were consistent with economic predictions (where insurance is assumed to be a good), indicating theoretical validity. The results of the second round of data collection showed that income and other socio-economic variables that implied increased disposable income, in particular the education and sex of the household head, were associated with higher values of WTP. (As stated above, the WTP questions in round one provided respondents with exposure to the subject and hypothetical questions and the results were used primarily to narrow the options for the proposed insurance. For these reasons the relationships between round one WTP and socio-economic variables were not explored in the analysis.) When open-ended questions were asked, the WTP answers, when taken as the maximum price, were negatively associated with the

population's demand (more households would purchase covers offered at low prices than at high prices, thus for inpatient care at Battor, 65% would purchase if the price was c1,000 but only 15% would, if the price was c4,000). The observed positive income effect on WTP and the negative "implied price" effect on the demand derived from the WTP answers suggest that the hypothetical nature of the question probably did not impair the ability of respondents to make demand decisions rationally.

Besides the consistency between the WTP assessments in round one and in round two, correlation between the two also provides information on the reliability of the WTP answers. A high correlation coefficient of 0.856 was found, suggesting that when faced with questions about identical goods, household heads gave answers that were systematically related rather than unrelated. It is possible that the focus group discussions and the first interview helped the respondents to understand the hypothetical scenario created as part of contingent valuation questions. They therefore gave answers that were reliable rather than random. The adjusted  $R^2$ s of the ordinary least square regressions were close to 0.15, suggesting that the variables explained significant amounts of the variation in the dependent variable. This provides further evidence that the contingent valuation measure used in the research was reliable.

## GENERALIZABILITY OF WTP FINDINGS

One limitation common to all the sites is that the absolute level of willingness to pay found may not be applicable to the countries as a whole. In Burundi this inability to generalize the absolute values is because: 1) the relatively high altitude of Muyinga Province may be associated with a climate, and therefore illness patterns, that differs from lower lying provinces; and 2) Muyinga Province is a major coffee growing area, the relatively high household incomes may make household health expenditure significantly different from other provinces. However, the proportions of CAM and non-CAM households willing to pay more for the CAM card are unlikely to differ significantly from one province to the other. The socio economic status of the different rural areas of Guinea Bissau appear to be more uniform than in Burundi and therefore it is possible that generalization may be

feasible.

In contrast to Muyinga, Osoduko in Ghana, was relatively poor at the time of the study compared with other rural areas in the south of the country. The main economic activity in the 1960s and 1970s was sugar growing and factory work, providing incomes comparable to some urban areas. However, with the collapse of the sugar factory incomes reduced significantly. Past high incomes and possibly high levels of education make it unlikely that the absolute WTP findings can be generalized to the whole of Ghana. Nevertheless, on balance, the findings were probably typical for rural areas in the richer southern parts of the country in 1993/94.

#### Effectiveness of study design

On the whole, the design of the three field studies produced the type and quantity of data anticipated. The one exception was the Abota study with regard to data required to estimate health care utilization rates and health care expenditures. One of the original objectives of the household survey was to assess the adequacy of contributions by estimating rates of illness episodes, rates of utilization of different levels of government, private and traditional health care and the average cost per USB visit. However, in spite of the measures taken to ensure rigour, it was found that some parts of the data had internal inconsistencies and records of treatment by village health workers were inaccessible. For these reasons it was impossible to provide illness and utilization rates, or to evaluate the relationship between Abota revenues and the costs of providing components of care at the USBs.

#### Focus Group Discussions and Ethnocentrism

Focus group discussions have been developed as a tool for determining the perceptions, attitudes, manner of thinking and opinions of participants. Used for this purpose, they produce results that have high face validity and, in some cases, greater predictive validity than individual questionnaires<sup>25</sup>. Focus group findings are qualitative and are therefore

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<sup>25</sup> See study comparing focus group discussions with a large-scale mail-out survey, Reynolds F. and Johnson D. Validity of focus group findings. *Journal of Advertising Research* 18(3): 21-24, 1978.



associated with the problem of ethnocentrism (the tendency to take for granted one's own cultural view and to evaluate other behaviour in terms of it), thereby increasing the possibility of misinterpretation. Sackmann argues that individuals of dual-cultural backgrounds may be able to overcome some aspects of ethnocentrism<sup>26</sup>. Teams in which members are of different cultural backgrounds may have multiple and conflicting interpretations of qualitative data, thus increasing the problem. The background of the principal investigator in this study is bi-cultural, Ghanaian and English<sup>27</sup>, and it was hoped therefore that the ethnocentrism would be reduced.

## THE CASE STUDY FINDINGS

### Social impact

This section discusses findings of the case studies that provide insights into the social impacts of implementing rural health insurance schemes in Africa. These findings include those that allow inferences to be drawn about a) the ability of schemes to reduce the financial barriers to health care utilization, and b) the impact of the scheme as perceived by women (those mainly responsible for health care in the household). In addition findings that have a bearing on the affordability of premiums and appropriateness of payment schedules provide evidence about the social functioning of the schemes.

### *CAM*

Approximately 27% of households gave financial inability to purchase a CAM card as one reason for non membership. It seems, therefore that the scheme was unable to remove the financial barrier at the time of illness for a significant proportion of the population. However, non-CAM patients referred from health centres to higher level facilities often purchased cards before, or on arrival at, the referral centre, thus manipulating the scheme to reduce their financial barrier to expensive curative care without participating in the risk

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<sup>26</sup> For a discussion of the heritage of the "culture" concept and the major anthropological approaches to the study of culture. See Sackmann SA *Cultural Knowledge in Organizations: Exploring the Collective Mind*. London: Sage Publications, 1991.

<sup>27</sup> Dr Arhin spent part of her childhood in England and after her primary and secondary education she returned to West Africa.

sharing.

Women reported that they had limited access to cash and, therefore, by eliminating cash payment at the point of care, CAM empowered them to decide the need for, and timing of, health care consumption by household members. (Women in CAM households did not require money, and hence permission, from male household heads to seek health care.) Cash has become less of a barrier to obtaining curative treatment for card holders, but sometimes the quality of care was considered inadequate. Women who participated in the focus groups gave reasons for purchasing CAM cards which suggested that they were risk averse. (Economic theory postulates that risk averse persons purchase insurance policies to maximize the expected utility from their income.) Many women were willing to pay higher CAM prices to improve the benefits. Generally, it appears that women, being the main carers, derive additional utility from the knowledge that in the event of child illness treatment was available even in the absence of cash in the household.

#### *Abota*

In villages that had an Abota, participation was about 94% (Eklund and Stavem (1990) reported more than 90%). Therefore, for almost the entire populations of these villages the financial barriers to obtaining health care at the time of illness were removed. Similarly most of the physical barriers were removed (generally, people in Abota villages said that an important benefit of the scheme was increased physical accessibility of primary health care). Since the 1989 evaluation of prepayment conducted by Eklund and Stavem, individual and household participation rates have not declined. In view of the problems faced by the scheme, reported by studies cited in Chapter 6, this was significant. The problems included inadequate drug supplies, instances of misappropriation of funds and the decline in actual benefits obtained when referred to government facilities. (In principle, treatment is free for inpatients at hospitals and health centres but due to shortages, patients must often purchase medications and dressings from private pharmacies.)

The ethnic homogeneity of the villages, the traditional nature of the society and the

predominance of Islam (a religion that stresses collectivism), suggest that collectivism in the Abota villages was high. The Abota scheme's ability to survive in spite of the many logistic problems mentioned above may be due to the level of collectivism in the local culture. Societal norms concerning the extent of individualism and collectivism expected by village members will have influenced the nature, structure and function of the Abota through the decisions made by the community. Therefore, it is conceivable that social cohesion is responsible for the near universal participation in the scheme in Abota villages, reducing adverse selection, and enabling the village health workers and the community to prevent excess utilization (moral hazard) through informal controls. In the CAM study in Muyinga Province, preference was shown for prepayments (rather than for user fees) by women who participated in the focus discussion. There did not appear to be a religious origin to this preference since the women were of different religions.

Indirect evidence that the Abota contributions were affordable comes from the willingness to pay findings. At the time of the study the mean contribution per household was 3,438 PG (approximately £0.92) collected once or twice a year, yet 87% of participating households were willing to pay twice their current contributions to the Abota to improve the availability of drugs<sup>28</sup>. Approximately 74% of households in villages without Abota schemes stated that they would be willing to pay 2,000 P.G.(£0.55) or more as regular contributions if Abota was started in these villages.

As the CAM card could be purchased at any time of the year, payment schedules did not present a barrier to any household. It seems that monthly contributions would be incompatible with the pattern of cash flow in rural households and would discourage households from participating in schemes. In the Abota scheme the number of times prepayment contributions were collected in a year varied, some villages collected twice, others once. The frequency of payments was determined by the villages themselves, therefore it is reasonable to assume it was the most appropriate for the community.

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<sup>28</sup> The question asked was, "Would you agree to pay twice the current Abota contribution to permit the system to always have drugs available, Yes or No?".

### Financial performance

For the CAM, a public treatment rate of 0.91 per household per month and a mean value of drugs of 134.1 FBU per formal treatment, implies that an average household consumes 1,464.4 FBU of outpatient drugs annually. The current price of the CAM card would therefore cover 34.1% of the drug costs. In practice, revenue from CAM does not appear to be used to purchase drugs or medical supplies required for patient care at the health centre. Although a potential for improving financial performance exists, because there is some willingness to pay a higher price for the CAM card on condition that more drugs become available at government facilities, the findings indicate a lack of financial viability. It is important to note that, even at the present price, significant numbers of households stated that they could not afford to purchase the CAM.

Adverse selection and moral hazard are major causes of inefficiencies in the functioning of health insurance schemes and therefore have consequences for financial viability (Arrow 1963; Pauly 1963; Lohr *et al* 1986; Manning *et al* 1987). The study found evidence to suggest that both these problems may be contributing to the poor financial performance of the CAM. Adverse selection arises when insurance policy suppliers lack perfect information about the risk of individual insurees, or, on grounds of equity, offer insurance policies based on community rated premiums (uniform premiums based on the population's average expected probability of loss). The alternative is experience rated premiums in which individual probabilities are assessed and individuals are offered premiums accordingly. It is reasonable to consider the fixed price of the CAM card as an example of the former scenario - a community-rated premium. Where the insurance is voluntary, as in the case of CAM, the community rated premium discourages those of low risk from purchasing while making it attractive to high risk individuals. The resulting "selection" of high risk individuals increases the average expected loss for the insured population in subsequent periods. The outcome is an inadequate pool of funds that diminishes the scheme's financial viability. The percentage of eligible members belonging to the scheme is one proxy measure of the degree of adverse selection affecting the scheme. The theoretical analysis of the cause and consequence of adverse selection assumes that individuals have perfect knowledge of their illness risks and that they are not

prevented from purchasing insurance by inadequate incomes. In reality, however, especially in a country of low per capita income such as Burundi, the household membership rate in the CAM may be less related to perceived or actual risks of requiring health care and determined significantly by affordability. Thus an assessment of adverse selection in the CAM requires consideration of both affordability and perceived illness risks. The frequency of illness episodes among CAM and non-CAM households was sought in an attempt to ascertain the degree of adverse selection. If a statistically significant higher rate of illness per person were to be found in the former group this suggest that individuals with higher risk had 'selected' themselves to participate in the scheme.

The rate of illness per person was found to be almost identical for members of CAM and non-CAM households and, therefore, adverse selection of individuals did not seem to be a likely problem. However, since larger households were more likely to purchase the CAM than smaller households, illness episodes per household were significantly greater for CAM households than for non-CAM households. This situation may be described as 'adverse household selection' and results in a sub-optimal level of risk sharing among households.

Moral hazard occurs when individuals, once possessing full and fair insurance policies, lack the incentive to take actions that reduce the probability of the insured event occurring, or the loss associated with it. (A full insurance policy is one in which the loss resulting from the insured event, in this case illness, is exactly compensated for. A fair policy is one in which the premium is equal to the expected loss: probability of loss times the value of loss.) In the context of health insurance, moral hazard may lead an insured person to invest less in preventive health measures and to use more resources to treat illness. In the presence of third party payment, the individual lacks an incentive to contain the cost of health care, faces zero marginal costs at the point of consumption and, theoretically, may consume to the point of satiation. The outcome is rising rates of utilization with increasing per capita health care costs. In the study the utilization rates per episode of illness of CAM households compared to non-members was proposed as

an indicator of the extent of moral hazard.

The formal treatment rate for CAM patients was over 50% higher than the non-CAM group and this suggests that moral hazard existed, assuming illness severity was equal for the two groups. It is, however, noteworthy that this rate may be higher for the CAM group because some government health centres gave incomplete treatments (inadequate volumes of medication for patients' weight or volume) that may have delayed recovery and/or required additional visits to collect remaining drugs. Households participating in the scheme were three times more likely to use government facilities than non CAM households. During the course of the research it became apparent that incomplete treatment was an acknowledged problem receiving the attention of the MOH.

In theory, it is also possible that the higher utilization among CAM households was the outcome of "supplier induced demand", i.e. changes, especially increases, in the demand and consumption of health care by patients as a result of the actions of doctors or other health care providers. Health centres and hospitals are not reimbursed, either a flat fee per patient seen or a fee per service rendered, and therefore the scheme does not provide an incentive for suppliers to influence demand in this way. On the other hand, neither does the scheme appear to create strong incentives for efficient use of health care resources by the consumer or the provider. Currently the organizations retaining CAM revenues (the "commune" committees) are not required, either by national law or legally binding contracts, to fund all or substantial percentages of the care provided under the scheme in health centres. The committees, therefore, have no financial incentive to minimize or rationalize the use of health services by the insured population.

It is difficult to evaluate the relationships between premiums and benefits in the Abota scheme from the study findings. However, since many USBs were supplied with fewer drugs than they could purchase with their contribution and had cash returned to them by the MOH, it appeared that revenues were higher than the value of supplies available to participating individuals and households. Since, in the long term, this situation is likely to reduce the incentive to collect contributions, future revenue is likely to be less related

to the supply needs.

## THE FINDINGS OF THE GHANA FEASIBILITY STUDY

### Quality issues

The willingness to pay expressed by households in the study was conditional that the care provided by the insurance was of specific quality. If the health care currently provided by government health facilities in the district is not of this quality, demand for health insurance that relies on these facilities may be far less than suggested by the research findings. When the quality of care specified is compared with that currently thought appropriate by the Ministry of Health it is comparable. Therefore it is likely that the District Health Administration would receive support from headquarters to achieve it and therefore the demand would be as suggested by the findings. This support would be required to train health workers, purchase equipment and carry out infrastructure improvement to allow the desired quality to be attained within a reasonable period.

### Factors influencing household contingent valuations

In the literature, the individual's cut-off price (the maximum he or she is willing to pay) that guides him or her in deciding whether or not to purchase an insurance policy is usually absent from the data used in estimating the demand for insurance. For this reason the estimates are of models of discrete choices, that is, whether or not to purchase health insurance. Therefore, the continuous choice models estimated in this research are unique since the dependent variable is the amount consumers are willing to pay rather than their probability of purchasing an insurance policy. (Predictions about discrete choices were however obtained in chapter 8 where the percentage of households who would purchase cover types at different premiums was calculated using a non-econometric approach.)

WTP values represent the amounts of money consumers are willing and able to pay for the proposed insurance schemes. Some of the estimated results in this research may be explained by assuming that the "willingness to pay" component is influenced largely by

perceptions of the risk and the ease of accessing the care offered under the insurance cover (ie distance from home to health facility). In turn, perception of the risk (the likelihood of requiring care and the expected expenditure involved) will be moderated by past illness and health expenditure experiences. The econometric finding for option a, that WTP is positively influenced by difficulties in paying fees in the past, appears to support the link between WTP for insurance and past health expenditure experiences, the latter possibly paralleling perceived risks. The findings that adults being perceived as healthy had a negative effect on WTP, may also be related to risk perception; household heads reasoned that healthy adults were less likely to be ill and therefore insurance would be of less value as the need for health care will be low.

A second plausible assumption regarding willingness and ability to pay for health insurance, one that may also explain the findings, is that the “ability to pay” component is largely governed by income. However, in all models explored the income coefficients were insignificant in explaining the variation in WTP values. A possible reason for this finding is that sex (being a male head of household) and education (secondary schooling and above), both significant positive determinants, displaced the stated income as a measure of the disposable income in the estimation. Another possible reason is that where income disparity in absolute terms is low, the income level may not be important in explaining variation in WTP among households. The literature describing participation in insurance schemes in rural areas in Africa with relatively uniform incomes supports this argument. The fact that willingness to pay is a Hicksian benefit measure and is therefore not distorted by income effects may also account in part for this finding (Pearce & Nash 1989).

The lack of significance of income in regard to WTP contradicts the results of econometric estimation of the demand for private health insurance in the UK by Proper (1987). In her models, earned and unearned income had positive coefficients that were significant. The situation in the UK, however differs in several ways from that of the study area; in the former, private insurance is purchased in addition to compulsory national health insurance cover, absolute disparities in income levels are large and



consumers have no experience of user fees. These differences may be responsible for the dissimilarity between the two studies with regard to the income results. The fact that the UK study was not based on contingent valuation may also have made the two studies fundamentally different and therefore not comparable.

The R squares in the Ghana study ranged from 0.35 to 0.45 for the OLS models estimated for WTP for adult and child health insurance with the characteristics described for option a. The discrete nature of many of the explanatory variables meant that this was an expected finding. Nevertheless, the R square values were probably not higher partly because variables included in the equations as measures of risk aversion and of the demanders' perception of differences in the care for insured and uninsured, were inadequate measures. It was not possible to conclude on the effect of including such variables because of the failure to obtain significant coefficients for those variables hypothesised to be possible proxies. For example current and past smoking of respondents were used as proxy for "risk loving" but were rejected as a determinant of WTP by all models.

In the analysis of variance of the models, the overall regression F test rejected the null hypothesis that there is no linear relationship between the WTP for option a and the independent variables included in the model. This was therefore further evidence, in addition to adjusted R squared values of the estimated models being close to the rule of thumb value for reliability, that the WTP observations were reliable.

One finding of the focus group discussions was a consensus that the official of an insurance association implemented in the study area should be involved in the management of the health facilities that provide care for its members. This suggests that the personnel structure and their authority within the Ministry of Health may influence the scheme's acceptability to, and patronage by, the community. Ultimately it would therefore influence willingness to pay for insurance policies offered by the scheme. In the review of the literature of health insurance schemes for rural populations (chapter 5), the management structure was one specification dimension that seemed important in

distinguishing different schemes and their outcomes. Consequently, it was not surprising that the management personnel of the hypothetical scheme and their functions were of concern to those in the discussion groups. Unexpectedly, there were no findings from the discussions about the government's role in the operations of the insurance association and its transactions with the MOH. This may be an indication that the participants in the discussions did not envisage that the government would have a major role in the insurance scheme.

## Chapter 11: Conclusions and Policy Implications

### INTRODUCTION

This chapter presents the major research conclusions relating to the demand for health insurance in the study countries and comments how they provide support for the research hypotheses. It also describes the policy implications of the research findings for health care financing in the study countries and in other Sub-Saharan African countries. Finally suggestions are made about future research that is required in this area.

#### The demand for health insurance in the study countries

The findings of this study support a number of statements about the demand for rural health insurance schemes in Ghana, Burundi and Guinea Bissau. The statements are based on the evidence from an Anglophone, a Francophone and Portuguese speaking country in west and east Africa. In addition, all three countries had a Gross National Product (GNP) per capita of \$ 400 or less in 1991 and are currently classified as low income countries by the World Bank. Consequently, these statements are likely to be of general relevance for the health financing policies of other low income African countries. The statements concern risk attitudes towards health care and the compatibility of different scheme specifications. These statements are stated and briefly explained below.

*\*Households in rural areas do appear to be risk averse with regard to health care.*

- a) The contingent valuation study in Ghana found that almost all household heads (98%) would be willing to pay a premium to obtain health insurance cover for all persons in their households. (This high rate of acceptance is partly explained by the focus group discussion findings that households in Dangme West conceptualise health insurance as a solidarity association to deal with the risk associated with illness. Also they had previous experience of solidarity associations for other social needs.)
- b) The study of CAM found that only 7% of households reported reasons for non participation in the scheme that might suggest "non risk averse" attitudes to

illness. These reasons included "absence of worries about health care prices, because of good family health." Where households reported "not willing to lose money in the event of non-use", one interpretation could be that they have a low monetary evaluation of the risk involved in illness. A low evaluation would lead to unwillingness to pay a positive price to avert the risk and therefore would be consistent with a low demand for insurance. Only 11 (3.6%) of households fell into this category.

- c) The Abota case study found that over 94% of the respondents in the household survey stated that they held a "good opinion" as opposed to "no opinion" or "bad opinion" about the Abota<sup>29</sup>. Only 8% of the households stated they would be unwilling to contribute were schemes to be established in their villages or nearby villages.

*\*There is significant latent demand for health insurance policies among some rural populations in Africa.*

- a) The contingent valuation study in Ghana found that the median WTP per household ranged from c9,000 (£8.60) to c15,000 (£14.30) for different cover options (Table 8.7).
- b) A moderate rate of willingness to pay was found for the Abota scheme: 87% were willing to pay twice their current contributions to the Abota to improve the availability of drugs<sup>30</sup> when mean contribution per household was 3,438 PG (approximately £0.92) collected once or twice a year. Approximately 74% of households in villages without Abota schemes stated that they would be willing to pay 2,000 PG (£0.55) or more as regular contributions.
- c) In Burundi fifty four percent of households were either participating in the CAM at the time of the survey or had done so in the past. Forty-nine percent of households were willing to pay more than 1,000 FBu (3.7 US\$), twice the card

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<sup>29</sup> It was the view of indigenous co- investigators that in the cultural context of the region such a qualitative measure of perceptions would be more valid than attempts to elicit more finely graded evaluations.

<sup>30</sup> The question asked was, "Would you agree to pay twice the current Abota contribution to permit the system to always have drugs available, Yes or No?".

fee at the time of the study, to improve the quality of care provided under the scheme.

*\*Proximity of providing facility was an important factor in determining demand for rural health insurance schemes.*

- a) In the WTP study in Ghana the effect of proximity possibly explains the relatively small difference in the mean WTP for inpatient cover at Battor Hospital, option b, and combined OPD at clinic /inpatient cover at Battor Hospital, option c. This difference was less than 50% of the WTP for OPD at the nearby clinic, option a. The WTP for option c was only 78% of the sum of mean WTP for options a and b. This could be interpreted as indicating that once access to inpatient care is assured, OPD care becomes less valuable. However this explanation is in contrast with findings of the focus group discussions since participants stressed the importance of having basic and emergency care close to their homes. Rather, it may suggest that once they have access to nearby OPD care, inpatient care at a more distant hospital becomes less valuable.
- b) In the Abota case study it was frequently communicated to the research team that having people in the village, who had been trained to give health care and medication, eliminated the need to walk long distances to government health centres to obtain treatment for common problems such as headaches and mild fevers.

*\*Monthly contributions are incompatible with the pattern of cash flows in rural households and would discourage households from participating in schemes.*

- a) In Dangme West the preferred schedule of payments was bi-annual (45%), and the least preferred monthly (7.0%).
- b) In Burundi the consensus among women who took part in focus group discussions about the CAM was that it especially benefited poor farming households who could purchase a CAM card when cash was available from the sale of crops. When asked if they would be willing to purchase the cards at a specified time in the year to facilitate the purchase of drugs in larger amounts, and therefore

cheaper unit prices by the government, they suggested July-August, the months corresponding to the end of the harvest.

*\* Collaboration between officials of a health insurance association and those managing facilities providing health care to the insured persons was thought to be a desirable features of a rural health insurance system.*

This collaboration could be described as a “insurer-provider unions” and would permit local insurance associations to be involved in the management of government, and where applicable NGO, health facilities who contract to provide care to members of the associations. In Dangme-West one consensus from the focus group discussions was that close working relationship between the health insurance and the government and mission health facilities was necessary. Possibly respondents stated this because they believed that the incentives created would help to improve quality of care and encourage accountability.

## SUPPORT FOR THE RESEARCH HYPOTHESES

The research sought to test two hypotheses, one relating to the effectiveness of schemes designed to provide health insurance cover for rural populations and the other concerned with the information required to make economic predictions about proposed schemes.

### Findings relating to Hypothesis 1

- \* A community health insurance scheme in a developing Sub-Saharan African country can be effective in reducing the financial barriers faced by those who are most vulnerable, such as the poor, the chronically ill, the elderly and children, and be financially viable.

The two case studies of schemes in Africa, undertaken as part of the research, showed a willingness to pay for health insurance among rural populations. Financial performance and efficiency was low in both schemes because of inadequate and/or erratic supplies of inputs for the care of participating households. The outcome has been a low participation rate, partly explained by the perception of poor quality of care provided to the insured,

in the Burundian scheme, and a reduction in the pace of operational evolution in the case of the Abota in Guinea Bissau. However, in both countries it was observed that the schemes performed effective social and equity functions. It is therefore concluded that where quality of care is perceived to be adequate, a community health insurance scheme in a developing Sub-Saharan African country can be effective in reducing the financial barriers faced by those who are most vulnerable, such as the poor, the chronically ill, the elderly and children, and be financially viable.

### Findings related to Hypothesis 2

- \* The health care utilization pattern of rural households in a sub-district in Ghana, their stated preferences for insurance coverage and basic health facility cost data, can be used to forecast the relationship between premiums that households are willing and able to pay, and those premiums that will cover a given percentage of the costs of providing care for those households.

Community rated health insurance premiums that would recover 100% of the non-salary costs of providing outpatient and/or inpatient care in a mission hospital in Ghana for the study population have been estimated (“cost recovery” premiums). The “cost recovery” premium for inpatient cover only was 12% of the mean WTP of households for this option. For combined outpatient and inpatient cover the cost recovery premium was 18% of the mean contributions that households were willing to make for this benefit, and 80% of households would be able and willing to contribute this premium.

## REALIZATION OF RESEARCH OBJECTIVES

### Original research objectives achieved

The research had two main aims; a) to assess the social and financial performance of the two schemes selected and b) to assess willingness to pay for and the revenue outcome of a proposed health insurance in a rural area in Ghana. Both aims were met and the following specific objectives were also achieved:

- \* The affordability of premiums charged by two schemes studied empirically were

evaluated and found to be moderate, as judged by the level of participation and the willingness to increase contributions to improve the quality of care provided under the insurance scheme.

- \* The payment schedules for the two schemes were found to be appropriate for target populations most of whom were households living in the rural areas.
- \* The relationships between the premium revenue and benefits expenditure was successfully carried out for one scheme studied, CAM. (The literature review also provided information on the relation between insurance revenue and expenditure for other rural schemes.)
- \* The extent of adverse selection and moral hazard was assessed with varying degrees of success for the two schemes CAM and Abota.
- \* The preferred specifications of community-based risk sharing for health care and the “Willingness to Pay” - WTP was determined for households in a rural sub-district in Ghana.
- \* The community risks (calculated as the proportions of the population in the study area who would seek western type health care during the dry season and the wet season, for serious and mild illness, if such care were physically accessible and affordable) was estimated for the households in the Ghana study.
- \* Average costs for outpatient and inpatient episodes in health facilities preferred by households in the study area were calculated.
- \* Using different approaches, two sets of fair community rated premiums were estimated for the Ghana household sample.

#### Additional objectives achieved

Another achievement of the study was that the evaluation of the Abota, by combining qualitative and quantitative methods, explored the links between the effectiveness of the scheme, participatory development, aspects of the indigenous culture, and institutional development. This was not an original objective of the research. However the Abota study findings highlighted some contractual and managerial problems that may face locally controlled health insurance schemes in rural areas. It appeared that cultural norms have influenced and are being reinforced by the Abota system suggesting that local cultures



have central roles in determining the structure and functions of participatory development approaches. Furthermore, the historical background and status of the Abota system illustrate that grassroots initiatives in development may be assimilated into sustainable social institutions through a learning process.

#### Objectives not achieved

One objective that the research failed to achieve successfully was to assess objectively changes in the population's access to health care resulting from the schemes studied. Rather it came to conclusions in the CAM study that females considered the insurance to be of particular value to them. They indicated that the schemes had increased their access to health care once their husbands could be convinced to purchase the CAM card. Similarly the issue of external subsidy from government and/or donor agencies that may be required to make the preferred schemes financially viable in Ghana was only addressed indirectly and not comprehensively.

Following the literature review, one research question that was identified was; were there household variables that could be used to predict WTP? Even though the objectives of this research were not intended to address this question, models of WTP were estimated using econometric techniques of analysis. This made it possible to search for such variables. The analysis demonstrated relationships between the WTP for option (a) and some independent variables collected by the household survey; therefore collectively these variables could have met the need for efficient predictors. However, health planners would probably find it difficult to use these variables to predict the WTP of populations targeted to receive health insurance. This was largely because many of them, for example difficulties in paying fees, can only be measured using a time-consuming household survey similar to that used in this research. Nevertheless, since the present study and econometric estimations were preliminary, future research may be identify variables that are more useful in this respect.

## POLICY IMPLICATIONS OF THE RESEARCH FOR THE CAM AND THE ABOTA

### Improving financial performance of the CAM

The low level of risk-sharing among households arising from 'adverse household selection', the low membership fee (price of card) and low membership rate of 23% of households appeared to be the reasons for CAM's poor financial performance. Therefore measures to increase the participation of households that have few members would have helped to increase the level of risk-sharing and total revenue. In addition, funds external to the CAM scheme could have been sought as 'seed money' to permit improvements in the quality and efficiency of the services provided by the government under the CAM scheme. A significant increase in the funds available to the health centre could also have been achieved if the government required communes to use all, or a large percentage of the revenue from CAM and user charges for health care provision at the health centre level. The funds could be used not only to purchase an initial adequate quantity of drugs, but also to implement in-service training schemes for health workers in clinical practice. Training could usefully include rational prescribing, in order to eliminate the problem of incomplete drug treatments, and patient-sensitive consulting. It is likely that such measures would have significantly improved the financial performance of the scheme by encouraging membership of households who either withdrew or never purchased CAM cards because of the poor quality of care provided by government facilities. Improved quality may then pave the way for moderate increases in the price of the CAM.

### Improving health care provided by the Abota

Under the contracts that governed the Abota system, the government had specific obligations to the villages, including training and supervising village health workers and supplying essential drugs. Chabot and Waddington (1987) argue that these commitments involve substantial recurrent and capital investments by the Government. They show that much of the capital investment in this approach is associated with start-up training, and the purchase of vehicles and equipment of relatively short life span, and that reinvestment is therefore required as frequently as every four to five years. At the time of the study funds for both recurrent and capital expenditures had declined, and the Government is

experiencing difficulties in meeting these obligations fully. There was, therefore, the need for USBs to have had access to other providers. For several years prior to the study, NGOs, such as GVC, had been providing support services to the Abota system, especially where government health workers were constrained by lack of resources.

Following evaluations such as that by the joint WHO/UNICEF and Netherlands Government team which stressed the need to improve training and supervision of village health workers, both the MOH and NGOs responded by intensified activities in these areas. However, in most cases, procurement of drugs has continued to be tied to the Ministry of Health drug supply system. It would have been helpful if BI inputs had been available for the USBs to purchase at a subsidized rate. This would have improved the supply of essential drugs at the village level and also helped to functionally integrate the village level community financing and the Bamako Initiative in the region.

## POLICY IMPLICATIONS OF THE RESEARCH FOR GHANA

### Compatible scheme specifications and sustainability of scheme

The population in the study expressed a strong demand for health insurance policies provided by a community health insurance scheme. The following scheme specifications would be compatible with their stated preferences, willingness to pay and the illness experience of individuals in this population.

- a Three cover options
  - i) OPD and emergency care at sub-district health facilities (health centres)
  - ii) inpatient care at the district hospital (initially to be provided at Battor hospital until a district hospital is established)
  - iii) OPD/emergency care at health centres and inpatient care at the district hospital
- b Household contributions paid bi-annually, following the harvesting

- c Scheme operated and managed by a local health insurance association
- d Community rated premiums set to recover non-salary costs of providing care to association members and loaded by approximately 10% to fund administrative costs.

The sustainability of the above specified scheme has yet to be tested using simulation models or action research. However, to date, the research has produced substantial qualitative and quantitative evidence suggesting that the preferred insurance scheme will be financially viable and effective. The specific findings that support the feasibility of a community insurance scheme in this locality are as follows.

- a Given the health care utilization pattern of the study population rate, the premiums that household heads state they are willing and able to pay will recover 100% of non-salary cost to the Ministry of Health in providing care, even when allowance is made for increased utilization arising from moral hazard.
- b Due to the solidarity nature of the scheme, its managers will not be paid salaries/wages and individual bills will not be required for patients who receive care at the association funded facilities. It is therefore envisaged that the major administrative cost will be the provision of membership/payment cards and will be relatively low.
- c Approximately 80% of households expressed a positive demand for insurance that covered health treatments at a nearby health facility.
- d The contributions that households were willing to pay were dependent on the insurance plans giving access to health care of acceptable quality. The quality levels described are attainable using the injection of moderate external "seed money" to upgrade 4 health centres and 4-6 community clinics.

- e The consensus during the focus group discussions was that a close relationship between the elected managers of the health insurance association and health facility staff would ensure efficiency and accountability.

#### Support Programme for a Health Insurance Association

From the research findings it is possible to recommend that a programme be implemented to support the preparation period (12 months), and the first 24 months of operation, of a community insurance initiative in Dangme-West. Through the programme, technical assistance should be provided to:

- a) support the communities in Dangme-West to form a legally recognized Dangme-West Health Insurance Association (DWHIA);
- b) enable MOH Greater Accra Region, in collaboration with DWHIA, to specify in more detail appropriate coverage/premium options;
- c) support MOH Greater Accra Region to introduce, into its financial management system, procedures for administering insurance contracts between MOH facilities and DWHIA; and
- d) assist MOH and DWHIA to plan and execute upgrading of the existing 4 health centres and 4-6 selected community clinics, to provide the quality and distribution of health care demanded by the local population.

Other districts should be encouraged to explore the preferences of households for different forms of community financing using focus group discussion techniques similar to those developed for the work in the study district. Where preferences for insurance are found to be significant, a simplified version of the research protocol could be made available to districts to enable them to assess the feasibility of, and financial and managerial requirements for, a health insurance association.

#### Administrative and financial management capacity

The administration of the recommended scheme is probably within the capacity and experience of the consumer in the district because of the experience with saving groups and associations, the functioning of clans that are common in Ghana. Also in recent years

the local political organization and the district assembly structure has exposed the population to formal collective decision making and public accountability. Nevertheless, training of officials of the health association will help it to operate efficiently.

For the insurance funds to improve the district health service the existing budgeting, accounting procedures and financial information systems must be strengthened. This is especially true because the Ministry of Health's financial systems have been slow to keep pace with the strengthening of the capacity and capability and authority of the district health management teams. In the recent past budgets often did not encompass all sources of income and do not always reflect priority activities (Marshall 1992). Some minor modification of the existing financial monitoring process will be required (with the approval of the Ministry of Finance and Economic Planning and the Accountant General's Office) to ensure that the health insurance revenue is properly accounted for. The collection of premium funds from the health insurance association must be included in the internal audit system. In addition the funds must be readily available to be used for purchases that will ensure improved health care provision to the insured population.

#### Institutionalization of the insurance scheme

Although the 3 year support for a rural health insurance scheme recommended above would be important in providing the administrative and technical foundations of the scheme, in the long term the sustainability of its structure is likely to be one which is determined by the process of Institutionalization. The case study of the Abota revealed that institutionalization was important and that it involved a lengthy process of local innovations, political lobbying and geographical expansion. The process permitted individual communities to develop a financing system that they regarded as appropriate to local conditions, taking into account their administrative capacities and the seasonal availability of cash, and the prevailing cultural norms on collectivism. This would have been less likely if Abota had started as a detailed project proposal developed by what Chambers refers to as a "normal professional" (Chambers 1986). Development initiatives that have detailed plans at the onset provide limited opportunities for communities to participate fully. Therefore, it will be important that support facilitates the roles of the

community and the MOH in adapting recommendations. It should not be the aim to steer the parties involved towards a scheme that conforms to a predetermined blueprint.

Participation, as used here, refers to a “process of empowerment of the deprived and the isolated” (Ghai 1988), and implies increasing the ability of social groups to exercise economic and political power and to make private and public decisions. It appears that community involvement in the Abota extended beyond the mobilization of local material and labour resources, mainly because the initiative from which it emerged did not follow a detailed project blueprint. This permitted the community to be empowered and to assume managerial and planning roles through a learning process.

Even so, community participation did not extend to the control of individuals and procedures involved in the purchasing of inputs for the USB. Instead, staff of health centres and sectoral hospitals acted as procurement agents, and received money from individual village Abota schemes to purchase and deliver inputs. Delays and supply failures sometimes originated from these elements of the system that were beyond the control of the village committees. The recommendation of a joint WHO/UNICEF and Netherlands government team charged to draw up a Bamako Initiative plan of action in 1991, included establishing health (management) committees in each health zone. It was suggested that representatives of the Abota villages, including their health workers, would serve on this committee along with health centre and hospital staff. This type of committee would permit the Abota villages to increase their control of funds, procedures and individuals involved in the purchase of essential drugs and other inputs. Perhaps such an approach in Ghana would help ensure consumer participation and the acceptance of the scheme as social institutions.

#### RHIAs and the national health strategy

The above recommendations are compatible with the health strategy currently being pursued by Ghana. Firstly, Ghana endorsed the principle of "cost-sharing" for health care in 1971, with the introduction of government hospital and clinic fees. The Government has in recent years stated its desire to include insurance in its health financing strategy

(several health insurance feasibility studies have been commissioned by the MOH since 1985). RHIA would complement schemes implemented for those employed in the formal or semi-formal sectors. Secondly, recent changes, including plans to contract out non-clinical services of government facilities, such as catering and laundry, imply that the government wishes to encourage partnership with the private for profit and the non-government sectors in the provision of health care in government facilities. The health insurance associations would be acting as local “block purchasers” of health care from government health facilities, and would also represent private partners in the financing of health care. An advantage of this arrangement is that it would lead to greater accountability of service providers to local consumers. Thirdly, the promotion of the sub-district facilities staffed by lower cadres of health professionals is also one of the current policies of the MOH.

## POLICY IMPLICATIONS FOR OTHER SUB-SAHARAN AFRICAN COUNTRIES

Rural health insurance is a community financing option that has largely been ignored in the debate on health financing in Africa. The research findings suggest that some African communities prefer community health financing strategies that are based on an insurance mechanism, rather than those based on fee-for-service at the point of use. Their willingness and ability to pay for their preferred insurance covers was found to be high. In two Sub-Saharan African countries, innovative schemes have already been reasonably effective in reducing the financial barriers faced by rural households when seeking health care.

As already discussed, the common conjecture that health insurance schemes for rural populations in Africa would not be feasible, appears to be based on the following assumptions: (i) there is no preference or demand for health insurance among these populations, (demand is used in the economic sense of being the willingness and ability to pay for goods or services); and (ii) schemes would require management structures similar to those employed by Western health insurance systems. The research conclusion, based on evidence from West and East Africa (an Anglophone country, a Francophone



country and a Portuguese speaking country), is that in a number of low income African countries there is significant economic demand for health insurance among rural households. The demand is adequate to permit schemes to harness vital private funds for the health care sector and to reduce the financial barrier faced by vulnerable groups to obtaining health care.

The second assumption concerning the administration requirement of a rural health insurance scheme, ie that schemes require management structures similar to those employed by western health insurance systems, would only be true if schemes were to be modelled on conventional health insurance. The latter schemes, found in Europe and North and Central America, are designed to cater largely for waged/salaried workers and therefore premiums are collected monthly or weekly. The administrative networks required to collect monthly insurance premiums from rural populations and manage individual claims are nonexistent in many African countries. (In any case, as already discussed, many rural households would not have regular cash incomes to permit them to make contributions throughout the year). Therefore it is reasonable to predict that in the foreseeable future, it is unlikely that either centralised government or large commercial schemes, as found in rich countries, can provide near-universal health insurance cover for people in Africa. The schemes studied in the case studies described in Chapter 4 are examples where the principle of “appropriate socio-technology” has been applied in the design of administration and management structures. Both schemes are administered by relatively few government officials at central levels and they rely mainly on local management by the community.

Another example of an “appropriate” insurance administration structure that may be feasible in the current socio-economic context of Sub-Saharan Africa, is 'local health insurance associations that contract with and/or co-finance providers of health care in their localities'. This structure was suggested by household heads who took part in the focus group discussions in Ghana.

The studies cited above also provide preliminary observations and conclusions on

organizational and socio-anthropological issues in relation to insurance schemes in rural Africa. It is crucial that such evidence informs the policy debate among African countries and donor organizations seeking to promote sustainable and accessible health care services. Otherwise rural health insurance will continue to be dismissed and the possibilities for raising revenue for health without greatly decreasing access will remain unexplored.

The findings in Guinea Bissau exemplify that to maintain the effectiveness of decentralised and community controlled schemes, continuous appraisals of their contractual arrangements with both public sector and non-public private organizations may be necessary. In addition, the adoption of a learning process approach, in which the overall structure of community financing has evolved over time on the basis of experience, was found to be an important and distinctive feature of the Abota system.

To reject the option of rural health insurance because quality of services would be poor is not justifiable. Poor quality is not inherent to, nor is it confined to, health insurance. It has also contributed to low utilization and poor cost recovery rates where financing has depended on user fees. Poor quality is a symptom of the underlying economic malaise that requires consumers in Africa to fund government health services directly, as well as through their contributions to general tax revenue. All things being equal, the returns, in terms of improved access to health care would be higher if resources are used to improve quality of care within an insurance -financed system rather than one financed by user fees.

## FUTURE RESEARCH

### Operational Research on the process and outcome of a pilot district rural insurance scheme

The feasibility study component of this research, undertaken in Osudoku health area in Ghana, has produced detailed base line data on morbidity, health care expenditure and consumer perception about the quality of locally available health care. Therefore, if the recommended rural health insurance scheme is implemented in this study district it will

be possible to carry out a “before and after” study of the impact of the scheme on efficiency and equity of the health care system. The indicators of health sector efficiency and equity influenced by health insurance include cost escalation, resource allocation, the use of specific medical technologies and equity of access to services (Kutzin & Barnum 1992). The benefit type, the role of the insuring organization with respect to financing and health care provision and the system of reimbursing providers or patient are institutional characteristics of insurance schemes that will affect these indicators. A “before and after” study could evaluate changes in these efficiency and equity indicators and analyse the role of institutional characteristics of the pilot scheme in producing the observed changes. This would provide policy makers with information needed to improve the scheme and expand to other districts in Ghana.

If a rural health insurance scheme is voluntary, problems of ‘adverse household selection’ revealed by CAM case study may occur. Consequently, it may be advisable to base projections of the health care utilization rate (used to calculate premiums and government subsidies for such voluntary schemes) on illness rates of households that are likely to participate, rather than the entire household population. Operational research may therefore be required to monitor the size, composition and income of such households as soon as schemes are implemented. The estimates of the affordable contributions per household and the level of subsidies required from government and/or donors to fund the proposed benefits could then be revised at the appropriate intervals.

#### Research on the role of governments and capital markets in rural health insurance associations

When considering the operation and regulation of insurance contracts, a number of questions arise. They include: what is the appropriate quality of insurance to be stimulated by government? As in the developed countries, guarantees and/or regulatory legislation by the government will probably be necessary to ensure consumer trust in the solvency and integrity of the schemes. However the mechanisms for government regulation may need to be different from those in developing countries and research could be used develop the framework for designing the appropriate mechanisms.

Another relevant question in this regard is; are capital markets, either local or external, likely to support rural health insurance schemes through the provision of reserve funds and/or reinsurance? The importance of capital markets in a given country is likely to be influenced by the level of public subsidy of health care provided to the insured but research could be useful in demonstrating the short and long term consequences of involving the private sector (both for profit and not for profit). Such research would also need to investigate the Government's role in regulating and funding schemes that depend on private capital for reserve funds as compared to those that do not.

#### Econometric research on modelling WTP

The econometric estimations in this research provide decision makers only with pointers about the relationship between WTP and household factors in a rural African setting. This is because independent variables collected by the household survey alone did not appear to be efficient predictors of WTP. Policy decisions about the feasibility of proposed rural insurance schemes would have found such predictors of value. Research into the methods of measuring risk attitudes might in future make it possible for econometric modelling of WTP to be more useful to health planners and policy makers in the future. It is noteworthy that the stated annual household income was not statistically a significant determinant of WTP, suggesting that establishing household incomes may not be vital in rural health insurance feasibility studies. (In any case estimating household incomes in rural areas is often problematic.)

#### Research on adverse selection arising from AIDS patients among target population

Although moral hazard did not appear to be a problem in the two health insurance schemes studied in depth by the research and appeared not to be a major issue in the literature about schemes for rural households, adverse selection in one form or another appeared significant. In the CAM, larger households were more likely to have CAM cards than smaller households. In the Nkoranza Health Insurance Scheme it was estimated that 19% of admissions among the insured would not have occurred in its absence and the available evidence suggested that part of the increase in utilization was due to adverse selection and that this was the major cause of the scheme's expenditure exceeding its

revenue.

A high prevalence of chronic health problems among an insured population will increase the likelihood of adverse selection. In the past sickle cell disease was the major chronic condition in Sub-Saharan Africa, but in recent years AIDS and associated conditions such as TB have become the common cause of chronic disease consuming high proportions of health resources. Three main types of costs are associated with management of AIDS and HIV: 1) direct treatment costs; 2) public health costs such as blood screening, promoting health life styles and research and 3) indirect costs ie. loss of income due to morbidity and mortality (Foster & Lucas 1991). Chela and co-workers found that the treatment of HIV-positive patients was more costly than HIV-negative patients in rural Zambia (Chela *et al* 1989). Likewise, a study of a random sample of 251 inpatients admitted to the medical wards of a hospital in Kinshasa, Zaire found the direct costs of illness were higher for HIV-positive patients (\$170 vs \$110) (Hassig *et al* 1990). With increasing numbers and improvements in treatment these costs are expected to escalate.

Given the likelihood of adverse selection, as the numbers of HIV and AIDS patients increase, the higher costs associated with their medical care will further threaten the financial viability of schemes as the Nkoranza Health Insurance Scheme or the recommended Dangbe scheme. (Recent estimates for the national prevalence of HIV for Ghana are high (2% by GTZ). In theory households that expect to have high health costs because of the poor health status of one or more of their members will be especially motivated to participate in the health insurance scheme. Some research will be required to investigate the distribution and characteristics of high-expenditure patients among the insured and non-insured population, in particular those with HIV and evaluate the impact of HIV, patients and other high -expenditure patients on the financial performance of the scheme. The findings will provide crucial policy information for the managers of the Nkoranza Scheme and the Ministry of Health in Ghana.

## SUMMARY OF CONCLUSIONS AND POLICY IMPLICATIONS

In conclusion, the schemes described in this thesis identified some "appropriate technology" solutions to the problem of how to promote sustainable and accessible health care in Africa. Furthermore it found evidence from socioeconomic evaluations of three health insurance schemes in Sub-Saharan Africa that suggest, were quality of care provided to the insured perceived by them to be adequate, appropriately designed rural health insurance in some African countries would reduce financial concerns faced by people at the time of illness. It would also raise significant revenue. By improving *quality, coverage and efficiency*, health insurance would contribute to fulfilling the primary goals of health sector reform in Africa.

Within the last 10 years some African countries have already experimented with rural health insurance schemes that cater for rural communities; these countries include Burundi, Ghana, Guinea Bissau, Zambia and Zaïre. These countries will benefit from technical assistance to monitor, evaluate and improve these schemes, and in the future undoubtedly more countries will wish to initiate similar schemes. It is hoped that the achievements and weakness of the Abota village system and the CAM card scheme, documented in this research, will inform the policy discussions among African countries and donor organizations seeking to promote sustainable community financing schemes in the sub-region. The methodology developed in this research may also be developed further, tested and adapted to provide locality specific information upon which to base decisions in different countries and regions.

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## **Appendices**

Appendix 1:	Publications
Appendix 2:	Questionnaires <ul style="list-style-type: none"><li>▶ CAM Study</li><li>▶ Abota Study</li><li>▶ WTP study (Ghana)</li></ul>
Appendix 3:	Osudoku sub-district census
Appendix 4:	Evaluation of regression models

## **Appendix 1: Publications**

Arhin DC. (1994) The health card insurance scheme in Burundi: a social asset or a non-viable venture? *Social Science and Medicine* 39(6): 861-870.

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## THE HEALTH CARD INSURANCE SCHEME IN BURUNDI: A SOCIAL ASSET OR A NON-VIABLE VENTURE?

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**Abstract**—La Carte d'Assurance Maladie (CAM) is a national health card insurance scheme implemented by the government of Burundi since 1984. Focus group discussions, a household survey, and a retrospective outpatient survey were used in 1992 to assess its financial and social performance in Muyinga Province. The study showed that although the revenue from premiums was insufficient to fund even the recurrent costs of outpatient drugs consumed by participating households (the current price of the CAM card would cover approx. 34% of the outpatient drug costs), the scheme performed a valuable social equity function. Women reported that they had little access to cash and that CAM, by eliminating cash payments at the point of use, empowered them to decide the need for, and timing of, health care consumption by household members without consulting male household heads. Other findings suggested that the schemes financial performance was poor because current membership was low (23% of households) and, more importantly, households with relatively high risks dominated the scheme ('adverse household selection'), making risk-sharing sub-optimal. The author concludes that improvements in the quality of care, in particular increased drug availability and higher standards of prescribing by health workers, would encourage the participation of 'lower risk' households, many of whom did not have a valid CAM because they judged the quality of care provided under the scheme to be inadequate. A policy obliging communes (local governments) to use the greater part of the scheme's revenue, initially supplemented by external 'seed money', to fund services at the health centres would facilitate these improvements. It is envisaged that improved quality would also lead to increased revenue and therefore, greater financial viability, by paving the way for moderate increases in the price of the card.

**Key words**—health, insurance, social equity, Burundi

### INTRODUCTION

Sector restructuring programmes are common features of the economic reforms of many countries in sub-Saharan Africa. In the health sector, the aims of these reforms invariably include to rationalize budgeting, financing and management practices in order to improve efficiency, coverage and quality of health services. The reform packages in most cases have decentralisation and community financing as core components. Consequently, one of the challenges facing these developing countries is to organise community financing in a manner that does not deter poor and vulnerable groups from seeking health care. In most cases this is a formidable task because of the generalised nature of poverty in the sub-region.

Local health insurance is one in a portfolio of available options to promote community involvement in health financing while maintaining access to free, or virtually free, health care at the time of illness. It also has the potential to foster decentralisation. To ensure health insurance coverage for the majority of people in rural Africa, schemes must be capable of accommodating individuals and households that have irregular and/or seasonal cash incomes. Therefore, schemes cannot be modelled on conventional

health insurance schemes that cater largely for waged/salaried workers in Europe and North America. Rather, lessons should be drawn from the few innovative health insurance schemes currently functioning in sub-Saharan Africa. Analytical studies of these schemes would provide insights into policy relevant issues such as the affordability of premiums, the appropriateness of payment schedules, the relationships between premiums and benefits, and the resulting level of access to health care among the population. To date only a few studies in the sub-region have addressed some of these questions in relation to risk sharing schemes for rural populations. They include the evaluations of the Abota village insurance scheme in Guinea-Bissau [1-3] and hospital pre-payment in Zaire [4]. The broad aim of this case study of La Carte D'Assurance Maladie (CAM) in Burundi, was to contribute to current knowledge on this subject.

La Carte d'Assurance Maladie is a national health card insurance scheme implemented by the government of Burundi since 1984. Purchase of a CAM card by a household entitles its members (restricted to two adults and all children below 18 years) to free health care at all public health facilities. The card is sold at a fixed price irrespective of the household size [in June 1992, the price of the card was 500 FBu (1.85

U.S.\$]). Persons without cards are required to pay user charges for government health care. The level of user charge per episode of illness treated is determined by the health worker at his or her discretion and generally varies with the age of the patient and the quantity and type of treatment received. All health services provided by the government are covered by the CAM scheme and therefore, in theory, CAM card holders who seek health care at government facilities should not incur out of pocket expenses. However, due to the shortage of drugs and other inputs, CAM holders, like fee paying patients, are sometimes given prescriptions to purchase drugs on the open market. The names of household members entitled to use a card are written on the card at the time of purchase, making it difficult for it to be used by individuals from other households. The card is valid for one year and may be purchased from a community representative at any time of the year. This makes it possible for a non-CAM patient to pay a user charge at a health centre and on referral to a hospital, to purchase a CAM card in order to obtain free hospital care. The cards are not accepted by non-government health facilities, such as mission and for-profit clinics and hospitals.

The revenues from CAM card sales and user charges are retained by the 'commune' committees (the 'commune' is the lowest level of local administration in the country). These committees have some financial responsibilities for the health centres in their localities and are expected to fund recurrent expenditures, such as stationery, fuel for refrigerators and linen, and in some cases capital projects such as construction of new health centres. However, revenues from CAM and user charges are not designated to be used in the provision of health care and therefore in practice only a small fraction is allocated by communes to health. In 1990 8% of the revenues of communes in Muyinga Province came from the sale of CAM cards, whereas an average of only 1% of commune revenues were used to finance health care [5]. Health worker salaries and drug costs are funded by the government through the Ministry of Health's budget.

#### FUNCTIONS OF A HEALTH INSURANCE SCHEME

##### *Financial function*

The approach used in the study is underpinned by the assumption that a health insurance scheme has two prime functions that merit separate consideration, although they are intrinsically linked. The first is a financial function: to provide a pool of funds to cover all, or (in government subsidized schemes) part, of the cost of health care for those who contribute to the pool; and to encourage providers and consumers to use health services in a cost-effective manner. Schemes that perform well financially by raising adequate revenues from insurer contributions to cover a high percentage of the costs of care provision,

plus all administrative costs, will provide meaningful additional funds for the health sector. On the other hand schemes may have poor financial viability because of an excess of high risk members in the scheme (adverse selection), or as a consequence of levying an inadequate premium relative to the health care needs of the insured population. Finally, a scheme may be unable to fund the health care claimed by its insured because they make excess demands as a response to being insured (moral hazard).

The study sought to assess CAM's financial strengths and weakness. In particular to determine the existence of adverse selection and moral hazard by establishing whether differences existed in the illness rates and utilization rates per episode of illness among individuals in households that participated in the scheme and households that did not. Another specific objective was to estimate the ratio of revenue to expenditure by determining the relationship between the average annual value of drugs obtained per participating household from public health facilities, and the annual cost of membership in the scheme. The study assumes that the percentage of the drug costs covered by CAM revenue is central to the scheme's financial performance. The rationale for this approach is that drug expenditure forms a major cost item in the provision of primary level care and therefore the ability of an insurance/prepayment scheme to fund drug supplies adequately will provide some indication of its level of financial viability; in addition community financing of drugs used at the local level is increasingly becoming a part of the health financing strategies of developing countries. Although at the time of CAM's inception it was not an objective to raise funds to cover drug purchases at the health centres, at the time of the study the Ministry of Health was exploring the potential of CAM to cover drug costs of government health centres in the future. The final specific objective with regard to financial function was to evaluate the potential for improved financial performance by considering household health expenditures and the willingness of heads of households to pay higher prices for membership of the CAM, if services were improved.

##### *Social function*

The second prime function of a health insurance scheme is social, including social equity. It is to remove financial barriers to obtaining health care at the time of illness for the vulnerable groups in society, i.e. the very young and elderly, and the chronically ill. Many of these persons are also in the low income groups and/or require expensive health care. This social function is achieved through the subsidization of the cost of caring for some individuals in the society by those who have lower risks, i.e. the wealthy and more healthy. This may be regarded as redistribution of effective income. Thus a health insurance scheme promotes social equity because individuals



who have equal health care needs, 'need' being defined as the capacity to benefit from care, are assisted to obtain comparable care irrespective of their economic status. All members participating in the insurance scheme benefit from removal of the uncertainty about wealth or income arising from health care expenditure. In addition to providing private benefits to participating individuals, health insurance also increases overall social welfare by promoting the optimal consumption of health care and thus maximizing the resulting positive externalities. A scheme may fail to perform its financial function adequately as a consequence of low participation of individuals of low risk (adverse selection) and high income, thus minimizing its impact on the distribution of effective incomes and making it impossible for it to perform the equity function of reducing the financial barrier to the disadvantaged when seeking health care. Financially non-viable schemes may, however, be assisted by government subsidies to have an impact on the levels of financial concerns faced by the poor at the time of illness, and thus still provide a valuable social function.

The study focuses on whether CAM improves the access of women and children to prompt health care. It was assumed that women and children had higher risks and less access to money, and therefore if the CAM affected their health care utilization favourably it was performing a positive social function. The specific objectives of the study relating to social benefits of the scheme were: to determine the perceptions of heads of households about the benefits of participating in the scheme; and to ascertain the effect of the scheme on the access of women and children to health care.

#### *Data collection*

A household survey was used to obtain information on illness occurrence in the month preceding the study, perceptions about the value of the health card insurance scheme and willingness to pay for membership from 300 households in Muyinga Province. Fifty 'collines' were randomly selected with probability proportional to population (1990 data) from 259 collines in the province. (A colline is a rural community commonly located on hill tops. Several collines form a sector administered by a Sector Chief, and several sectors form a commune governed by a committee, responsible for local development activities.) In each colline 6 households were randomly selected and the head of household interviewed by local college students trained to administer the questionnaire by the research team.

Four focus group discussions were conducted (the number was determined by time and resource availability). Three were held among farming women in rural collines and the fourth was held in Muyinga town. The collines were randomly chosen among approx. 50 of the collines that had local women's credit associations. On arrival at the collines the

study team either randomly selected a group of 7–12 women working in a field or women living in a cluster of houses randomly selected, and the women were invited to participate in discussion held in the local language, Kirundi. All those invited agreed to be members of the groups. The main question debated was "Has the card insurance scheme increased the access of women and children to health care?" The women's general perception of the health insurance card scheme was the starting point of each of the discussions. Although women of widely differing ages participated in the discussions, the majority were in the child bearing age, 15–45 years. The discussions were permitted to last 40–55 min.

A retrospective outpatient survey was used to obtain data about 566 outpatient visits to 5 government health centres in the preceding 12 months. For each month, in a health centre, 9 or 10 patients were selected by taking every tenth outpatient registered in that month. The age, sex, diagnosis and drug treatments of the patients in the sample were extracted from the registers. The completeness of a patient's treatment was jointly assessed by the principal and co-researchers, both trained public health physicians with clinical experience in tropical Africa, by comparing the quantity of drugs prescribed to the quantity required for a person of the patient's weight under the MOH's dosing schedule. The patient's weight was inferred from age and sex. In some of the health centres the register also provided information on the form of payment used by the patient, i.e. whether fee for service or a health insurance card.

Initial analysis of the data collected was carried out in the field. Epi Info, version 5, was used to analyze the household survey data. Costing of the drugs received by outpatients at the health centres was done using Quatro Pro spreadsheet package.

### **CAM: CONTEXT AND PERFORMANCE**

#### *Muyinga Province*

The topography of Muyinga, like most of Burundi, is that of numerous hills and valleys. Agricultural land is sparse and therefore the slopes and valleys surrounding the collines are intensively cultivated. The majority of household units in the district consist of a mother, father and dependent children, and frequently one or two grandparents. Women produce the food crops consumed by the household, selling any surplus in village markets, while the cash crop, coffee, is harvested and sold by men in the town markets.

Some women brew and sell local beer made from bananas, and therefore periodically earn small amounts of cash income. However, in general, because women in male-headed households are excluded from trading in the cash crops, women have little access to cash. Consequently, it is common for household decisions about the use of cash to be made

Table 1. CAM status of male and female headed households

Status	Male headed		Female headed		Total	
	N	(%)	N	(%)	N	(%)
Non-CAM households	111	42.5	27	69.2	138	46.0
Past CAM households	85	32.6	9	23.1	94	31.3
CAM households	65	24.9	3	7.7	68	22.7
	261	100	39	100	300	100.0

by men. In order to obtain health care from fee-for-service health facilities, either for themselves or their children, women must frequently request cash from male heads of households.

The average household size was 5.34 persons. The majority of households (90%) said they were Christians. Moslems and other religions accounted for only 3% and 4% respectively. Almost all households in the study area were engaged in farming; 285 (95%) of heads of households were farmers. Only 9 (3%) had received more than 6 years of formal education, 129 (43%) had attended school for 1-6 years and 162 (54%) had received no formal

education. The majority of homes were constructed either of bricks, tiles and mud (56%), or mud and thatch (41%). The households possessed few consumer goods: 128 (42.7%) of households owned a radio and/or a bicycle, and only one household possessed a car.

#### Participation

Fifty-four percent of households were either participating in the CAM at the time of the survey or had done so in the past. Valid cards were held by 23% of households. Table 1 shows the distribution of households in the sample with respect to their participation in CAM. The 'CAM households' (22.7%) presented valid CAM cards to the interviewer; the 'Past CAM households' (31.3%) did not possess valid CAM cards at the time of survey but reported having purchased cards in the past; 'Non CAM households' (46%) reported never purchasing a card. Female headed households constituted 13% of the sample. Among female headed households only 7% had cards whereas 24% of male headed households had valid cards.

Table 2. CAM status by households size

Status	Household size (No. persons)						Row total	
	≤2		3-6		≥7		N	(%)
	N	(%)	N	(%)	N	(%)		
Non-CAM households	27	84.4	88	50.9	22	23.4	137	45.8
Past CAM households	3	9.4	54	31.2	37	39.4	94	31.4
CAM households	2	6.3	31	17.9	35	37.2	68	22.7
Column total	32	10.7	173	57.9	94	31.4	299	100
$\chi^2$	Value		df		Significance			
Pearson	42.7634		4		0.0000			
likelihood ratio	44.9698		4		0.0000			

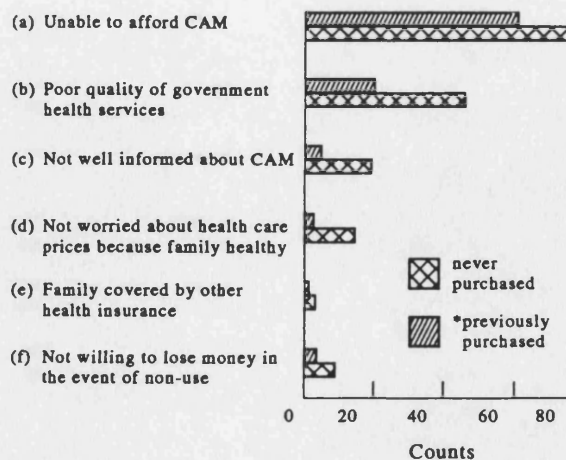


Fig. 1. Reasons for non-purchase of CAM by households. N = 232 households who did not have valid CAM cards.

Table 3. Morbidity and treatment rates for acute illness in a one month recall period in CAM and non-CAM households

Rate	CAM households	Non-CAM households	Total
No. of people	981	615	1596
Illness episodes	400	259	659
Illness rate per household	2.47	1.88	2.20
Illness rate per person	0.41	0.42	0.41
Treatment actions	305	164	469.00
Treatment rates per person	0.76	0.63	0.71
(a) Formal treatment rate per episode	0.54	0.35	0.46
(b) Public treatment rate per episode	0.37	0.16	0.28
(c) Formal treatment rate per household	1.33	0.65	1.02
(d) Public treatment rate per household	0.91	0.3	0.63

(a) and (c) treatment from formal health facilities such as government health centres and hospitals, mission clinics and hospitals, and private clinics.

(b) and (d) treatments from government facilities.

A hypothesis that CAM membership status of households and the size of households were independent was rejected (Chi-square test  $P < 0.001$ ). Larger households were statistically more likely to be current or past CAM card holders than households with few members (Table 2). The Chi-square test of independence rejected independence between economic proxies (type of house and household possessions) and size of family. However, test of association failed to indicate a linear relationship and rather suggested that households with either very few or many people were poorer than those of sizes close to the sample average. Tests of independence could not be used for cross-tabulations of economic proxies by CAM status because some of the expected frequencies were less than 5.

The most frequently selected reasons for non purchase were affordability, poor quality of government services (lack of drugs) and insufficient knowledge about the scheme (Fig. 1). Forty-five percent of the households who gave lack of funds as one of the reasons also said they would be willing to pay at least twice the present price if drugs were always available, suggesting that some of the reported inaffordability may have been relative rather than absolute. Competition from other health insurance schemes did not appear to be a significant factor influencing non participation in the CAM scheme since only 4 (1.3%) households reported that they were covered by other health insurance schemes. Of the 232 households who did not have valid cards, 15 did not select any of the 6 reasons offered in the questionnaire as possible expla-

nations for non-participation. (All reasons were first read to the respondent and during a second reading he or she was asked for an answer.)

Reasons that might suggest 'non risk averse' attitudes to illness were reported by only 23 households. These reasons included 'absence of worries about health care prices, because of good family health' and accounted for 8.4% of the reported reasons for never having purchased a card and only 2.1% of the reasons for not having a valid card at the time of the survey. For households that reported 'not willing to lose money in the event of non-use', one interpretation is that they have a low monetary evaluation of the risk involved in illness. A low evaluation would lead to unwillingness to pay a positive price to avert the risk and therefore would be consistent with a low demand for insurance. Only 11 (3.6%) of households fell into this category.

#### Illness rates and utilization

The main symptoms reported suggested that the principal illness conditions for all age groups were respiratory infections, malaria, digestive disorders, headaches, and injuries. These health problems accounted for 76% or more of illness episodes in each age group in the 4 weeks prior to the survey.

The illness occurrence as measured by episodes of illness per person, was almost identical for households that purchased the CAM and those that did not (Table 3). This suggests that there was not a predominance of persons with high tendencies/risks of becoming ill in the households purchasing CAM, compared to households that had not purchased CAM. This in turn suggests that adverse selection of individuals was probably not a major problem. Formal health care (modern/western care obtained outside the home) was not sought for all illness and therefore the number of formal treatment actions was less than 1 per illness episode. The formal treatment rate per episode was higher for CAM households as opposed to non-CAM: 0.53 per episode for CAM households and only 0.35 per episode for non-CAM. Public treatment (treatment from government facilities) rates were also higher for CAM than non-CAM: 0.37 per episode and 0.91 per household for CAM households, and only 0.16 per episode and 0.3 per household for non-CAM.

The average number of drugs (types) received by outpatients was similar for the five centres studied. The mean number of drug types was 1.58 (Table 4).

Table 4. Number of drug treatments and mean cost of drug treatments by health centre

Health centre	N	Patient (%) receiving X no. of drugs				Mean no. of drugs	Mean value of drugs
		X = 0	X = 1	X = 2	X = 3		
Gasorwe	120	0.8	30.0	55.8	13.3	1.82	165.5
Giterayi	120	3.3	60.0	34.2	1.7	1.34	111.3
Kamaramagamba	120	0.8	30.8	52.5	15.8	1.83	79.1
Muyinga	120	6.7	51.7	31.7	10.0	1.45	72.0
Muramba	86	0.0	62.2	33.7	3.5	1.41	125.6
Total	566	2.5	46.3	42.0	9.2	1.58	114.4



The average value of the drugs received by patients in each facility, however, varied greatly, ranging from 72 FBu for patients at Muyinga to 165.5 FBu for those at Gasorwe. Significant numbers of patients received incomplete treatments in the centres that had low values (Kamaramagamba and Muyinga), whereas most patients received adequate quantities in Gasorwe and Muramba. Distribution of the average value of the drugs received by patients in each facility is skewed towards the lower range of values (Fig. 2). The mean value of drugs per patient (both CAM and non-CAM) for the three centres that did not give incomplete treatments is 134.1 FBu. (It was not possible to calculate the mean value of drug per CAM patient because the health centre records did not state the method of payment in all cases. However, since drug treatments were generally adequate in these three centres, it was assumed that the mean value of drugs per CAM patient would not differ significantly from this value.)

#### *Health expenditure and willingness to pay*

In the month prior to the study, 110 (36.6%) of households had incurred out-of-pocket expenses for medical consultation(s) and/or drug purchases. Of the households who held valid CAM cards 27.9% had incurred such costs, and of the households without valid cards the corresponding figure was 39.85%. The mean expenditure per household was 254.00 FBu for the former group and 192.84 FBu for the latter. The expenditure per treatment action ranged from 10 FBu to 9,000 FBu. For households possessing a valid CAM the mean expenditure per treatment action was lower than for households that did not (136.00 FBu and 249.94 FBu respectively).

Willingness to pay a higher price for CAM if drugs were more available at government health centres was expressed by 49% of households. About half of these households were willing to pay 1000 FBu and the others were willing to pay 2000 FBu (Fig. 3). Of those who said they were conditionally willing to pay more for the CAM card, 32% had never purchased a CAM card in the past.

#### *Benefit of CAM to women*

Contributions in the focus group discussions were in general spontaneous and appeared to reflect a keen interest in the CAM. One rural group opened the discussions with a request that they be informed of the outcome of our study because they had received no feedback from a previous study in which they had participated.

In response to the opening question, "do you think the CAM has any benefits for women?", consensus in three of the groups implied that the CAM has important benefits for poor families, for households with seasonal cash availability and to women whose husbands spent significant amounts of household cash on alcohol. In these situations the CAM ensured that in times of illness health care was available. This was thought particularly important in cases of child illness since they required prompt treatment.

"Before the CAM if you were unable to pay for expensive drugs then your child would die". One member stated, "CAM was started out of love for the people". Some members of the fourth group expressed the opinion that the CAM provides no benefits because the government health centres provided poor quality service and insufficient drugs. Some of the comments in the early part of the discussions reflected an appreciation that the CAM

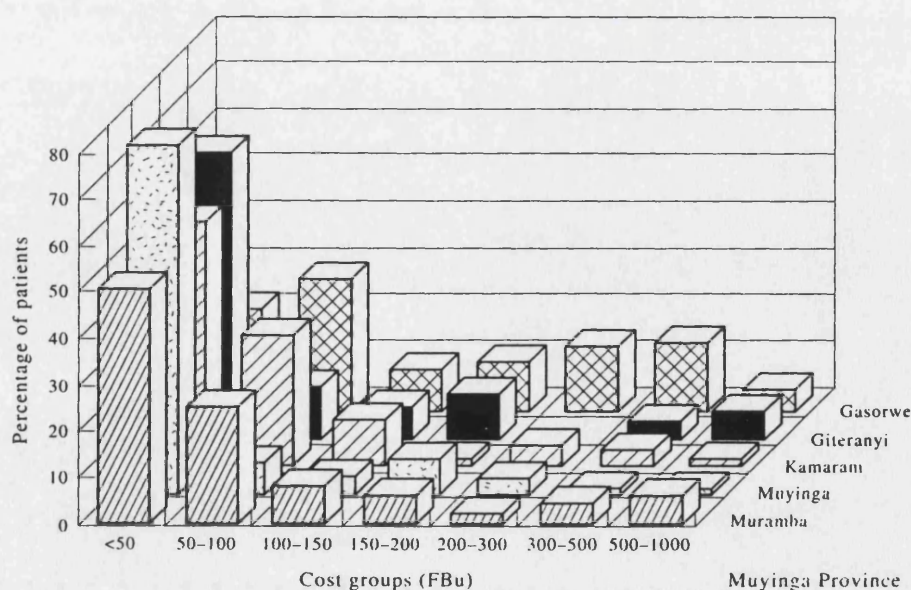


Fig. 2. OPD drug treatment costs. Patients (%) by cost groups.

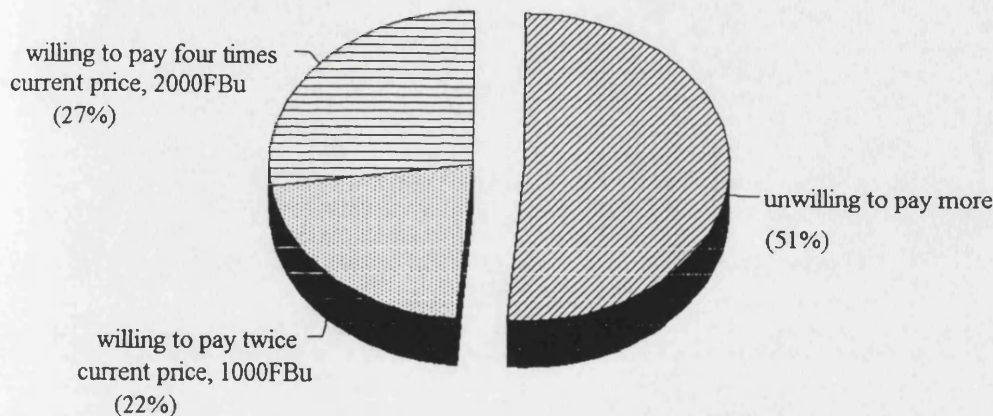


Fig. 3. Household willingness to pay more for CAM (willingness was conditional to drugs being available at government health facilities).

removed the uncertainty about the affordability of health care at the time of a child's illness;

It is better to buy the card than to take the chance of illness.

To guard against falling sick in times of no cash it is well to buy the CAM.

The card is important because for one year use it is cheap, especially when one is referred to the hospital.

Overall the groups agreed that households' decisions to purchase the CAM were initiated by the women but that the cards were purchased by male partners. However, several women reported that they had purchased separate cards for older girls living away from home to ensure them antenatal care. The cards were either kept at home and women required no permission from husbands to make use of them or, as reported in one group, "the card is kept in the pocket of the woman just like an identity card".

In three of the groups the issue of quality of health care received by CAM holders became dominant after the initial debate about the merits of the CAM. There was agreement that CAM holders had poor care because the drugs at government health centres were frequently out of stock. They also identified that in some cases health workers discriminated against CAM holders and gave preferential treatment to patients that paid cash. It was noted in one group that antenatal treatment was poor because there were few female medical technicians at the health centres.

Most of the women in the group that were dissatisfied with the quality of care expressed willingness to pay a CAM price of up to 2000 FBu if this would ensure adequate drug supplies at the health centres. (The groups believed that the revenue from the sale of the cards was used to purchase drugs and other supplies for the government health centres and hospitals.) These women were also willing to purchase the cards at a specified time in the year to facilitate the purchase of drugs in larger quantities and therefore cheaper unit prices by the government.

They suggested July–August, the months corresponding to the end of the harvest. One unwilling woman explained that she was a poor widow. Another said she was elderly and had no children in her care.

In the latter stages of the discussions the groups were asked to make some suggestions to improve the CAM. The following summarises the suggestions made;

- (1) Ensuring adequate drug supplies and improved quality of care at government health centres.
- (2) Including older girls, aged 18 years and above, who are unmarried and still living with parents as eligible household members under CAM.
- (3) Incorporating the mission health facilities so that CAM holders may receive either free or subsidized care at these institutions.
- (4) Provision of exemptions for the very poor and widows.

#### DISCUSSION

##### *Study limitations and strengths*

To increase the reliability of the answers to the survey questions the questionnaires were written in the local language, avoiding potential distortions due to incorrect translations. Some of the limitations of the study arose from its cross-sectional design. Projections of annual household illness rates were made on the basis of illnesses that were reported to have occurred in the 4 weeks preceding the study. The findings of the household survey may therefore be subject to some degree of recall error and any seasonal variations in illness occurrence will not be reflected. A four week recall period was adopted in order to facilitate the estimation of illness incidence rates and health care utilization rates that could be projected to annual rates and then meaningfully related to annual CAM revenue. Another limitation is that the absolute level of willingness to pay found may not be applicable to the whole country. This



inability to generalize the absolute values is because: (1) the relatively high altitude of Muyinga province may be associated with a climate and therefore illness patterns that differ from that of lower lying provinces, and (2) Muyinga province is a major coffee growing area, and the relatively high household incomes may make household health expenditure significantly different from other provinces. However, the relative proportions found between CAM and non-CAM households is unlikely to differ significantly from one province to the other and therefore the results may be used to assist in the formulation of national policies.

#### *Financial performance*

A public treatment rate of 0.91 per household per month and a mean value of drugs of 134.1 FBu per formal treatment, implies that an average household consumes 1464.4 FBu of outpatient drugs annually. The current price of the CAM card would therefore cover 34.1% of the drug costs. In practice, revenue from CAM does not appear to be used to purchase drugs or medical supplies required for patient care at the health centre. Although a potential for improving financial performance exists because there is some willingness to pay a higher price for the CAM card on condition that more drugs become available at government facilities, the findings indicated lack of financial viability. It is important to note that even at the present price significant numbers of households stated that they could not afford to purchase the CAM.

Adverse selection and moral hazard are major causes of inefficiencies in the functioning of health insurance schemes and therefore have consequences for financial viability [6-9]. The study found evidence to suggest that both these problems may be contributing to CAM's poor financial performance. Adverse selection arises when insurance policy suppliers lack perfect information about the risk of individual insurees, or on grounds of equity, offer insurance policies based on community rated premiums (uniform premiums based on the population's average expected probability of loss). (The alternative is experience rated premiums in which individual probabilities are assessed and individuals are offered premiums accordingly.) It is reasonable to consider the fixed price of the CAM card as an example of the former scenario. Where the insurance is voluntary, as in the case of CAM, the community rated premium discourages those of low risk from purchasing while making it attractive to high risk individuals. The resulting 'selection' of high risk individuals increases the average expected loss for the insured population in subsequent periods. The outcome is an inadequate pool of funds that diminishes the scheme's financial viability. The percentage of eligible members belonging to the scheme is one proxy measure of the degree of adverse selection affecting the scheme. The theoretical analysis of the causation and

consequences of adverse selection assumes that individuals have perfect knowledge of their illness risks and that they are not prevented from purchasing insurance by inadequate incomes. In reality, however, especially in a country of low per capita income such as Burundi, the household membership rate in the CAM may be less related to perceived or actual risks of requiring health care and determined significantly by affordability. Thus an assessment of adverse selection in the CAM requires consideration of both affordability and perceived illness risks. The frequency of illness episodes among CAM and non-CAM households was sought in an attempt to ascertain the degree of adverse selection. A statistically significant higher rate of illness per person in the former group would suggest that individuals with higher risk had 'selected' themselves to participate in the scheme.

The rate of illness per person was found to be almost identical for members of CAM and non-CAM households and, therefore, adverse selection of individuals did not seem to be a likely problem. However, since larger households were more likely to purchase the CAM than small households, illness episodes per household were significantly greater for CAM households than for non-CAM households. This situation may be described as 'adverse household selection' and results in sub-optimal level of risk sharing among households.

Moral hazard occurs when individuals, once possessing full and fair insurance policies, lack the incentive to take actions that reduce the probability of the insured event occurring or the loss associated with it. (A full insurance policy is one in which the loss resulting from the insured event, in this case illness, is exactly compensated for. A fair policy is one in which the premium is equal to the expected loss: probability of loss times the value of loss.) In the context of health insurance, moral hazard may lead an insured person to invest less in preventive health measures and to use more resources to treat illness. In the presence of third party payment, the individual lacks an incentive to contain the cost of health care, faces zero marginal costs at the point of consumption and, theoretically, may consume to the point of satiation. The outcome is rising rates of utilization with increasing per capita health care costs. In the study the utilization rates per episode of illness of CAM households compared to non-members was proposed as an indicator of the extent of moral hazard.

The formal treatment rate for CAM patients was over 50% higher than the non-CAM group and this suggested that moral hazard existed, assuming illness severity was equal for the two groups. It is however, noteworthy that this rate may be higher for the CAM group because some government health centres gave incomplete treatments (inadequate volumes of medication for patients' weight or volume) that may have delayed recovery and/or required additional

visits to collect remaining drugs. Households participating in the scheme were three times more likely to use government facilities than non CAM households. During the course of the research it became apparent that incomplete treatment was an acknowledged problem receiving the attention of the MOH.

In theory it is also possible that the higher utilization among CAM households was the outcome of 'supplier induced demand', i.e. changes, especially increases, in the demand and consumption of health care by patients as a result of the actions of doctors or other health care providers. Health centres and hospitals are not reimbursed either a flat fee per patient seen or a fee per service rendered and therefore the scheme does not provide an incentive for suppliers to influence demand in this way. On the other hand, neither does the scheme appear to create strong incentives for efficient use of health care resources by the consumer of the provider. Currently the organizations retaining CAM revenues (the 'commune' committees) are not required, either by national law or legally binding contracts, to fund all or substantial percentages of the care provided under the scheme in health centres. The committees, therefore, have no financial incentive to minimize or rationalize the use of health services by the insured population.

#### *Social performance*

Approximately 27% of households gave financial inability to purchase a CAM card as one of the main reasons for non membership and therefore the scheme is unable to remove the financial barrier at the time of illness for a significant proportion of this population. In practice non-CAM patients referred from health centres to higher level facilities often purchase cards prior to, or on arrival at, the referral centre thus manipulating the scheme to reduce their financial barrier to expensive curative care without participating in the risk sharing. Women reported that they had limited access to cash and, therefore, by eliminating cash payment at the point of care, CAM empowered them to decide the need for, and timing of, health care consumption by household members. (Women in CAM households did not require money, and hence permission, from male household heads to seek health care.) Cash has become less of a barrier to obtaining curative treatment for card holders but in some cases the quality of care was considered inadequate. Women who participated in the focus groups gave reasons for purchasing CAM cards which suggested that they were risk averse. (Economic theory postulates that risk averse persons purchase insurance policies in order to maximize the expected utility from their income.) Many of the women were willing to pay higher CAM prices to improve the benefits. Generally, it appears that women, being the main carers, derive additional utility from the knowledge that in the event of child

illness, treatment was available even in the absence of cash in the household. The conclusion is that the CAM provides a significant social function (and welfare utility) in the communities studied.

#### CONCLUSIONS

It is concluded that CAM's poor financial performance was due to the low level of risk-sharing among households arising from 'adverse household selection', low membership fee (price of card) and the low current membership rate of 23% of households. To increase the level of risk-sharing and total revenue, measures are required to increase the participation of households that have few members. In addition, funds external to the CAM scheme could be sought as 'seed money' to permit improvements in the quality and efficiency of the services provided by the government under the CAM scheme. A significant increase in the funds available to the health centre could also be achieved if the government required communes to use all or some large percentage of revenue from CAM and user charges for health care provision at the health centre level. The funds could be used not only to purchase an initial adequate quantity of drugs, but also to implement in-service training schemes for health workers in clinical practice. Training could usefully include rational prescribing in order to eliminate the problem of incomplete drug treatments, and patient-sensitive consulting. This would significantly improve the financial performance of the scheme by encouraging membership of households who either withdrew or never purchased CAM cards because of the poor quality of care provided by government facilities. Improved quality would also pave the way for moderate increases in the price of the CAM. The available evidence suggests that its social efficiency would be significantly enhanced by improvements in the quality of care.

Health prepayment/insurance schemes in other developing countries that rely on voluntary household membership and coverage are likely to have the problem of 'adverse household selection' revealed by the study. It is, therefore, advisable that projections of the health care utilization rate used to calculate premiums and government subsidies for such voluntary schemes should be based on illness rates of households that are likely to participate, rather than the entire household population. Operational research will be required to monitor the size, composition and income of such households as soon as schemes are implemented. This will permit estimates of the affordable contributions per household and the level of subsidies required from government and/or donors to fund the proposed benefits. Alternatively, where socially and politically feasible premium rates set per person may be a better option.

**Acknowledgements**—This study forms part of a research project on community health insurance in developing countries being undertaken by the Health Economics and Financing Programme at the London School of Hygiene and Tropical Medicine; the Programme is supported by the British Overseas Development Administration (ODA). Fieldwork for this study was funded jointly by IDRC and Unicef. I am grateful to Dr Nestor Ndayimirije of the Ministry of Health in Burundi who participated in the field research. I am particularly indebted to Dr Anne Mills who diligently read and commented on previous drafts of this paper.

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## Viewpoint

# Health insurance in rural Africa

Dyna Arhin

The 1993 World Development Report *Investing in health* made detailed policy recommendations about insurance financing in middle-income countries but this option was barely mentioned in respect of poorer countries ("idealistic but impractical", it implies). The authors of that report, as do other professionals working in international health, dismiss rural health insurance in Africa as unfeasible, so excluding from the policy debate a crucial option—one that would allow rural households to make direct financial contributions to the cost of their health care without placing financial barriers to obtaining care at the time of illness. They suggest that patients should pay clinic and hospital fees ("user fees") for consultations and treatments provided in government facilities. Sadly such fees will deter many rural patients, most of them children and women, from seeking health care. Incomes in rural Africa are very low and seasonal, and access to credit hardly exists. Waiting for crops to mature, be harvested, and then sold for cash can take up half the year, and during that period individuals requiring health services often find them inaccessible. Indeed in Africa the introduction of fees has been followed by significantly reduced use of services. Evidence for this comes from Zaire,<sup>1</sup> Swaziland,<sup>2</sup> and Lesotho.<sup>3</sup> Following significant increases in user fees in Ghana, clinic and hospital attendances fell sharply in rural areas and did not return to pre-increase levels even after several months. In urban areas utilisation did return to former levels.<sup>4</sup>

The conviction that health insurance schemes for rural populations in Africa would not be feasible appears to be based on the assumptions that there is no preference or demand for health insurance among these populations ("demand" being used in the economic sense of willingness and ability to pay for goods or services); and that schemes would require management structures

similar to those of western health insurance systems. There is little evidence for either contention.

The assumption that demand for insurance cover would be low arises partly from the view that "African consumers prefer not to pay money for a future benefit for the simple reason that they lack confidence that the future benefit will be made available when they need it."<sup>5</sup> It is therefore significant that villagers in Gabu region, Guinea Bissau, when given a choice, preferred collective prepayment to fee for service.<sup>6</sup> These villagers subsequently adapted a payment system originally used to finance ceremonies to fund inputs for primary health care—and thus began the Abota health insurance system, just over a decade ago. Today there are many hundreds of autonomous Abota schemes at village level organising prefinancing of essential drugs and the provision of primary health care.

Over 94% of heads of household surveyed in Gabu region in 1992 stated that they held a "good opinion" (as opposed to "no opinion" or "bad opinion") about the Abota initiative.<sup>7</sup> 87% were willing to pay twice their current contributions to improve the availability of drugs. Participation in a national health insurance scheme in Burundi (Carte d'Assurance Maladie [CAM]) was high among rural households in Muyinga Province.<sup>8</sup> 54% of households in the study district were participating in the scheme or had done so in the past. 49% of households stated they would be willing to pay at least twice the premium charged at the time. "Women reported that they had little access to cash and that CAM, by eliminating cash payments at the point of use, empowered them to decide the need for, and timing of, health care consumption by household members without consulting male household heads".

These studies did not conclude that low demand for health insurance was itself a major cause of poor financial performance of the schemes. What they did suggest was that the efficiency and the financial viability of rural health schemes are likely to be hampered by poor quality,

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as perceived by the target population, of the care provided. About one-quarter of those surveyed judged the service provided by the CAM and Abota schemes inadequate for their needs.

To reject the option of rural health insurance because the quality of services provided would be poor is untenable. Poor quality is not inherent to—nor is it confined to—financing by health insurance. It has also contributed to low utilisation and poor cost recovery rates where user fees have been introduced in rural Africa. Poor quality is a symptom of the underlying economic malaise that requires consumers in Africa to fund government health services directly as well as through their contributions to general tax revenue. (In low income countries most government income from tax revenue is provided by duties on imports and exports; poorer households contribute a higher proportion of their incomes to this revenue when they purchase imported goods and they bear the brunt of taxes on exports because these taxes reduce profits on their agricultural and mineral outputs.) All things being equal, the returns, in terms of improved access to health care, would be higher where resources are used to improve quality of care within an insurance-financed system rather than a user-fee system. For example, in Burundi "seed money" to improve quality of services would significantly improve the financial performance of CAM by attracting back into it households which withdrew because of the poor care provided under the scheme by government facilities. Improved quality would also pave the way for moderate increases in the annual premium.

The assumption that a rural health insurance scheme in Africa requires a management structure similar to that of a western health insurance system would only be valid if schemes were to be modelled on conventional health insurance. The schemes found in Europe and North and Central America are designed to cater largely for employees on regular incomes from whom premiums can be collected monthly or weekly. The networks required to collect premiums from rural populations and to handle individual claims are non-existent in many African countries. Lessons must be sought from the few innovative and "appropriate technology" health insurance schemes that have arisen in sub-Saharan Africa. The schemes described above are two examples: both are administered by a few government officials centrally and rely mainly on local management by the community.

Another alternative that may be feasible in sub-Saharan Africa is to set up local health insurance associations that contract with and/or co-finance local health care providers. This structure was suggested by household heads who took part in group discussions in Dangbe-west District, Ghana, as part of a feasibility study (unpublished). The consensus was that such an association should be locality specific or otherwise decentralised and should have direct managerial and financial links with the health facilities contracted to provide health care to its members. It was envisaged that the association would set its annual membership dues equal to, or above, the percentage of the expected average costs of health care per household borne by the consumer. The association, by investing contributions in local health facilities, would act as a co-financer of government health facilities in the district and provide a risk-sharing/insurance mechanism for its members.

The Guinea Bissau and Burundi experiences provide preliminary evidence on the organisational and socioanthropological issues raised by insurance schemes in rural Africa. Such evidence should inform the policy debate both in African countries and among donor organisations that seek to promote sustainable and accessible health services. Otherwise rural health insurance will continue to be dismissed and an opportunity for raising revenue for health without greatly decreasing access will remain unexplored.

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## How to do (or not to do) . . .

### Willingness and ability to pay for health care: a selection of methods and issues

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#### 1. The policy and research problem

Willingness to pay (WTP) is a concept which is being used increasingly to inform policy decisions in the health sector. This paper briefly reviews the reasons why there is more interest in WTP studies and provides some examples of how they have been conducted. The final section of the paper emphasizes the need for caution in interpreting results as the WTP method is still in an experimental stage of development.

Declining budgetary resources and a political environment which has raised questions about the efficiency and equity of state subsidies for health care have stimulated health sector financing reforms in many countries. Governments are supplementing tax revenues by increasing direct household contributions to the health sector through a variety of policy reforms: user fees at government facilities; the adoption or encouragement of community based financing schemes (such as pre-payments, revolving drug funds); and the encouragement of non-profit-making but fee-charging non-governmental organizations.

As a result, decision-makers at the government, facility and community levels are faced with the difficult but important policy question of how to price health services. One way is to measure the cost of supplying a service and to charge a price that will cover all or a proportion of that cost. The main problem with this procedure is that a price based only on costs takes no account of demand, or people's willingness and ability to pay<sup>1</sup> that price. People's WTP is important because

consumer responses to prices will influence service utilization levels and patterns, and revenues collected. In particular, the efficiency and equity impacts of prices for health care will be influenced by people's willingness and ability to pay:

- *efficiency* – although it is argued that fees will reduce 'frivolous' use of services and overcrowding (World Bank 1987; 1993), especially at outpatient departments in hospitals, a decline in utilization may create a situation of surplus capacity and higher average costs.
- *equity* – in addition to revenue objectives, fee schedules and pre-payment mechanisms must be sensitive to local economic circumstances, especially people's ability to pay. Fees may have to be waived or reduced for patients from vulnerable households or socioeconomic groups so that their utilization of health services does not decline.

How much people are willing and able to pay for a good or service can be assessed in two ways: (a) by observing and modelling past health care utilization, expenditure and responsiveness to prices<sup>2</sup> or; (b) by asking people directly how much they would be willing and able to pay for a specified health care service or product.

The first method will obtain information about the money people are currently spending on health care. This will inform decision-makers about the potential market in which they are operating, but observing how much people spent on a health service in the past to assess how much they will be willing to pay in the future may be inappropriate for a number of reasons:

- a market for the health service may not previously have existed because health care has been provided free or because a new service is being introduced to an area.
- the price paid by patients in the past may not reflect the *maximum* amount they are willing to pay, which may be greater.
- willingness to pay for a service is related to particular situations and non-price factors, so that patients may be willing to pay a certain price to one provider but may not be willing to pay the same price to a different provider. For example, women might pay traditional midwives or mission hospitals for delivery services, but might not be willing to pay at the government hospital because of the particular quality of care received, the accessibility of the government hospital, or because of lack of trust in the staff at the government hospital.

## 2. Asking people about their willingness and ability to pay

The second method, in theory, overcomes these three problems. It asks people directly the maximum amount of money that they would be willing and able to pay for a specified health service. It assumes from the beginning that people have had no previous *experience* of buying the health service which is going to be put on the market, and instead asks people their willingness to pay on the basis of their *expectations*:

'The method...circumvents the absence of markets for public goods by presenting consumers with hypothetical markets in which they have the (hypothetical) opportunity to buy the good in question. Because the elicited WTP values are contingent upon the particular hypothetical market described to the respondent, this approach came to be called the contingent valuation method' Mitchell & Carson (1986: 2-3).

Since the health service and the circumstances under which it is bought are hypothetical, the respondent must develop an answer based on information provided by the interviewer. A WTP study therefore takes the form of a survey with several components:

### (a) *Past health care practices, expenditure and attitudes*

According to WASH (1988: 19), these questions will establish the credibility of the subject matter and stimulate the respondent into considering what they are currently willing to pay for particular health services and why. To some extent these questions will remind the respondent of previous valuations and choices that they have made, so their WTP values for any new service will be made in the context of knowing about alternative providers.

### (b) *Creation of a plausible hypothetical market*

Because the health service and the market situation presented is hypothetical, it should be described to respondents so that they can make an informed decision. The types of information that need to be considered include:

- a detailed description of the service or treatment being valued;
- the institutional and organizational circumstances under which the service will be made available;
- the method of payment (out-of-pocket payments, instalments, pre-payment, etc.);
- actual or perceived risk of illness and perceived effectiveness of the treatment (Morrison and Gylmark 1992).

### (c) *Questions which elicit the respondent's willingness and ability to pay for the health service on offer*

These questions must be designed to minimize any bias in respondents' WTP values.

### (d) *Questions about the respondent's or household's characteristics*

In order to understand more about why people give particular figures for WTP, socioeconomic information such as age, gender, income, attitudes to free health care, etc. should be collected.

In the last two decades economists have developed the WTP method in other sectors to put a (monetary) value on public goods such as cleaner air or recreational sites, which are not traded in private markets.<sup>3</sup> For example respondents are asked how much they would be willing to pay for different gradations of cleaner air, and the amount in dollars specified is taken to be a quantitative measure of the benefits of

this cleaner air. Decision-makers require data on the monetary value or benefits of environmental goods to help them decide which public facilities or environmental qualities to prioritize (or to protect in the face of pollution). The assumption is made that if a person consumes an environmental 'good' he or she receives a certain amount of satisfaction from it, and the money that he or she is prepared to forego provides a measure of that satisfaction. The more people are satisfied by, or value, a public good like cleaner air, the more they will be willing to pay. The argument is taken one step further to say that the maximum a person is willing to pay represents the degree of benefit they feel.<sup>4</sup> More recently the benefits of health care programmes have been measured using the WTP method in order to provide information for decision-making and priority setting in the health care sector.<sup>5</sup>

WTP studies have been developed in some industrialized countries to quantify the value of health programmes – particularly in countries such as the United Kingdom and Sweden, where there is a large government-funded health sector. Other more market-oriented economies such as the United States have considered WTP in relation to the level of insurance premiums. With the rise of cost recovery in low income countries, WTP studies are now being used in social and economic contexts very different from those in the West, to obtain information about the demand for public services if user charges are introduced, the potential revenue that can be raised and the financial sustainability of the policy change. The water and sanitation sectors, for example, have developed and tested the method in Burkina Faso, Haiti, Nigeria, Pakistan and Tanzania.<sup>6</sup> The potential for cost recovery in the health sector is now also being explored using these methods.

Given this new context and purpose for using WTP studies, extra caution needs to be exercised both in the design of WTP questions and in the interpretation of results. The rest of this paper reviews some of the types of question that have been used to elicit people's WTP for health services, and some of the problems with the method that are of particular relevance to the health sector.

### 3. How are WTP questions asked?

As with any survey method, careful attention must be paid to the development and piloting of questions. WTP surveys require a special series of questions to elicit a respondent's WTP for services, and these need to be designed in a way that minimizes bias. There is no consensus on the best question format to use, but a number of alternatives are discussed in the literature (Mitchell and Carson 1986; WASH 1988). Three of these have recently been used in the health sector.

#### Open ended questions

The National Impregnated Bednet Programme in the Gambia faced the question of how to obtain funds from villages to finance the cost of insecticide. A survey of village-level mechanisms for raising funds used open ended WTP questions (see Box 1) to obtain minimum and maximum WTP bids<sup>7</sup> (Mills et al., forthcoming).

#### Box 1. An example of an open ended question

'If people living in the village thought that dipping their bednets in insecticide was effective in killing insects, what is the maximum (minimum) each compound would be willing and able to pay for the service?'

Researchers in other sectors have been critical of the open question format because if respondents are unfamiliar with the product, they find it difficult to pick a value out of the air without some form of assistance (Mitchell and Carson 1986:97). Experience from the water sector suggests that individuals may respond to the question by asking how much they should pay or would need to pay in order to have an improved service (WASH 1988:9).

#### Closed questions

In Ghana research into the WTP for rural health insurance, a new and unfamiliar method of financing health care in the area, is using both open and closed WTP questions (Arhin 1994). An example of a closed question is shown in Box 2.

**Box 2. An example of a closed (take it or leave it) question**

'An association wishing to provide free care at specific facilities for its members will need to collect adequate contributions from each household. Would you be willing and able to pay the following yearly contributions for the stated benefits for all persons in your household?

(a) 4000 cedis for free care at Bator mission hospital - would you be willing and able to pay this amount to be a member?

(b) 3000 cedis for free care at Akuse government hospital - would you be willing and able to pay this amount to be a member?

(c) 2500 cedis for free care at the nearest health centre/post - would you be willing and able to pay this amount to be a member?

(d) 1500 cedis for free care at a community clinic - would you be willing and able to pay this amount to be a member?'

The strength of this technique is that it simplifies the market situation for the respondent. He or she must simply make a judgement about a price - a yes or no, 'take it or leave it' type of response (Mitchell and Carson 1986: 101). Its main weakness is that it does not provide a maximum willingness-to-pay amount. It is also 'a relatively inefficient use of the information potentially available from the respondent because, if asked further questions, he or she might be willing to reveal much more about household preferences' (WASH 1988: 9).

**Bidding games**

Rather than using only one price, the interviewer could obtain more information about consumer preferences by suggesting different prices, bidding the respondent up or down depending on the answers given. This sequence of questions is known as a 'bidding game' and has been used extensively by Whittington et al. (1987; 1988; 1989; 1990) in the water sector. In a recent WTP survey

designed for a non-profit-making hospital in Mexico (Russell 1994), a bidding format was designed to test WTP for an ante-natal, delivery and post-natal package. As a visual aid, 12 cards covering a range of prices from N\$40 to N\$300 were used, and the first card presented to the respondent was N\$100.

To provide an example of how a bidding game can be designed, the basic format of some of the questions (for prices N\$40-N\$200) is shown in Box 3. If the respondent is not willing to pay the starting price of N\$100, the interviewer presents the card of the next lowest value (N\$80). This process of moving down the scale continues until the respondent makes a bid, and if the respondent is not willing to pay the minimum price (N\$40), she is asked for her maximum bid (see Box 3, Section C).

If the respondent is willing to pay N\$100, prices are not presented in an incremental order. Instead, a much higher card is offered (N\$200), and if the respondent is not willing to pay N\$200, the interviewer moves back down the scale to a value (N\$125) just above the previously accepted bid. If she is willing to pay N\$125, then a higher value card (N\$175) just below the previously rejected bid is presented, and so on until a bid is made. The result of the bidding game will not produce a maximum WTP bid, but rather an interval within which the 'true' WTP falls (WASH 1988: 11). For example if the respondent is willing to pay N\$100 but not willing to pay N\$125, her bid will be between N\$100 and N\$124.

Bidding games have the advantage of initiating a process of thought and choice about different prices. The main disadvantage with bidding games (and closed questions) is that a starting bid has to be used, which implies a value for the good. There is a danger that this starting value or point can bias responses. Mitchell and Carson (1986) therefore favour a card technique which 'scatters a range of cards on the table' to help the respondent visually but which presents them all at once, avoiding starting point bias.

This card technique and the bidding game are designed to 'help' the respondent decide on a price by presenting a range of prices. Although the range of prices offered could bias respondents' WTP statements, for policy purposes it may be necessary to offer consumers a range of

**Box 3. An example of a bidding question format****A.**

A1. If the price you are charged for the whole package is (N\$100) per month for 6 months, would you or someone in your family be willing and able to pay this monthly amount?

(Enumerator hands card to the respondent)

Yes	_____	Go to B
No	_____	Go to C
Not sure	_____	Go to C

**B.**

B1. Enumerator repeats question but with price and card of N\$200

Yes	_____	go to D†
No	_____	go to B2
Not sure	_____	go to B2

B2. Enumerator repeats question but with price and card of N\$125

Yes	_____	go to B3
No	_____	FINISH
Not sure	_____	FINISH

B3. Enumerator repeats question but with price and card of N\$175

Yes	_____	FINISH
No	_____	go to B4
Not sure	_____	go to B4

B4. Enumerator repeats question but with price and card of N\$150

Yes	_____	FINISH
No	_____	FINISH
Not sure	_____	FINISH

**C.**

C1. Enumerator repeats question with price and card of N\$80

Yes	_____	FINISH
No	_____	go to C2
Not sure	_____	go to C2

C2. Enumerator repeats question but with price and card of N\$60

Yes	_____	FINISH
No	_____	go to C3
Not Sure	_____	go to C3

C3. Enumerator repeats question but with price and card of N\$40

Yes	_____	FINISH
No	_____	go to C4
Not Sure	_____	go to C4

C4. What is the maximum amount you would be willing and able to pay for the package?

Unsure	_____
--------	-------

† Section D is not included in this example of bidding formats. If the respondent is WTP N\$200, the next card offered is N\$300.

Source: Russell (1994), adapted from WASH (1988)

prices that are based on the costs of providing the service. For example the mid-point of the range of prices offered to respondents may be the average cost of providing the service. Whilst this provides a link between cost and demand, the cost may not be equated to the consumer's *value* of the service offered.

#### 4. The need for caution

In addition to biases introduced by the wording of questions, a major doubt is whether people can give meaningful answers to these questions. The WTP method relies on the respondent making rational and knowledgeable trade-offs and choices before quoting a price, and these decisions are based on the information they have about the health service, which is provided by the interviewer. A respondent's WTP statements may not be reliable if they have insufficient information about the characteristics of the service being described, or if they do not understand the information. Providing information about health services to respondents may be especially difficult because, firstly, specialist knowledge may not be available to provide all the details about the risks of disease and effectiveness of treatments. Secondly, even if this specialist knowledge exists, brief but comprehensible descriptions of risks and treatment effectiveness are notoriously difficult to explain to people.

Some difficult questions to resolve are what information about health risks, treatment processes and benefits should be provided to respondents before they are asked their WTP, and how this information should be presented. A difficult balance between providing adequate details and overloading the respondent with information must be sought and achieved.

To be useful to policy-makers, the WTP method must provide reliable and valid data. Yet any hypothetical statements about behaviour must be treated with caution. As one researcher in this field points out, the WTP method 'is in an experimental state, and the studies carried out so far on health care have largely been experimental studies testing the feasibility of the approach. Now when the method is becoming more popular it is of the utmost importance to interpret results cautiously . . . ' (Johannesson 1993: 359).

The ultimate test of validity is to compare hypothetical WTP bids with actual money transactions after fees or insurance schemes are introduced (Johannesson 1993), but this would be often impossible and, as stated earlier, is fraught with difficulties of interpretation. Another test of validity is to see whether WTP bids are systematically related to socioeconomic variables. If they are, there is a greater chance that the WTP bids have not simply been pulled out of the air, but are in fact related to household preferences.

If one assumes that these problems can be overcome, there is still the question of setting prices. WTP methods can help decision-makers set prices because they provide information about the demand for a service at a given price: a hypothetical demand curve can be constructed. But the prices set will depend on the priorities of decision-makers. Prices might be set at a level which the majority of people are willing and able to pay so that utilization does not decrease, but these prices might be too low to cover costs. If the decision is taken to raise prices because the WTP survey showed that enough people would still use the service, this may be beneficial in terms of revenue and efficiency, but might discourage utilization by poorer sections of the community.

WTP is a method which can be considered for attaching a value and a price to health services. However, as it is still in an experimental stage, careful consideration needs to be given to the development and piloting of questionnaires. Secondly, given the limited understanding of the factors affecting WTP statements, it is important to at least collect socioeconomic information to aid analysis of valuation. Finally, there needs to be careful interpretation of any WTP values because the validity and reliability of hypothetical statements is still not clear.

#### Endnotes

<sup>1</sup> There is some debate over the terms *willingness* and *ability* to pay. In orthodox economic theory there is no conceptual distinction between these two terms - it is assumed that if individuals are willing to pay the price then they must, somehow, be able to do so. Ability to pay does, however, require further analysis, since payments for health care might, for example, be based on asset sales causing long-term declines in household welfare.



<sup>2</sup> A number of studies using survey data have modelled the demand (willingness to pay) for social services and health care using this technique: see Gertler and van der Gaag (1988) and Lavy and Quigley (1993). They use data on illness and medical care utilization to construct a demand function, and predict the elasticity of demand for health care and the impact that user fees accompanied by quality/accessibility changes would have on utilization, revenue and welfare.

<sup>3</sup> There is a large body of work on contingent valuation methods relevant to industrialized countries, particularly by environmental economists. See for example Brookshire, Ives and Schultz (1976), Brookshire and Crocker (1981), Brookshire and Schultz (1986), Mitchell and Carson (1986).

<sup>4</sup> These assumptions are based on paretian welfare economics which accept that the sum of all individuals' WTP equals society's maximum valuation for the good or service in question. It gives no recognition to who the recipients of benefits or welfare improvements are.

<sup>5</sup> See for example Johannesson et al. (1991); Gafni (1991); Morrison and Gyldmark (1992); Johannesson (1993); Golan and Shechter (1993).

<sup>6</sup> See for example Altaf et al. (1992); Altaf and Hughes (1991; 1992); Whittington et al. (1987; 1988; 1989; 1990; 1992).

<sup>7</sup> Respondents often give a range of prices that they would be willing and able to pay.

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## Acknowledgements

The authors would like to thank Dr Anne Mills, Head of the Health Economics and Financing Programme, and Richard Brooks from Strathclyde University for their comments. The

Health Economics and Financing Programme is funded by the Overseas Development Administration, UK.

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## **Appendix 2: Questionnaires**

CAM study

Abota study

Willingness to pay study (Ghana)

PATIENT HEALTH INSURANCE UTILIZATION QUESTIONNAIRE MUYINGA PROVINCE, BURUNDI

Nous souhaitons vous poser quelques questions afin de nous aider à mieux comprendre pourquoi certaines familles utilisent la Carte d'Assurance Maladie, alors que d'autres ne l'utilisent pas. Vos réponses nous seront très utiles pour savoir quelques changements sont peut-être nécessaires pour améliorer la CMA. Toutes vos réponses seront tenues confidentielles, et si vous le souhaitez, votre nom ne sera pas inscrit sur les dossiers. Nous vous prions surtout de nous donner des réponses correctes. Merci de votre bonne collaboration.

DATE DE L'ENQUETE: \_\_\_\_\_ JUIN 1992

NOM DE L'ENQUETEUR \_\_\_\_\_

1 NOM DU REpondant \_\_\_\_\_

2 NUMERO D'IDENTIFICATION DU REpondant \_\_\_\_\_

3 ADRESSE : Numéro de la Maison \_\_\_\_\_

Zone ou quartier \_\_\_\_\_

Province Muyinga

4 Quelle est votre position dans le ménage ?

☐

1 Homme chef de ménage; 2 Femme chef de ménage; 3 Femme épouse du chef de ménage; 4 Homme époux de femme chef de ménage; 5 Frère ou soeur du chef de ménage; 6 Père ou Mère du chef de ménage; 7 Autre:

5 Quelle est votre situation matrimoniale?

☐

1 Célibataire 2 Marié; 3 Veuf (veuve); 4 Divorcé/séparé

6 Quelle est votre religion ?

☐

1 Aucune; 2 Religion traditionnelle; 3 Islam; 4 Christianisme; 5 Autres

## HOUSEHOLD HEALTH INSURANCE UTILIZATION QUESTIONNAIRE

"Nous vous demandons de nous indiquer les noms et âges de toutes les personnes qui font partie de votre ménage (famille). En outre, veuillez préciser pour chacune de ces personnes, si durant les 4 dernières semaines elles ont une quelconque maladie, même si c'était une maladie banale pour laquelle aucun traitement n'était nécessaire. Si quelqu'un était plusieurs fois malade durant ces 4 dernières semaines, indiquez la maladie la plus récente ainsi que l'une quelconque des autres maladies.

Nom de la personne	Age	Sexe	Nombre d'épisodes de maladies durant les dernières semaines	Principal signe ou plainte du dernier épisode de maladie
7a	8a	9a		10a _____ _____
7b	8b	9b		10b _____ _____
7c	8c	9c		10c _____ _____
7d	8d	9d		10d _____ _____
7e	8e	9e		10e _____ _____
				10f _____ _____

# PATIENT HEALTH INSURANCE UTILIZATION QUESTIONNAIRE

A présent, nous allons vous poser des questions concernant les personnes qui étaient malades, ce qu'elles ont fait pour retrouver la santé, et les frais que cela a coûté dans chaque cas. Précisez dans chaque cas si la carte CAM a été utilisée ou non.

NOM DE LA PERSONNE	Quel type de soin a été utilisé?		Quel type de paiement a été utilisé?		Combien ont coûté les dépenses de la plus récente maladie? (Fbn)			Combien ont coûté les dépenses de la précédente (ancienne) maladie ?		
	1ere maladie	2ème maladie	1ere maladie	2ème maladie	P	M	T	P	M	T
	11a		12a		13a	14a	15a	13a	14a	15a
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	_____	_____	_____	_____	_____	_____
	11b		12b		13b	14b	15b	13b	14b	15b
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	_____	_____	_____	_____	_____	_____
	11c		12c		13c	14c	15c	13c	14c	15c
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	_____	_____	_____	_____	_____	_____
	(1) Soin à domicile (2) Guérisseur traditionnel (3) Centre de santé du Gouvernement (4) Hôpital de la Mission (5) Médecins privés (6) Autres		(1) Argent comptant (2) CAM (3) En nature (4) Autre assurance (5) Autre_____		P = Argent payé au service soignant M = coût des médicaments achetés T = Coût de transport et autres coûts_____					

HOUSEHOLD HEALTH INSURANCE UTILIZATION QUESTIONNAIRE  
MUYINGA PROVINCE, BURUNDI

- 16 Actuellement, votre famille possède-t-elle une carte CAM valide ? Oui=1  
Non=2

☐

Combien de fois cette carte a-t-elle été utilisée ?

- 17 Votre famille a-t-elle, dans le passé, acheté de carte CAM  
(différente de l'actuelle carte ?)

☐

Oui=1 Non=2

- 18 Au moment où vous achetiez cette carte CAM, est-ce que vous, ou une autre  
personne de votre famille, était malade et allait l'utiliser pour se  
soigner ?

☐

Oui=1 Non=2

- 19 Selon vous, quels sont les principaux avantages (bénéfices) que vous  
pouvez tirer de la CAM ?

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Ecrivez fidèlement les propres mots du répondant. Au besoin, demandez clarification et  
ensuite sans modificaton.

reportez



PATIENT HEALTH INSURANCE UTILIZATION QUESTIONNAIRE  
MUYINGA PROVINCE, BURUNDI

20 Pour terminer, je vais vous lire une liste de raisons pour lesquelles une famille peut décider d'acheter ou de ne pas acheter une carte CAM. Pour chacune de ces raisons, indiquez si oui ou non si cela a pu être une des raisons pour lesquelles votre famille a cessé d'acheter la carte CAM.

- |     |     |   |     |     |
|-----|-----|---|-----|-----|
| OUI | NON | 1) Ma famille n'a pas reçu assez d'information sur la CAM   | OUI | NON |
| OUI | NON | 2) Ma famille n'a pas assez d'argent (n'est pas assez riche) pour acheter la carte  |     |     |
| OUI | NON | 3) Les membres de ma famille ne sont pas souvent malades. Il n'y a donc pas de raisons de s'inquiéter au sujet des dépenses de santé.   |     |     |
| OUI | NON | 4) Si aucun membre de la famille ne tombe malade, la carte est inutile et l'argent dépensé pour acheter la carte est alors une perte. Je tiens à éviter une telle perte d'argent. |     |     |
| OUI | NON | 5) Les membres de ma famille ont droit aux soins gratuits grâce à une autre forme d'assurance.  |     |     |
| OUI | NON | 6) Les membres de ma famille ont peu d'occasions d'utiliser les services de santé du Gouvernement.  |     |     |
| OUI | NON | 7) Aucune des raisons citées n'est valable, puisque depuis le démarrage de la CAM, ma famille a toujours acheté la carte.   |     |     |

21 Est-ce que vous, ou un autre personne de la famille est membre d'une forme locale ou traditionnelle de solidarité, telles association pour Caisse de funeraillles, Mariage, Naissances et Baptêmes ?

Si oui, indiquer laquelle \_\_\_\_\_

☐

Oui=1 Non=2

22 Seriez-vous favorable pour payer 2 fois le prix actuel de la carte si cela permettait d'obtenir les médicaments nécessaires pour les soins de santé?

☐

Oui=1 Non=2

23 Votre famille a-t-elle déjà eu faire face à des dépenses de santé qu'elle ne pouvait pas payer par ses propres moyens ?

☐

Oui=1 Non=2



PATIENT HEALTH INSURANCE UTILIZATION QUESTIONNAIRE  
MUYINGA PROVINCE, BURUNDI

24 Indiquez parmi ces articles, lequel ou lesquels votre famille possède actuellement

- 1) Radio
- 2) Bicyclette (vélo)
- 3) Voiture
- 4) Aucun de ces articles

25 Quelle est la principale occupation du chef de ménage ?

- 1) Cultivateur de riz
- 2) Cultivateur des céréales de base
- 3) Commerçant
- 4) Employeur du Gouvernement (Fonctionnaire)
- 5) Travailleur manuel
- 6) Petit commerçant
- 7) Autre (préciser)

26 Quelle est l'étendue de terre cultivée par le ménage ?

27 Quelle est l'étendue de terre qui est la propriété privée du ménage ?

30 Le Chef de ménage a-t-il reçu une formation scolaire (fréquenté l'école)?

Quel niveau de formation a-t-il atteint ? -----

ABOTA (Seguro de doença) Região de Gabú, Guiné-Bissau

10 Para terminar, vou passar a ler as razões pelas quais pode levá-lo a decidir contribuir para ABOTA.

Por cada uma dessas razões, Indicar SIM ou NÃO se isso tem sido uma das razões que lhe levaram ou a sua família a não contribuir para a ABOTA.

- |  |     |     |
|--|-----|-----|
| 1. Minha família não recebeu informações sobre a ABOTA   | SIM | NÃO |
| 2. A minha família não tem possibilidades financeiras (não é rica) para poder contribuir   | SIM | NÃO |
| 3. Os membros da minha família não estão sempre doentes. Portanto não há necessidade de me preocupar com gastos relacionados com a sua saúde | SIM | NÃO |
| 4. Se não tenho nenhuma familiar doente, a contribuição é inútil e gastar dinheiro nela é uma perda.   | SIM | NÃO |
| 5. Os membros da minha família têm direitos a cuidados médicos gratuitos graças a uma outra forma de assistência                             | SIM | NÃO |
| 6. Quando um membro da minha família está doente, a assistência médica na Unidade de Saúde de base ou não correspondem as necessidades       | SIM | NÃO |
| 7. Não existe ABOTA na minha tabanca   | SIM | NÃO |
| 8. Nenhuma destas razões é válida isto porque desde que se iniciou o sistema ABOTA a minha família   | SIM | NÃO |

Portanto, não tenho

não têm boa qualidade

sempre contribuiu para a

11 Será que você ou um seu familiar é membro de uma forma local ou tradicional de solidariedade, tais como Associações para a criação de um fundo destinado a pagar funerais, casamentos, nascimentos ou baptismos ?

sim = 1 não = 2

12 Em caso afirmativo, indicar o tipo de associação Cadabran

13 Tem experiência de ter ido a Unidade de Saúde Base nos últimos 12 meses e não encontrar medicamentos ?

sim = 1 não = 2

14 Estará de acordo a pagar 2 vezes o preço actual da ABOTA se ela permitisse obter os medicamentos sem falha ?

sim = 1 não = 2

Qual é a contribuição que estaria disposto a pagar para começar a ABOTA na sua tabanca ?

1000 = 1 2000 = 2 e mais de 2000 = 3 ou não está disposto a pagar = 4



ABOTA (Seguro de doença) Região de Gabú, Guiné-Bissau

30	A sua família já se confrontou com despesas relacionadas com a saúde sem que as pudesse saldar ? <i>Sim</i>	
31	Indicar entre os artigos abaixo discriminados, o qual ou os quais a sua família possui neste momento	<u>1</u>
	1. Rádio      3. Motorizada   5. Cavalo      7. Nenhum desses artigos 2. Bicicleta   4. Burro/Charette   6. Vaca	<u>2</u>
32	Tipo de casa 1. Materiais duráveis (zinco, telha, tijolo, bloco) 2. Materiais semi-duráveis (adobe) 3. Cobertura de palha ou folha	<u>2</u> <u>3</u>
33	Qual a principal ocupação do chefe do lar ou da família ? 1. Agricultor (subsistência)      5. Assalariado do sector público 2. Pequeno comerciante      6. Assalariado do sector privado 3. Artesão      7. Operário do sector público 4. Grande comerciante      8. Operário do sector privado 9. Outras	<u>1</u> <u>9</u>
34	Há outras pessoas no seio do lar ou da família que exercem outras actividades ? 1. Agricultor (subsistência)      5. Assalariado do sector público 2. Pequeno comerciante      6. Assalariado do sector privado 3. Artesão      7. Operário do sector público 4. Grande comerciante      8. Operário do sector privado 9. Não	<u>1</u> _____ _____
35	O chefe do lar ou da família tem alguma formação escolar (frequentou alguma vez uma escola) ?  Que nível de formação atingiu ?	Sim = 1    Não = <u>2</u> _____ _____

ABOTA (Seguro de doença) Região de Gabú, Guiné-Bissau

Pedimos que nos indique os nomes e respectivas idades de todas as pessoas que fazem parte do seu lar (família). Por outro lado, gostaríamos que nos esclarecesse se cada uma dessas pessoas que nos indicou, tiveram qualquer problema de saúde nas 4 últimas semanas, mesmo que seja uma doença sem importância e para a qual não foi sequer necessário fazer qualquer tipo de tratamento. Se alguém esteve várias vezes doente no decurso dessas 4 últimas semanas, indicar por favor a doença mais recente bem como um qualquer outro tipo de doença.

Nome da pessoa	Idade	Sexo	Doente		Nº de episódios	Nº de Consultas na USB	Principal sinal ou queixa da última doença
			Sim	Não			
17a	18a	19a			21a	22a	23a
	36	M	X		3	1	dor de corpo
17b	18b	19b			21b	22b	23b
	28	F	X		1	—	dor de dente
17c	18c	19c			21c	22c	23c
	18	F	X		3	—	dor da cabeça
17d	18d	19d			21d	22d	23d
	12	M	X		3	—	dor dos olhos
17e	18e	19e			21e	22e	23e
	10	M	X		2	—	dor de pé

Nome da pessoa	Idade	Sexo	Doente		Nº de episódios	Nº de Consultas na USB	Principal sinal ou queixa da última doença
			Sim	Não			
17f	18f	19f			21f	22f	23f
178	18g	19g			21g	22g	23g
17h	18h	19h			21h	22h	23h
17i	18i	19i			21i	22i	23i
17j	18j	19j			21j	22j	23j



**OSUDOKU HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY**

page 1

MOH &amp; LSHTM

HOUSEHOLD INTERVIEW SCHEDULE

1 LOCATION CODE

NAME OF HOUSEHOLD HEAD .....

2 DATE

3 CLUSTER NUMBER

4 INTERVIEWER

No.

name

5 START TIME

6 BUILDING TYPE

brick and tile (1)

local materials (2)

combination (3)

7 ROOF MATERIAL

thatch (1)

aluminium (2)

zinc (3)

asbestos (4)

TIME COMPLETED

I would like to talk to you about the health of those living in your household and the health care they have been receiving. I would also like to find out your view

and interest in an association to help with clinic and hospital fees. The contents of our talk will be used only to help the ministry of health to understand the health problems of the people of this community. All your answers will be confidential.

Status in household of person interviewed

head = 1 spouse = 2 parent = 3 child = 4 other .....

**IDENTIFICATION**

8 COMPOUND NO.

9 VILLAGE NAME

10 NAME OF RESPONDENT

11 AGE OF RESPONDENT

Inspection date

Supervisor's signature

12 What is your marital status?	single (1)	
	married (2)	
	widowed (3)	
	Divorced/ε (4)	<input type="text"/>
13 What is your religion?	Christian (1)	
	Islam (2)	
	Traditiona (3)	
	others (sp) (4)	<input type="text"/>
14 Is there an adult in your houshold	yes (1)	
who is unwell today ?	no (2)	<input type="text"/>
15 how do you consider the health of the adults in this household compared to other households you know	bettter than or the same as (1) (2)	
	worse than or (3)	<input type="text"/>
16 Is there a child (any person under 18 years )In your houshold	yes (1)	
who is UNWELL* today ?	no (2)	<input type="text"/>
*(provide meaning as below)		

\*Unwell = having a health problem for which treatment was sought, or would have been sought, if care had been available and could have been afforded

17 how do you consider the health of the the children,( the under 18 years olds)	bettter than others (1)	
	the same as others (2)	
in this household compares to children of the same age in other household?	worse than others (3)	<input type="text"/>
18 are members entitled to free health care at the point of use?	yes (1)	
	No (2)	<input type="text"/>
if so state source of benefit _____		

What is the source of drinking water for this household?	tap in compound (1)	
19	public standard pipe (2)	<input type="text"/>
	stream/well (3)	
	dugout (4)	
	others (specify) _____	
20 Is your houshold supplied with electricity?	yes (1)	
	No (2)	<input type="text"/>
21 Does your household possess items from the following three groups?	group A + or - ot (1)	
(a) cattle/truck/ tractor	group B + or - C (2)	
(b) car/milling machi/comme. property	group c + or - d (3)	<input type="text"/>
(c) TV/bicycle/sewing mach	group d only (4)	
(d) Radio/fan	none (5)	

# OSUDOKU HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY

page 3

We would like to know a little about those people who usually live in this household and whether or not they have been UNWELL recently. By unwell we mean he or she has had a health problem for which treatment/cure was sought, or would have been health care had been available and affordable

22 <-----information from household head ----->				<-----self reported by each household member or parent----->				
No	USUAL RESIDENTS & VISITORS	RELATIONSHIP TO HOUSEHOLD HEAD	sex	AGE	EDUCATION LEVEL	OCCUPATION	UNWELL PAST TWO WEEK	UNWELL SINCE BEGINING OF YEAR
	Please give me the names of persons who usually live in your household or are staying with you starting with the head of household	How is (name) related to the household head ?	Is (name) female or male ?	How old is he/she?		If you have several please state the three major (important first)	NO YES__to A2	NO YES__to A2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
'01	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'02	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'03	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'04	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'05	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'06	<input type="text"/>	>>> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

(1) HOUSEHOLD HEAD  
(2) SPOUSE  
(3) PARENT  
(4) CHILD  
(5) RELATIVE /FRIEND

(1) FEMALE  
(2) MALE

(1) profess. training  
(2) vocational tm  
(3) Secondary  
(4) middle sch  
(5) primary  
(6) None

(1) crop farmer  
(2) life stock farmer  
(3) fisherman  
(4) store/kiosk trader  
(5) table trader

(6) labourer  
(7) craftman/tradesman  
(8) non-degree proffessional  
(9) degree holder professional

TICK HERE IF CONTINUATION SHEET USED ☐

NO. UNWELL THIS YEAR

NO. UNWELL LAST 2WKS



# OSUDOKU HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY

page 4

- 23 Would you be willing to join an association that requires you to make regular contributions that would entitle ALL PERSONS in your household to receive health care free of charge?

Yes = 1 No= 2 (skip to children only)

If 2 then skip to children only option

first set A (insert a) if prfo=1 repeat as set B(ie insert b) if prfi=1 repeat as set B(ie insert b)

- 24 What would be the most money you would be willing and able to contribute in a year so that all your household could attend all facilities ie (community clinic, health posts, government and mission. hospitals.....> (insert a, b, or c)

(a) for free out and in patient care?

(b) for free outpatient only care?

(c) for free inpatient care only?

a	b	c
all care	outpatient	inpatient
cedis	(1000s)	
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 25 What would be the most money you would be willing and able to contribute in a year so that all your household could attend Bator catholic hospitals only .....>.....> (insert a, b, or c)

(a) for free out and in patient care?

(b) for free outpatient only care?

(c) for free inpatient care only?

a	b	c
all care	outpatient	inpatient
cedis	(1000s)	
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 26 What would be the most money you would be willing and able to contribute in a year so that all your household could level B, Health Post such as Volu ----> ----> (insert a, b, or c)

(a) for free out and in patient care?

(b) for free outpatient only care?

(c) for free inpatient care only?

a	b	c
all care	outpatient	inpatient
cedis	(1000s)	
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 27 What would be the most money you would be willing and able to contribute in a year so that all your household could attend Akuse government hospital only--> --(insert a, b, or c)

(a) for free out and in patient care?

(b) for free outpatient only care?

(c) for free inpatient care only?

a	b	c
all care	outpatient	inpatient
cedis	(1000s)	
<input type="text"/>	<input type="text"/>	<input type="text"/>

- 28 What would be the most money you would be willing and able to contribute in a year so that all your household could attend only the nearest community clinics-->-- (insert a, b, or c)

a	b
all care	outpatient
cedis	(1000s)
<input type="text"/>	<input type="text"/>

- 29 Name of nearest cc Volivo = 1 Klebuse =2

Atobinya =3 Duffo = 4

(a) for free out and in patient care?

(b) for free outpatient only care?

**An association wishing to provide free care at specific facilities for its members, will need to collect adequate contributions/dues per household . Would you be able willing and able to pay the following yearly contributions for the stated benefits for all persons in your household?**

yes = 1    No = 2

10/10/2010

11

11

11

**Why would you be unwilling or unable to pay ?**

a	b	c	d
mission hosp.	gov. hosp.	health post	Comm. clinic

[illegible]

Unable to afford such an amount

the quality of care provided at mission facilities is inadequate

do not understand the idea of an association to share the costs of health care

Not worried about health care costs because my household is always healthy

My household already does not pay for health care at the point of use

Not willing to 'lose ' my contribution if none in my household requires health care during the year

other reason(s) (specify.....)

30 (prfo)

Would you prefer to join an association that collected less money for contribution and entitled all your household to free outpatient care only

YES =1 NO =2 If yes repeat set above inserting b

(prfi)

31 Would you prefer to join an association that collected less money for contribution and entitled all your household to free inpatient care only

If yes repeat set

YES =1 NO =2 above inserting c

32 Would you be willing to join an association that required you to make less contributions on a regular basis but would entitle only the CHILDREN in your household to receive health care free of charge?

YES=1 NO = 2

33 Would you be willing to join an association that required you to make less contributions on a regular basis but would entitle only the ADULTS in your household to receive health care free of charge?

YES=1 NO = 2

If answers to ALL PERSONS, CHILDREN & ADULTS = 2 skip to Ever purchased

34 Would you prefer to make contribution(s) to this association

once a year = (1)  
twice a year = (2)  
four times a year = (3)  
monthly = (4)

skip to Ever purchased

others

-----

35 Which months of the year would prefer to make contributions


Ever purchased

36 Have you purchased an insurance policy in the past?

YES=1 NO = 2

If yes please specify \_\_\_\_\_

37

If you were a member of an association that provided free health care for you and your household which type of illness would you most value having free health care

**common, non-life threatening & cheap**

examples Asra (fever) (1)  
Setsou (backache)

**common non -life threatening & expensive**

examples Tsueheo (Tuberculosis) (2)  
Misikorm ( L. A. Pains)

**common life threatening and cheap**

examples Asraku (High Fever)  
Gvgorbem (Nose bleeding) (3)

**common life threatening and expensive**

examples Akoroley (Hernia)  
Gbedemi (measles) (4)

**rare life threatening and expensive**

examples illnesses requiring operation  
Dzlkunc ani Hiwe (snake bite)  
Nyaaml - (cholera) (5)

reasons

.....

.....

Transfers since the begining of the year (1993)

## TRANSFERS OUT OF HOUSEHOLD

38 recipients relationship parent (1) 39  
to head of household child (2)  
brother /sister (3)  
other (4)

inkind(specify type)

40 food (1) 41 cash equivalent  
clothes (2)  
accom'dation (3)  
health care (4)  
education (5)  
other

42 cash

Cedis (1000s)

## TRANSFERS INTO HOUSEHOLD

43 tranferee's relationship parent (1)  
to household head child (2)  
brother /sister (3)  
friend (4)  
other

inkind(specify type)

44 food (1) 45 cash equivalent  
clothes (2)  
accom'dation (3)  
health care (4)  
education (5)  
other

46 Cash

cedis 1000s

47 Purpose of cash transfer

Substance (1)  
school fees (2)  
trading capital (3)  
investment capita (4)

48 Are you a member of any saving group or associations that provided financial assistance in times of unforeseen need eg death and illness ? yes= 1 no=2  
specify \_\_\_\_\_

Which would you prefer if given the choice of prize money today or a larger amount next year. Please consider the following prizes and the bigger in a years time

now =1 later= 2

49 Would you take 1,000 cedis today or wait to recieve 1,100 cedis in a years time?

50 Would you take 3000cedis today or wait to recieve 3600 cedis in a years time?

51 Would you take 4000cedis today or wait to recieve 5600 cedis in a years time?

52 Would you take 5000cedis today or wait to recieve 7500 cedis in a years time?

53 Would you take 8000cedis today or wait to recieve 11600 cedis in a years time?

54 Is it better to purchase goods such as tv & fine cloths to use today or to save the money to be used at a later state?

YES = 1 NO = 2

55 How will prices of goods in the market and stores increase in the coming year?

will increase by 25% = (1)  
will increase by 30% = (2)  
will increase by 50% = (3)  
increase 100% or more = (4)  
don't know = (5)

## HOUSEHOLD PRODUCTION

Farm input previous minor " Gbo " season August 92 to January

type	codes	quantity
labour		
No.		
	self (1)	days
	family me (2)	
	hired (3)	
	others	
seeds	borrowed (1)	bags/tins
	from past (2)	
	purchased (3)	
machinary		days/acreage
	plouging (1)	
	harvesting (2)	
	transpt (3)	

## Crop farming output previous minor season " Gbo "

crop type	measure	units consumed	sold
	bags rice (1)		
	bkets tomatoes (2)		
	bkets pepper (3)		
	bags casarva (4)		
	bkets okro (5)		
	bags corn (6)		
	others specify		

 respondents estimate of  
 households annual income \_\_\_\_\_

## Production activities during minor "Gbo" season (Aug. 1992-Jan 1993)

		dry No.	wet No.
Fishing for	large eg. Dzo (1)	quantity cought	
	medium eg. Kpoku (2)		
	small eg. Agorkpo (3)	processed	
animals rearing(specify)		numbers sold	
	cows (1) sheep (2)		
	goats (3) pigs (4)	ltrs of milk	
retail trading (specify)	beer (1) others drinks (2)	quantity sold	
	provisions (3) veg & fruit (4)		
	cloths (5) others.....		
Poultry rearing(specify)	hicken/Guinea f (1)	numbers sold	
	turkey (2)		
	duck (3)	No. of eggs	
Sale of manual labour		days worked	
	persons		
	male adult (1)		
Sale of skilled labour/ professional skills		months employed	
	female adult (2)		
	child (3)		
Other outputs from household (please specify output type)	firewood collection (1)	units of measure	quantity
	charcoal burning (2)		

# OSUSUKO AREA HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY

A2

health record sheet

HOUSEHOLD LOCATION NO.

symptoms codes

code

NAME OF MEMBERS

-----

AGE

SEX

MAIN SYMPTOMS

1 -----

2 -----

3 -----

RECALL PERIOD

6 MONTHS=1

2 WEEKS =2

Action record No.	Action type	days admitted not admitted= NA	<----- direct costs (1000s cedis)----->			<---Indirect costs (1000s cedis)--->		level of satisfaction	Outcome of action
			consultation	drug	others	transport	others (Important first)		
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
'01	<input type="text"/>	<input type="text"/> >>>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'02	<input type="text"/>	<input type="text"/> >>>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
03	<input type="text"/>	<input type="text"/> >>>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'04	<input type="text"/>	<input type="text"/> >>>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
'05	<input type="text"/>	<input type="text"/> >>>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

(10)

- (1) NOTHING /WAITED / SPIRITUAL HEALER  
(2) TRADITIONAL MED SELF ADMIN.  
(3) PHARMACUETICAL SELF MED  
(4) BATTOR  
(5) COMMUNITY CLINIC

- (6) LOCAL HEALTH CENTRE  
(7) AKUSA GOVERN. HOSP.  
(8) ASUTURA MCH CLINIC  
(9) VOLU ?  
(10) OTHER (SPECIFY) \_\_\_\_\_

Has respondent had an operation as  
a result of any of the above actions?

yes = 1 No = 2

Action No.

If yes specify

- (1) very high  
(2) high  
(3) low

- (1) problem persisted  
(2) minor improvement  
(3) complete recovery

NOTE ques. (9)

If answers are either 1 or 2

TICK HERE IF CONTINUATION  
SHEET USED

☐

Inquire if another action was taken  
and complete another action record

## HOUSEHOLD LOCATION INFORMATION

LOCATION CODE

VILLAGE NAME

NAME OF HEAD ..... AGE

The purpose of our visit today is to continue the work the Ministry of Health has been doing in this district. This work is trying to find out from people their views and interest in an association to help with clinic and hospital fees

1 Did this household take part in the first round interviews?

Yes = 1 NO = 2

Don't Know = 9

Q1

If " don't know inquire from other members

## CONFIRMATION OF HOUSEHOLDS IDENTITY

2 COMPOUND NO.

Q2

3 VILLAGE NAME

Q3

4 NAME OF RESPONDENT

Q4

5 AGE OF RESPONDENT

Q5

*Continue interview with explanation if identity corresponds to given location No, otherwise terminate interview and inform supervisor immediately*

**PLEASE PROVIDE THE EXPLANATION BELOW BEFORE MOVING TO PAGE 2**

Thank you for your answers during the first interview. They were very helpful and have raised several specific questions about the willingness of people to contribute to an association that helps with clinic and hospital fees. In this interview I shall ask those questions. I would also like to talk to you about the health of those living in your household since our last visit and the health care they have been receiving. All your answers will be treated as private and confidential.

DATE

INTERVIEWER No.

INTERVIEWER'S NAME

START TIME

TIME COMPLETED

Inspection date

Supervisor's signature

6 Do you think associations that help individuals with the costs of funerals and other such unexpected costs are needed in this community?

Yes = 1 No = 2 don't know = 9

 Q6

7 In the past have you had any difficulties paying the costs involved in seeking clinic or hospital care for yourself or a member of your household?

Many time =1 Some times =2 Infrequently =3 Never = 4

 Q7

8 Have you experienced such difficulties within the the last six months?

Yes =1 NO =2 can not remember = 9 If no or cannot remember jump to question No.10

 Q8

9 If you have had difficulties in the last six months what sums of money were involved?  
Please states separately that for transport consulatation drugs and others

TOTAL	CONSULTATION	DRUGS	others
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	(cedis 1000s)		N/A =777

 Q9

10 What would be the main reason for Immunizing your children (1) To reduce the likely hood that they will get childhood diseases  
(2) To stop them getting ill  
(3) Others

 Q10

11 Please may we see the Road to Health Charts of the children in this household who are aged 2-5 years

1 = available for inspection  
2 = not available

 Q11

12 Instructions for Interviewer & supervisor  
Interviewer to fill in Immunization status box  
before answering Q7

tick for given immunization  
if not given "X"

child 1

child 2

child 3

child 4

DPT 3 or OPV 3 GIVEN	REASON FOR NON-IMMUNIZATIONS
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

 Q12

1=ALL/MOST IMMUNIZ.

2= LESS THAN HALF IMMUNIZ.

7 = N/A

13 Do you smoke or have ever smoked?

Yes currently =1 yes in the past =2 no,never =3

 Q13

Has the claim that smoking damages your health and increases your chances of illness influenced your decision whether or not to smoke?

yes,stopped me from starting=1 Yes, was the reason for stopping =2  
No, has not effected my smoking =3 I have not heard this claim =4 other =5

 Q13b



14 Of course one cannot tell what will happen tomorrow but it is possible that you or some other adult in your household may become ill .

The person may then need to go to the clinic or hospital . If that person is treated and allowed home

what would you expect the costs involved to be?

Don't know = 99

	consultation	drugs	cedis (1000s) transport	others	
Minimum amount					
Maximum amount					Q14

15 Again one cannot tell what will happen tomorrow but it is possible that a child in your household may become ill .

That child may then need to go to the clinic or hospital . If that child is treated and allowed home

what would you expect the costs involved to be?

	consultation	drugs	cedis (1000s) transport	others	
Minimum amount					
Maximum amount					Q15

16 If it happens that the adult is admitted in the hospital for one week (seven days ) for treatment and is allowed home

what would you expect the costs involved to be?

	consultation	cedis (1000s) drugs	transport	others	
Minimum amount					
Maximum amount					Q16

17 If it happens that the child is admitted in the hospital for one week (seven days ) for treatment and is allowed home

what would you expect the costs involved to be?

	consultation	drugs	cedis (1000s) transport	others	
Minimum amount					
Maximum amount					Q17

18 From your past experience how often in a year do you expect that you or another adult in your household will visit a clinic or hospital for treatment and return home the same day?

Q18

19 again from your past experience how often in a year do you expect that a child in your household will visit a clinic or hospital for treatment and return home the same day?

Q19

20

What is the most amount of money that you would be willing and able to contribute each year to be a member of an association that allowed your household to have outpatient care free at a clinic?

This clinic would be within an hour of walking and be staffed by nurses. Equipment for physical and laboratory examinations would be available. Drugs would also be available at the clinic. Members of the association would help manage the clinic.

per adult	per child

Don't know = 99

21

What is the most amount of money that you would be willing and able to contribute each year to be a member of an association that allowed your household to be admitted and treated at Battor Hospital free of charge and when it became necessary?

per adult	per child

Don't know = 99

22

What is the most amount of money that you would be willing and able to contribute each year to be a member of an association that allowed your household could be treated free of charge at this nearby clinic and also be admitted at Battor Hospital free of charge if and when it became necessary?

per adult	per child

Don't know = 99

23 From the work done in this area last year it was found that, on the average, an adult attends clinics about once and a child about twice per year. It has also been found that the average expense per outpatient attendance is about C 4,200 per adult and about C 3,600 per child. This covered consultation fee and drugs.

Given this information would you change the amount you are willing and able to pay as a member to allow your household to have free outpatient care.

per adult	per child

Not revised = 888

24 Similarly from the work done in this area last year it was found that, on the average, about six out of every 100 young to middle aged adults will be admitted in hospital. In the case of children, it was eight out of every 100 will be admitted. It was also calculated that the average expense per inpatient admission is C 15,000 per adult and C9,800 per child, This covered consultation fee and drugs.

Given this information would you change the amount you are willing and able to pay as a member to allow your household to be admitted and treated at Battor Hospital free of charge

Not revised = 888

per adult	per child

25 Given this information would you change the amount you are willing and able to pay as a member to allow your household to receive free treatment at the clinic and to be admitted free of charge to Battor Hospital should they become unwell

Not revised = 888

per adult	per child

# OSUDOKU HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY

(ROUND 2)

page 5

We would like to know whether since our last visit to this household some people have moved in or out and whether anyone has been UNWELL. By unwell we mean he or she has had a health problem for which treatment/cure was sought, or would have been health care had been available and affordable

<-----Information from household head----->			<---self reported or by parent of a child----->				
No	USUAL RESIDENTS & VISITORS	sex	CURRENT STATUS	AGE		UNWELL PAST TWO WEEK	UNWELL SINCE BEGINING OF YEAR
	Please confirm the names of persons who usually live in your household or are stay- ing with you starting with the head of household	Is (name) female or male ?		please confirm his or her age	TICK IF details same as recode sheet	NO YES__to A2	NO YES__to A2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
'01							
'02							
03							
'04							
'05							
'06							

(1) FEMALE  
(2) MALE

(1) still living in household  
(2) Moved out of household  
(3) Has died  
(4) arrived since round 1

TICK HERE IF CONTINUATION  
SHEET USED

☐

No. unwell  
since round 1

NO. UNWELL  
LAST 2 WKS

Transfers since mid 1993 (ie since our first interview)

## TRANSFERS OUT OF HOUSEHOLD

38 recipients relationship parent (1) 39  
to head of household child (2)  
brother /sister (3)  
other (4)

inkind(specify type)

40 food (1) 41 cash equivalent  
clothes (2)  
accom'dation (3)  
health care (4)  
education (5)  
other

42 cash

Cedis (1000s)

## TRANSFERS INTO HOUSEHOLD

43 tranferee's relationship parent (1)  
to household head child (2)  
brother /sister (3)  
friend (4)  
other

inkind(specify type)

44 food (1) 45 cash equivalent  
clothes (2)  
accom'dation (3)  
health care (4)  
education (5)  
other

45 Cash

cedis 1000s

47 Purpose of cash transfer

Subsistence (1)  
school fees (2)  
trading capital (3)  
investment capita (4)

48 Are you or have you ever been a member of any saving group or associations that provides financial assistance in times of unforeseen need eg death and illness ?

yes= 1 no=2

year of membership

In which situations do members benefit from the association eg death of relative illness

specify \_\_\_\_\_

How much money is /was contributed annually per member ?

Cedis

It better to purchase goods such as tv & fine cloths to use today or to save the money to be used at a later state?

YES = 1 NO = 2

How will prices of goods in the market and stores increase in the coming year?

will increase by 25% = (1)  
will increase by 30% = (2)  
will increase by 50% = (3)  
increase 100% or more = (4)  
don't know = (5)

## HOUSEHOLD PRODUCTION

Farm input previous major " Gble " season Mid -end 1993

type	codes	quantity
labour	No.	days
	self (1)	
	family me (2)	
	hired (3)	
	others	
seeds	borrowed (1)	bags/tins
	from past (2)	
	purchased (3)	
machinary		days\acreage
	plouging (1)	
	harvesting (2)	
	transpt (3)	

## Crop farming output previous minor season " Gbo "

crop type	measure	units consumed	sold
	bags rice (1)		
	bkets tomatoes (2)		
	bkets pepper (3)		
	bags casarva (4)		
	bkets okro (5)		
	bags corn (6)		
	others specify		

 respondents estimate of  
 households annual income \_\_\_\_\_

## Production activities during major "Gble " season 1993

		dry No.	wet No.
Fishing for	large eg. Dzo (1)	quantity caught	
	medium eg. Kpoku (2)		
	small eg. Agorkpo (3)	processed	
animals rearing(specify)	cows (1) sheep (2)	numbers sold	
	goats (3) pigs (4)	ltrs of milk	
retail trading (specify)	beer (1) others drinks (2)	quantity sold	
	provisions (3) veg & fruit (4)		
	cloths (5) others.....		
Poultry rearing(specify)	hicken/Gulnea f (1)	numbers sold	
	turkey (2)		
	duck (3)	No. of eggs	
Sale of manual labour		days worked	
	persons male adult (1)		
Sale of skilled labour/ professional skills	female adult (2)	months employed	
	child (3)		
Other outputs from household (please specify output type)	firewood collection (1)	units of measure	quantity
	charcoal burning (2)		

## OSUSUKO AREA HEALTH EXPENDITURE AND HEALTH INSURANCE DEMAND STUDY

A2

health record sheet

HOUSEHOLD LOCATION NO.

symptoms codes

NAME OF MEMBERS

AGE

SEX

MAIN SYMPTOMS

1

2

3

RECALL PERIOD

6 MONTHS=1

2 WEEKS =2

code

Action record No.	Action type	days admitted not admitted= NA	<----- direct costs (1000s cedis)----->	<---Indirect costs (1000s cedis)--->	level of satisfaction	Outcome of action			
(1)	(2)		consultation (3)	drug (4)	others (5)	transport (6)	others (Important first) (7)	(8)	(9)
'01			>>>						
'02			>>>						
03			>>>						
'04			>>>						
'05			>>>						

- (1) NOTHING /WAITED / SPIRITUAL HEALER  
(2) TRADITIONAL MED SELF ADMIN.  
(3) PHARMACUETICAL SELF MED  
(4) BATTOR  
(5) COMMUNITY CLINIC

- (6) LOCAL HEALTH CENTRE  
(7) AKUSA GOVERN. HOSP.  
(8) ASUTURA MCH CLINIC  
(9) VOLU ?  
(10) OTHER (SPECIFY)\_

Has respondent had an operation as  
a result of any of the above actions?

yes = 1 No = 2

I action No. ||

If yes specify

- (1) very high  
(2) high  
(3) low

- (1) problem persisted  
(2) minor improvement  
(3) complete recovery

NOTE ques. (9)  
If answers are either 1 or 2

TICK HERE IF CONTINUATION  
SHEET USED

Inquire if another action was taken  
and complete another action record

### **Appendix 3: Osudoku sub-district census**

## APPENDIX 2A

### Osudoku Sub-district census

The sub-district is divided into 29 units. These divisions are based on population, and are used by the CDRs and district council. Each unit has a unit CDR chairman. We used these units as the basis for enumeration; and the unit chairmen as the enumerators. Each unit is made up of several small villages with anything from 1 to 40 or 50 houses. Before the census each unit chairman was asked to list the villages making up his unit. This was to act as a check to make sure no village was overlooked in the enumeration. This list is provided below.

- Dormelian Unit DM
  - Mormortsonya
  - Amaganya
  - Djemam
  - Kenekope
  - New Town
  - Ablorkope
  - Akordum
  - Lomen
- Kasunya Unit KS
  - Kasunya
  - Kisseh-Kopey
  - Setse-Kopey
  - Kwaosi-Kopey
  - Fulani-Kopey
- Volivo Unit VO
  - Volivo Gbesedom
  - Volivo Tekoursi
  - Volivo Lanor
  - Mafi-Korpe No.1
  - Mafi-Korpe No.2
  - Chief-Korpe
- Agortor Unit AG
  - Teye Kwesi Korpey
  - Ayertey Obodai Korpey
  - Teye Kwao Korpey
  - Kwesi Gaga Korpey
  - Korsie Korpey
  - Narh Sadodji Korpey
- Akomo Kwao Korpey
- Narteh Djikuteh Korpey
- Mauna Okeletse Korpey
- Ahuma Akotia Korpey
- Sadjo Korpey
- Asanatse Korpey
- Korleteytse Korpey
- Gozah-Korpe Unit GO
  - Gozah-Kope
  - Akokokorpey
  - Mihadah-kope
  - Borkimataso
  - Zongo line
- Duffor Unit DU
  - Atabui
  - Duffor
  - Takpe-Korpe
  - 37 village
- Congo Unit CO
  - Congo village
  - Congo Sikanti
  - Bawa Korpe
  - Asutuare Military Camp
  - Zanidor
  - Awudu Korpe
  - Sowah farm
- Osuwem Unit 1 OS
  - Dakarkusi Part 1



Korle-Bu  
Dormekope  
Wuronu  
Ween  
Weto

- Natriku Unit NA  
Natriku  
Amatekope  
Kwadzo-Kope

- Kortorkor Unit KO  
Kormorekpo  
Tetsosi  
Kokotey Korpe  
Kortorkor  
Kortorkor  
Asimeh Korpe  
Tankporm  
Issa Korpe  
Kortorkor Salem

- Ada Korpe Unit AD  
Takpornya  
Dorse  
Amefarfor  
Adakope  
Saine

- Kasunya-Adidome Unit KA  
Kasunya-Adidome  
Edzorwu Kope  
Agbodzalu Kope  
Brother Kope  
Dafolenyame  
Dadematse kope  
Dzovor Kope  
Odomicabra

- Nyapienya Unit NY  
Maakpo  
Dadematsekope  
Nankpo

Fulani Kope  
Nyakumakope  
Ogbeteyohe  
Gblorkpokope

- Abuviekpong Unit AU  
Abider Kope  
Gatsiku Korpey  
Torbokor Korpey  
Daledzime Korpey  
Waleku Korpey  
Doku Korpey  
Edevi Korpey

- Kadjanya Unit KD  
Akukpong  
Tenya  
Atsavanya  
Gortsom  
Kadjanya  
No Smoking  
James Town

- Asutuare Unit 1 AA  
Agave  
Bokorkpey  
Saletsokpo  
Asutuare New Town  
Local Council

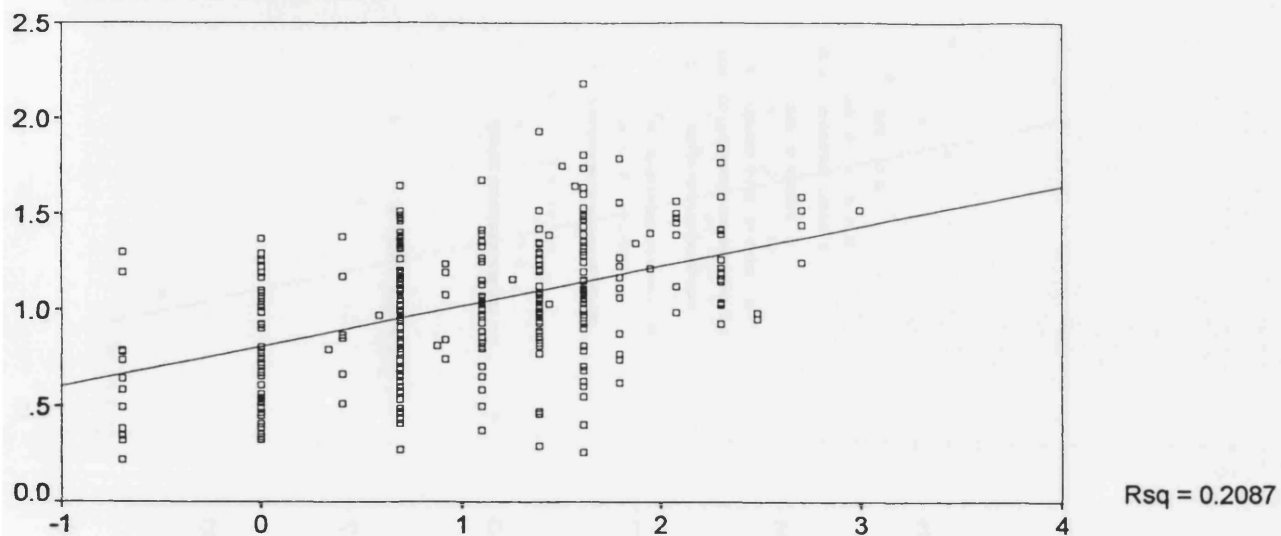
- Asutuare Unit 2 AS  
Tsangmer  
Tankpom  
Swarpo  
Zongo  
Namibia

- Asutuare Unit 3 AD  
Dorm  
Kopoanya  
Father Korpe  
Sikamawu  
Tamatey Korpe

**Appendix 4: Evaluation of regression models**

# Scatterplot of predicted and observed log WTP

Model 1 for adult cover

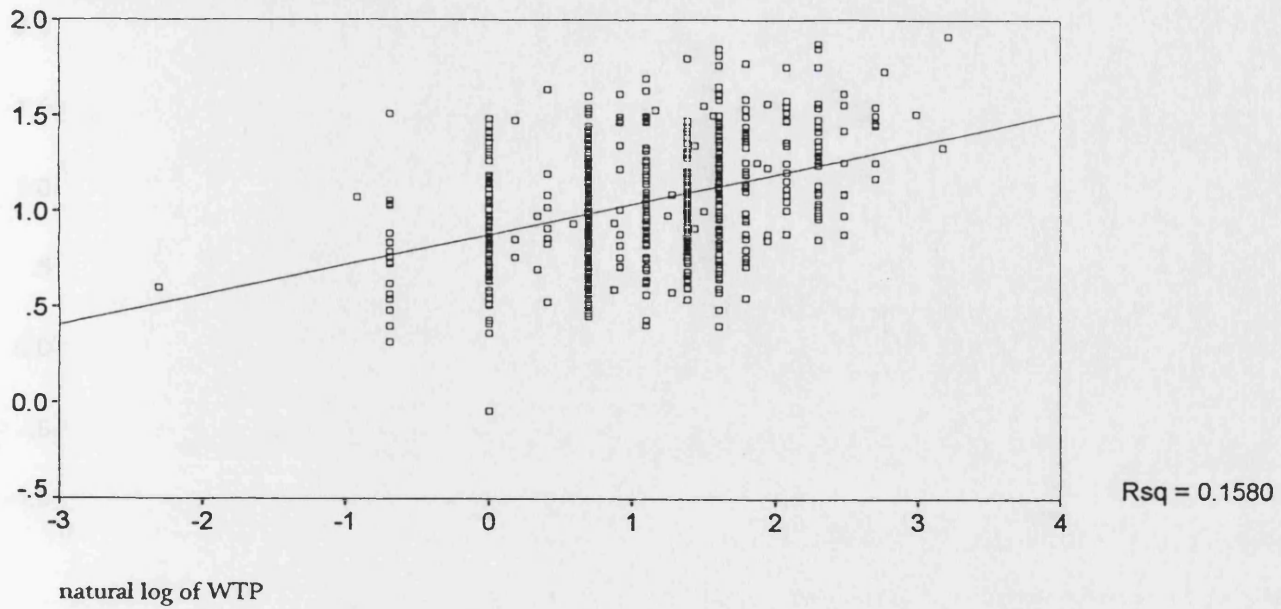


natural log of WTP

REGRESSION RESULTS

# Scatterplot of predicted and observed log WTP

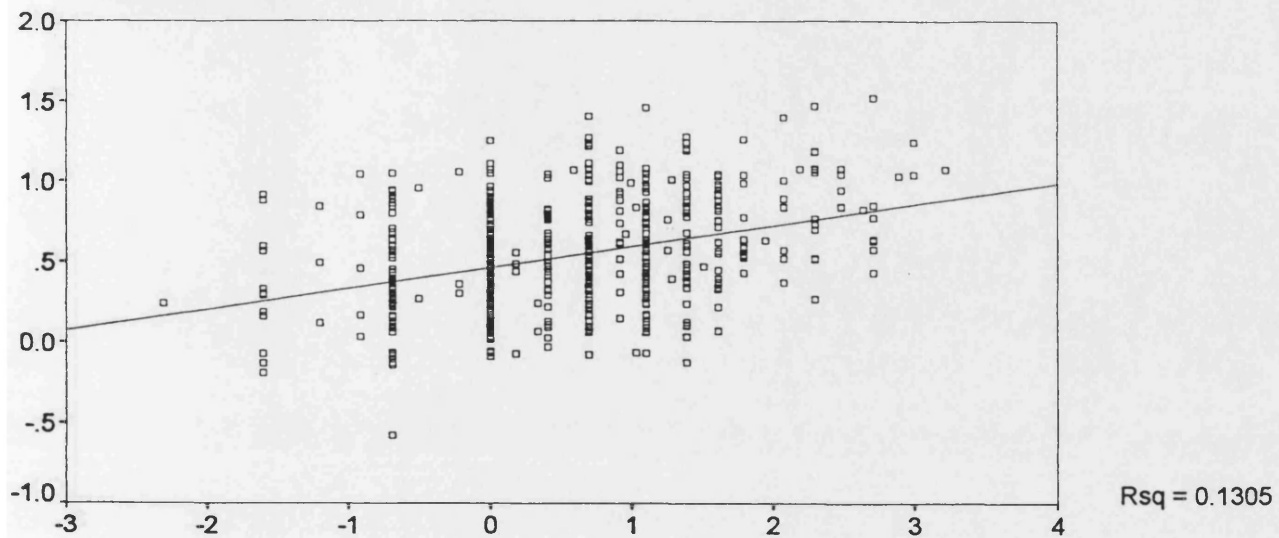
Model 2 for adult cover



REGRESSION RESULTS

# Scatterplot of predicted and observed log WTP values

Model 1 for child cover

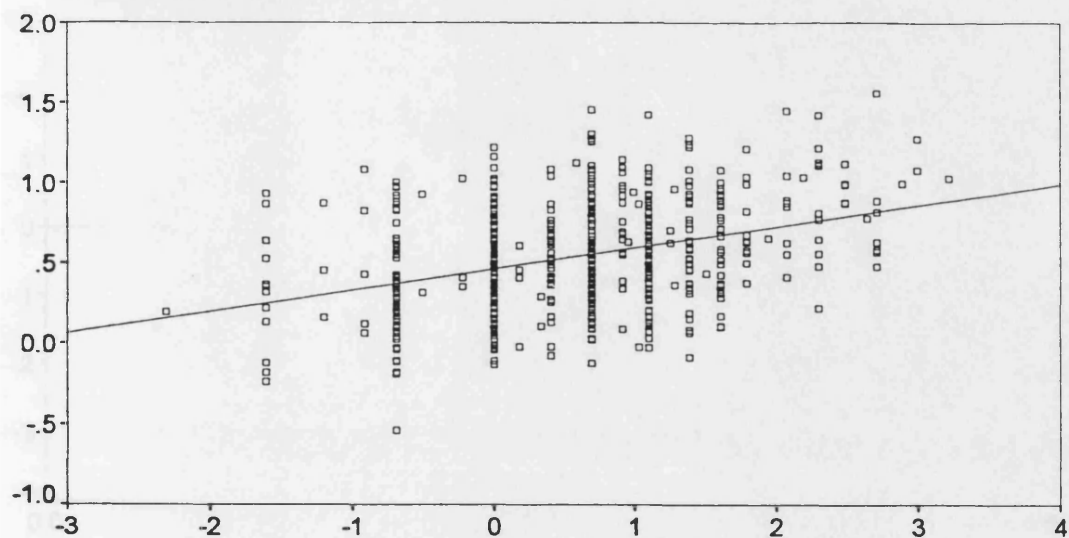


LG20CH

REGRESSION RESULTS

# Scatterplot of predicted and observed log WTP values

Model 2 for child cover



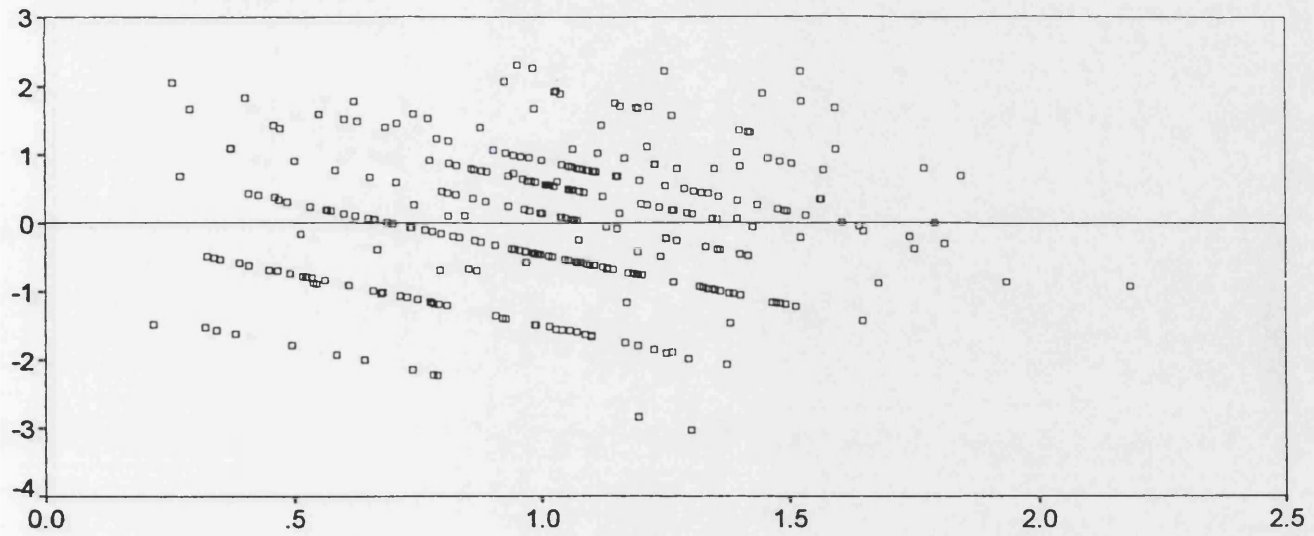
$R^2 = 0.1329$

LG20CH

REGRESSION RESULTS

## Residuals versus predicted log WTP

Model 1 for adult cover



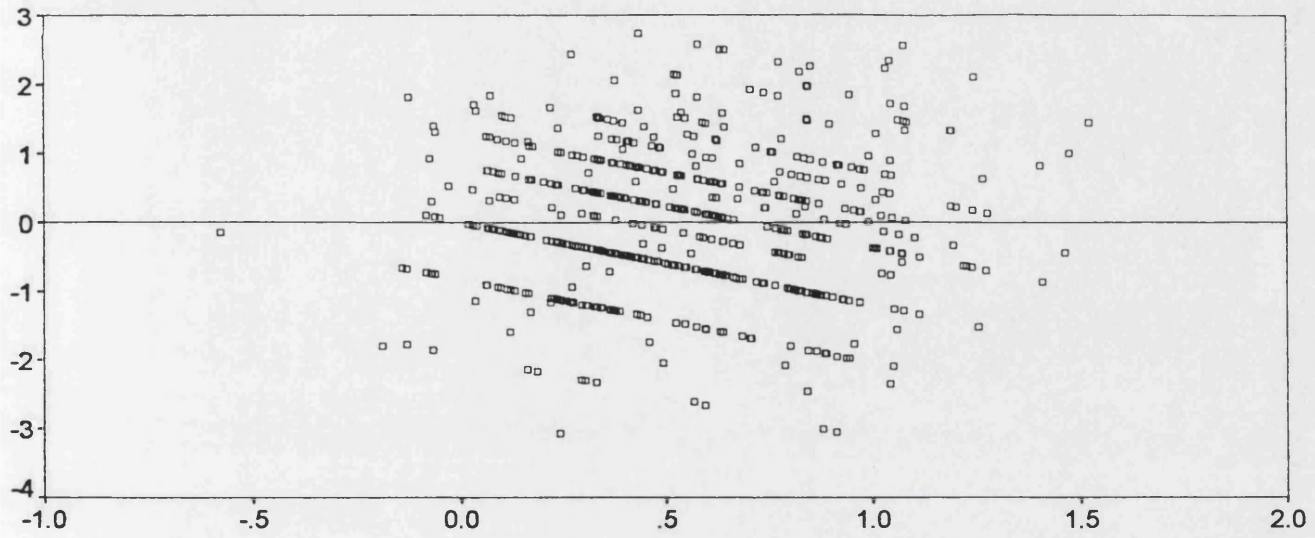
Predicted value of natural log of WTP

REGRESSION RESULTS



## Residuals versus predicted log WTP values

Model 1 for child cover



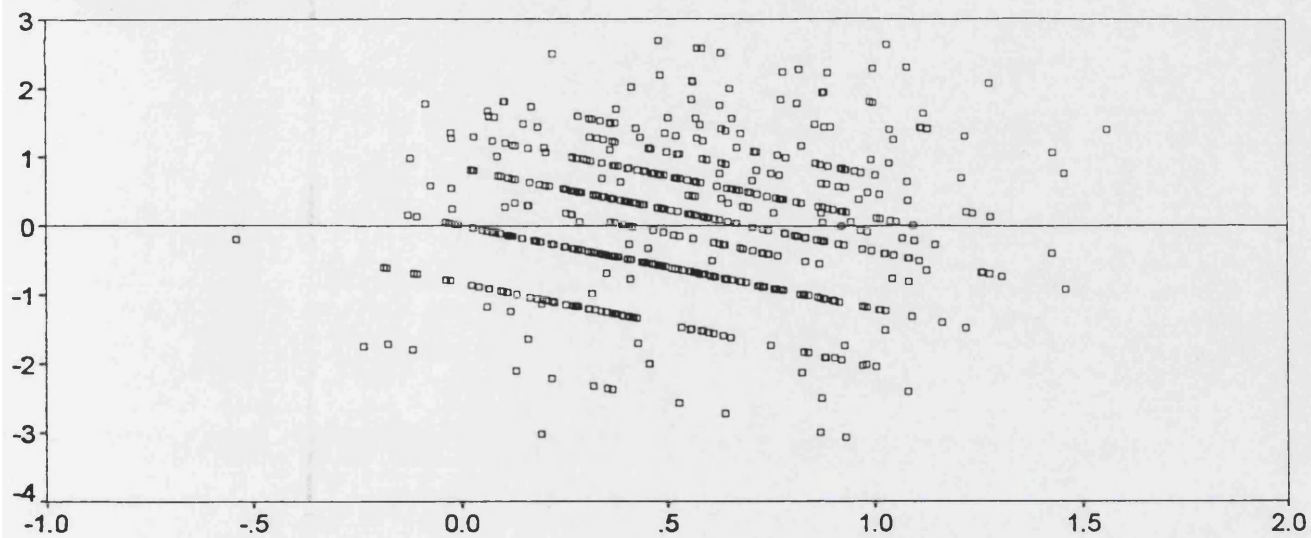
Predicted value of natural log of WTP

REGRESSION RESULTS



## Residuals versus predicted log WTP values

Model 2 for child cover



Predicted value of natural log of WTP

REGRESSION RESULTS