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FINDING SUSTAINABLE MEANS OF FINANCING HEALTH CARE IN GHANA: ARE THE PEOPLE WILLING TO PAY?

by

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"...Because of the Lord's great love we are not consumed, for his compassions never fail. They are new every morning; great is your faithfulness. I say to myself the Lord is my portion; therefore I will wait for him. The Lord is good to those whose hope is in him, to the one who seeks him; it is good to wait quietly for the salvation of the Lord. It is good for a man to bear the yoke while he is young."

(Lamentations 3:22-27)

"...So I saw that there is nothing better for a man than to enjoy his work, because that is his lot. For who can bring him to see what will happen after him?"

(Ecclesiastes 3:22)

DEDICATION

This thesis is dedicated to my sons, Nana Kwame Asenso-Boadi and Kwabena Nyameyie Asenso-Boadi for the joy they give me.

It is also dedicated to the entire congregation of Castlemilk Church of Christ, more especially Charles and Anne Kennedy for their commitment to helping other people.

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ABSTRACT

This study seeks to improve the knowledge of health care financing issues in Ghana as the country seeks a sustainable means of financing health care. To this end an empirical study of Ghanaians' willingness to pay for health services and for health insurance is undertaken thereby applying the contingent valuation model of estimating willingness to pay in a different context (health care financing and demand) from the usual applications reported in the literature, which value the benefit component of cost-benefit analysis.

Firstly, the study examines the three main methods of raising funds to finance health care (namely, government through taxes, user payments at the point of use, and health insurance) and discusses their advantages and disadvantages. Ghana's experiences in health care financing are considered with particular reference to the introduction of user charges by the government in 1992 and the issues raised concerning revenue generation, health service utilisation and equity, especially those affecting people with lower income levels.

The empirical study was undertaken in two district capitals and their immediate environs in the Eastern region of Ghana with a sample of 487 heads of household interviewed in their own homes. The study shows that, overall, Ghanaians are willing to pay for their health care whether delivered by government or private hospitals and they are also willing to contribute into a national health insurance scheme. However, one's willingness to pay does not necessarily mean one will be able to pay for one's health care, since this depends on ability to pay. Since Ghana's per capita income is US$390 and the daily minimum wage is less than US$1[1], many Ghanaians may find it difficult to pay for their health care at the time of use given the uncertain nature of health care needs. Consequently, this study proposes the establishment of a national/social health insurance scheme, which if properly implemented, could be of immense benefit in raising adequate funds to improve upon health care delivery in the country.

[1] US$1 was equivalent to ¢7000 at the time of the survey

Table of contents

CHAPTER ONE

INTRODUCTORY CHAPTER

1.0 Introduction

Provision of an efficient health care delivery system in any country requires adequate funding to make the system more reliable, efficient and effective in combating diseases in order to produce a healthy population. There are many different sources of funds to pay for health care in every country. These include taxes, compulsory and voluntary insurance and out-of-pocket user payment. These different sources of funds have different implications for equity, efficiency and costs in the delivery of health care, which depend also on how resources are pooled and channelled through funding institutions. Also, governments have crucial roles to play both in raising funds through taxes and social security, and in regulating public and private insurance schemes.

Generally, different countries finance their health care delivery systems differently, and the method used reflects political decision-making at the highest levels and involves trade-offs among fiscal, political and social objectives. In Ghana, health care financing has gone from free health care to the present cost-sharing era whereby there is full cost recovery for drugs and partial cost sharing for medical care. The issue of health care financing is really important in Ghana because of lack of basic health care for majority of the people, mostly the rural population. As a result of the user charges in hospitals, most people do not seek health care and, if anything, report at the hospital only when their health conditions have deteriorated. There is evidence that the current system of health care financing in Ghana, the user charge system, which is popularly called 'cash and carry', has had a negative impact on utilisation of health care to the detriment of the nation as a whole (Waddington and Enyimayew, 1989, 1990; Asenso-Okyere *et al.*, 1998). This reduction in health care utilisation as a result of the introduction of user fees is not unique to Ghana. It has been seen to be a common feature in countries that introduce market-based reforms to the health sector (IDS, 1985). This, no doubt, has adverse effects on the life expectancy, mortality and other health improving targets set by the authorities of the country. The situation has generated a lot of debate in Ghana centred on trying to find an efficient and sustainable means of financing health care delivery in the country, which will promote and sustain health care utilisation. Hence, it is important to conduct research

into financing of health care in Ghana to find out the views of the general public about how to finance health care.

1.1 The Purpose of the Study

The basic aim of this study was to find out more information from the general Ghanaian population about how we can utilise some of the cultural practices in the country to help improve how health care is financed in Ghana so as to make health care available and affordable to the majority, if not all, of the population. The emphasis was on using an empirical contingent valuation study to determine whether Ghanaians are willing to pay to use government and private hospitals for their health care, and if so, how much; whether they are willing to contribute into a national health insurance scheme, and if so how frequently they would be willing to pay their health insurance premia, and finally, how much they would be willing to pay as monthly health insurance premia, if compelled by the government to do so. It was anticipated that the study would identify some of the key issues affecting health care financing in Ghana. Thus, by drawing on some cultural practices in the country that deal with accumulation of capital (through the "Susu" system), pooling of resources to reduce debt burden on bereaved families (e.g. compulsory contribution towards funeral costs – "NSAWABO") in solidarity to members of the community, and the "NNOBOA" system where a group of farmers take turns to work on each other's farm during the farming season, the study aims to help come up with some ideas as how to improve upon the system of health care financing in the country.

1.2 The Relevance of the Study

Research findings are usually of great significance to individuals, organisations and nations. They highlight the impacts of actions taken by individuals, organisations, or government on the economy and as such provide the knowledge base and technology upon which health policies and health services are founded. Research findings can make contribution in at least three phases of policy making process, namely setting agenda, policy formulation and policy implementation (Hanney *et al.*, 2003). This study looks into financing of Ghana's health care in an attempt to determine whether Ghanaians are willing to pay for their health care and also willing to contribute into a national health insurance scheme with the aim of helping to find efficient and sustainable means of financing health care in Ghana. No comprehensive study of

Ghana's health care financing along the lines adopted in this study seems to exist. In this respect, this study adds to the stock of knowledge and understanding of the nature and dynamics of Ghana's health care financing and contributes to the appreciation of the economics of cost recovery, user charges, health insurance and willingness to pay, in health care delivery. Further, this study demonstrates that contingent valuation method of estimating willingness to pay could be used to analyse health care financing and demand issues (in addition to being used to value the benefits of non-marketed commodities) (Mataria *et al.*, 2004) thereby contributing to the knowledge on empirical applications of contingent valuation model and willingness to pay.

1.3 Organisation of the Thesis

The study is a country-specific study – Ghana – with a case study in one of its 10 geographical regions, the Eastern region. Empirical cross-sectional data were collected for analysis and interpretation thus enabling recommendations to be made as to how to improve the way health care is financed in Ghana. In all, the thesis consists of 16 chapters. This introductory chapter gives an overview of the entire thesis.

Chapter two reviews the basic economic theory relevant to the understanding of health care financing generally. It touches on welfare economics including efficiency – using the Pareto optimality concepts to explain the efficiency of a perfectly competitive market and market failure. The aim here is to explain that the efficiency reasons for public (government) involvement in health care delivery are based on the notion of 'market failure', which is a major feature of the health care sector (Dolan and Olsen, 2002). The chapter concludes with a description of the main characteristics of health care as a commodity, which together make it different from other commodities.

Chapter three identifies the main sources of funds to finance health care delivery. The chapter then discusses the advantages and disadvantages of government (tax) financing of health care, pointing out the arguments for government financing of health care delivery and giving examples of countries whose health care systems are financed by government.

Chapter four discusses health insurance as a means of financing health care delivery. It looks at the types of health insurance schemes, advantages and disadvantages of each type, conditions for successful health insurance schemes, and a review of empirical examples of each type of health insurance scheme from both developed and developing countries.

Chapter five discusses direct user fees as a means of financing health care delivery. It contains issues on the theory of user charges, potential applications of the theory, a model for assessing the effects of user charges given different demand conditions (Birdsall, 1987), issues involved in the implementation of user charges, a review of the empirical literature on health care user fees, mostly from developing countries, pointing out the effects of user charges on health care delivery and the case for and against the use of user charges to finance health care.

Chapter six reviews the relevant aspects of the welfare economics underpinnings of willingness to pay (WTP) and the contingent valuation estimation method (CVM) in order to make the theoretical and empirical justification for using the contingent valuation method of estimating willingness to pay, for the empirical part of the study. The chapter first of all differentiate between willingness to pay and ability to pay and goes on to review the other methods that could have been used to estimate WTP such as the travel cost and hedonic pricing methods and explains why they were not used for this study. The chapter presents the steps involved in using the CVM to estimate WTP.

Chapter seven presents some background information about Ghana's economy and its health care system so as to highlight the significance of having efficient and sustainable methods of financing health care in the country.

Chapter eight presents a statement of the empirical research problem, the specific objectives of the empirical study, the hypotheses to be tested, research methodology and the *a priori* expectations of the relationships between the major dependent and independent variables used for the empirical study.

Chapters nine to fifteen present the univariable and multivariable statistical analyses of the data obtained from the field survey.

Chapter sixteen concludes the study with a presentation of a summary of the main findings emanating from the empirical study and, together with the evidence from literature, makes recommendations for improving health care financing and health care delivery in Ghana.

1.4 Summary

This study makes a contribution to the debate on finding efficient and sustainable means of financing health care in Ghana, and with the knowledge of some cultural practices in the country, argues for the establishment of national/social health insurance schemes to help raise adequate financial resources for health care delivery, thus contributing to the debate on health care financing in Ghana. It also contributes to the empirical application of willingness to pay and the contingent valuation method.

As noted in section 1.0, governments play important roles in helping to raise resources through taxes and social security to finance health care delivery, and in regulating public and private insurance. All these are geared towards ensuring efficient and equitable health care delivery systems in their countries. The efficiency reasons for public involvement in health care delivery are based on the notion of 'market failure' whereas the equity reasons are based on society's view that health care should be distributed according to the notion of health needs rather than according to ability to pay (Dolan and Olsen, 2002). Hence, in order to understand the effects of how health care is financed in a country, one needs to have some basic knowledge of the economic theories that help to understand health care financing. Chapter 2 therefore reviews the basic economic theory underlying health care financing.

CHAPTER TWO

2.0 REVIEW OF ECONOMIC THEORY

Resources for health care delivery are generally limited in supply in relation to the demands placed on them. Hence, there is the need to make choices about the judicious use of these resources between competing alternatives. The concepts of 'scarcity' and 'choice making' involve allocating and distributing scarce resources efficiently and equitably to the benefit of society. This chapter reviews the economic theory that is relevant to understanding the financing of health care delivery generally. It aims to give readers some background economic knowledge to help understand health care financing issues. It starts by differentiating between positive and normative economics, leading to the concept of welfare economics where we dwell on the Pareto principle of efficiency. We then move on to discuss situations where the market, left on its own, results in inefficient outcomes (market failure), which is a major feature of health care markets. The chapter finishes with a description of the main characteristics of health care as a commodity that, taken together, may make it different from other commodities.

2.1 Positive Economics

Positive economics is the branch of economics that deals with objective or scientific explanations of the working of the economy with the aim of explaining how society makes decisions about consumption, production and exchange of goods and services. This is the type of economic analysis which deals with predicting, on the basis of empirical analysis, how firms and consumers will respond to economic changes, and with testing such predictions empirically. Thus, positive economics is only concerned with analysing the consequences of different changes or policies, without making judgements about the desirability of alternative allocations of resources. In positive economics it is for instance possible to analyse the consequences of a proposed health care reform on the supply of doctors and nurses and the prices of health care without any judgement about whether the health care reform should be carried out. There are usually two reasons for this investigation, namely,

i. to satisfy our curiosity about why the economy works as it does, and
ii. to have some basis for predicting how the economy will respond to changes in circumstances.

That is, positive economics attempts to establish cause and effect in a scientific manner, where hypotheses are formulated and checked against observed facts, and "does not tackle problems that require interpersonal comparisons of welfare" (Buchanan, 1959 cited by Clewer and Perkins, 1998).

2.2 Normative Economics

Normative economics is the branch of economics that deals with how the world ought to work. It is concerned with evaluating the costs and benefits of alternative courses of action (policies) in order to assist policy decisions. It involves analysing the desirability of different changes or policies, for example to judge whether a proposed health care reform should be carried out. Normative economics offers recommendations based on personal value judgements. Thus, normative economics is concerned with establishing the means by which socially desirable outcomes can be achieved. It is prescriptive and suggests what 'ought' to be. Normative economics could be viewed as an underpinning of welfare economics because welfare economics is ultimately concerned with providing criteria to rank alternative changes or policies. To be able to rank different policies it is necessary to impose some value judgements.

Positive economics versus normative economics

The propositions of welfare economics have a different content from those of positive economics. They are usually logical deductions from a set of definitions and assumptions, which may or may not be realistic, and which may or may not be ethical in nature. The whole process is to define welfare for an individual or a group, make various assumptions about the group and the welfare criteria, and then deduce the conditions under which welfare will increase. If these conditions are fulfilled and welfare does not increase, it simply means that the assumptions were inappropriate.

To the point of arriving at theory, there seem to be no difference between normative and positive economics. The difference arises when we actually try to test the outcome of the theories, i.e. when we try to discover whether or not welfare has in fact increased. However, welfare is not an observable quantity like market price or a tangible item of personal consumption, so in practice, if not in principle, welfare propositions are difficult to test.

The usual way to test a theory in positive economics is to test its conclusions and that of testing a welfare/normative proposition is to test its assumptions. This implies that in positive economics assumptions can be too simplified with the confidence that the appropriateness of the assumptions would be tested when we come to apply the conclusions inherent in them to real world observations. However, we cannot entertain such confidence in welfare economics. Consequently, the assumptions in normative economics must be scrutinised carefully and thoroughly. Each assumption must stand on its own feet. We cannot afford to simplify much. Nor can we hope that two erroneous assumptions will somehow 'cancel out' and produce an acceptable conclusion. However, in positive economics this procedure is as common as it is essential. For instance, if we assume that a person has a constant rate of time preference and that the marginal utility of consumption diminishes, we can deduce that a sufficiently high rate of interest will always result in consumption being planned to grow through time. The conclusion is testable and may be acceptable, even if the assumptions from which it is derived are not.

The objective of having an efficient and sustainable means of financing health care in any country is to help produce healthy and productive population. Consequently, since the main economic theory that is relevant to the topic of health care financing is welfare economics, we turn our attention to explaining the relevant aspects of welfare economics that are required to help us to understand the issues in health care financing that are discussed in this dissertation.

2.3 Welfare Economics

As noted in section 2.2, normative economics is sometimes considered as an underpinning of welfare economics because of the personal judgements involved. Welfare economics is the study of how the allocation of society's resources affects the economic well-being of the people living in the society and how it can be improved. Thus, the purpose of welfare economics is not to describe how the economy works but to assess how well it works. Welfare economics usually begins with an examination of the benefits that buyers and sellers receive from taking part in a market and then goes on to find out how society can make these benefits as large as possible.

The main themes that keep recurring in welfare economics are allocation and distribution efficiency. These are important to be understood and compared with the main characteristics of health care as a commodity that make it different from other commodities. This will help us to understand that care needs to be exercised when trying to find out a sustainable, efficient and equitable means of financing health care delivery. Attention is now turned to explain the concept of efficiency, which relies mostly on the Pareto principle.

Efficiency

Economics is concerned with evaluating and choosing among alternative courses of action. In doing so, it examines both the costs and consequences/benefits of the alternatives. The primary criterion that economics uses to organise and conduct these analyses is that of efficiency. Efficiency can be seen as the property of society getting the most it can from its scarce resources. However, "beyond this intuitive advice it is not always clear what this involves, or how to achieve it, and economists attach a very precise set of meanings to the concept of efficiency some of which may not be obvious, agreed to or understood by everyone" (Reinhardt, 1997). Thus, efficiency is an instrumental concept and as such it is always necessary to specify clearly the outcome being sought or the output being produced. It must be noted that being efficient is not the same as being cheap. There are basically three main elements of efficiency (Culyer, 1985) which are summarised as:

1. do not waste resources – technical efficiency;
2. produce each output at least cost – cost-effectiveness;
3. produce the types and amounts of output which people value most.

These three come together to give us allocation efficiency.

A fundamental value judgement that is made in welfare economics when it comes to dealing with efficiency is known as the Pareto principle or the Pareto optimality criterion. The Pareto principle states that a change is desirable if it makes some individual(s) better off without making some other individual(s) worse off. The Pareto principle is usually joined with the consumer sovereignty principle. The consumer sovereignty principle states that individuals are assumed to be the best judges of their own welfare, i.e. it is the individuals themselves who decide whether they are better off or worse off whenever there is a change.

The Pareto principle is related to the workings of the market economy. It can be shown that if there is perfect competition, the economy may attain Pareto Optimality in its resource allocations (see any basic Microeconomics textbook). Pareto optimality is a situation where it is impossible to improve the situation of some individual(s) without making at least one other individual worse off. This is also referred to as "top-level" efficiency by some authors.

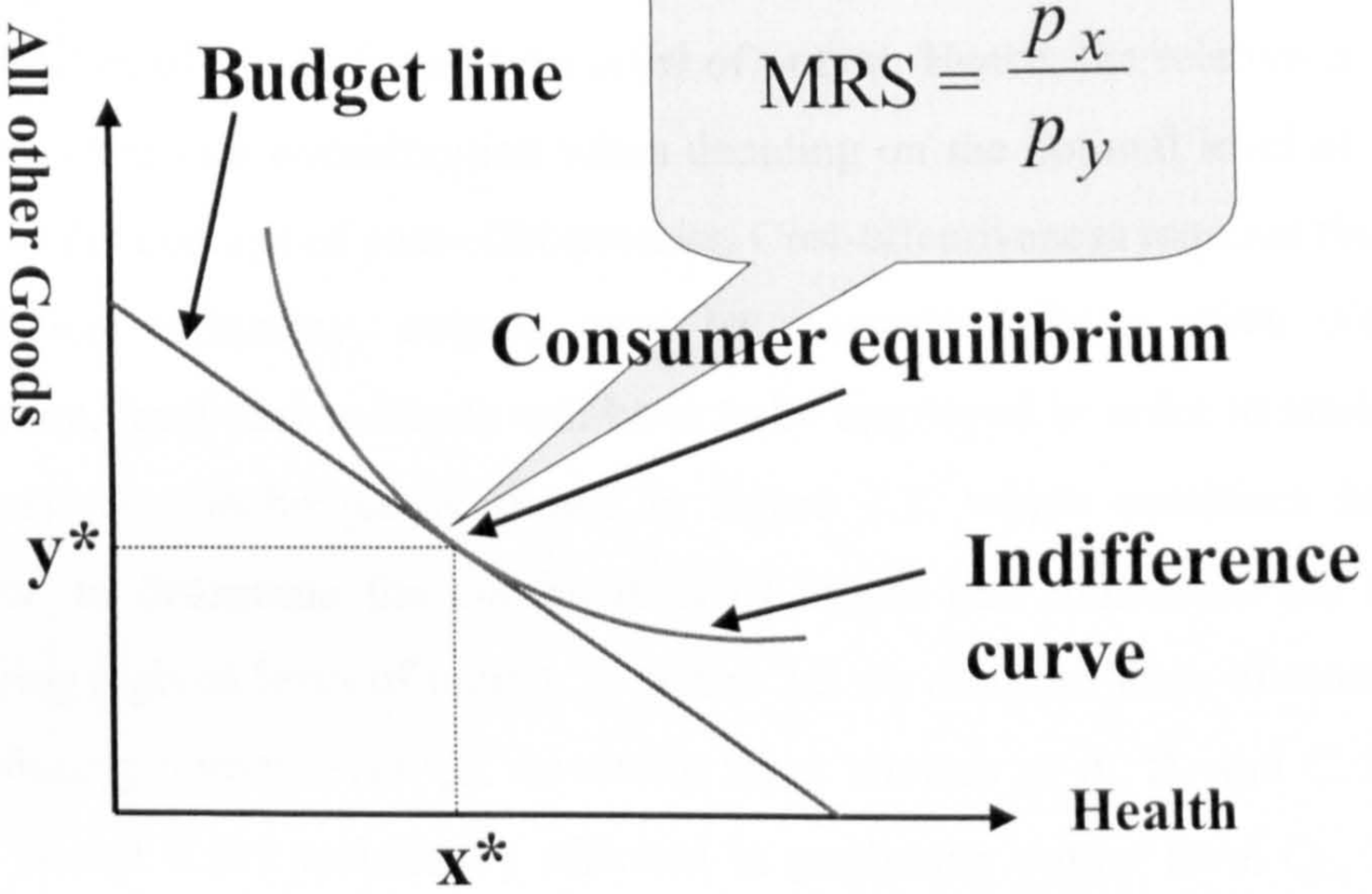
There are a number of different possible Pareto optimal situations in any economy, and which point of efficiency is reached in a perfect market economy will depend on the initial distribution of income. One theorem of welfare economics states that under certain assumptions it is possible to attain any Pareto optimal situation as a result of a competitive general equilibrium given the distribution of income (Boadway and Bruce, 1984). For a situation to be Pareto optimal, three sets of conditions must hold, namely efficient exchange, efficient allocation of factors of production, and efficient output choice.

(a) Efficient Exchange

The marginal rate of substitution is defined as the rate at which a household is willing to substitute one good (for instance health care) for another good. For an exchange situation to be Pareto optimal, then the marginal rate of substitution between two consumer goods, e.g. between health care and all other consumer goods, must be the same for all households that consume the goods, ($MRS^{A}_{xy} = MRS^{B}_{xy}$ where A and B are individuals and x and y, goods). If this condition does not hold then households could benefit from further trade. Assume for instance that society only consists of two households, A and B, which consume only two goods – health care and all other goods. If household A is willing to give one unit of health care for three units of all other goods, while household B will give one unit of all other goods for one unit of health care, it will be to the advantage of both households to exchange, with A increasing his/her consumption of all other goods and B consuming more of health care. Such trades are attractive until equality of the marginal rates of substitution is established, (for example, until both households A and B are willing to trade one unit of health care for two units of all other goods). At this point, the $MRS^{A}_{xy} = MRS^{B}_{xy}$ will be equal to the ratio of the market prices of the two commodities, P_x/P_y. The

efficient exchange condition is as shown in figure 2.1, using indifference curve and budget line[1].

Fig. 2.1 Exchange Efficiency



(b) Production Efficiency

Here we can talk of both technical efficiency and cost-effectiveness. Technical efficiency requires that for any given amount of output the amount of inputs used to produce it be minimised. In other words, this requirement states that maximum output is produced from any given combinations of inputs. To achieve this, the marginal rate of technical substitution between the inputs (capital and labour, for example) that are used to produce the goods are equalised i.e. $MRTS^{Y}_{KL} = MRTS^{X}_{KL}$, where Y and X are goods and K and L are inputs. Stated differently, the marginal rate of substitution between any given pair of inputs should be the same in the production of all goods for which both factors are used. If this condition is not met, then it is possible either to obtain more output through a different combination of resources, or to release some of the resources to alternative uses without sacrificing any current output. That is, if this condition were violated, the output of at least one of the commodities could be increased without decreasing the output of the other while using the same amounts of both inputs. So, to be technically efficient means to avoid waste. Hospitals that are

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[1] Please see any basic microeconomics textbook for the definitions of indifference curve and budget line.

larger than they need to be to serve their communities are an example of technical inefficiency (waste).

Technical efficiency says nothing about the prices that must be paid for the inputs that are used in production. In general, there will be several technically efficient combinations of inputs for a given level of output. Hence, the relative costs of inputs must be taken into consideration when deciding on the optimal level of output. This brings in the concept of cost-effectiveness. Cost-effectiveness requires that in addition to technical efficiency, outputs must be maximised for a given cost. Thus, in production, least-cost methods will have to be employed in order to attain efficiency. The least cost technique is shown in figure 2.2, which combines isoquants and isocosts[2] to determine the combination of inputs that minimises the total cost of producing a given level of output. In figure 2.2 we consider three alternative methods of producing output level Q_0, involving input choices at A, B, and C. Even though points B and C are technically efficient in producing output level Q_0, B uses more capital inputs and C uses more labour inputs, which make both B and C produce the output level Q_0 at higher cost than if input combination A is used.

Cost efficiency implies minimising the money cost of production. In effect, technical efficiency is a necessary but not a sufficient condition for cost efficiency. For any given output in a particular setting there will normally be only one combination of inputs that will be cost effective to produce that level of output – point A in fig. 2.2. It must be noted that if relative input prices change, the technically (or cost) efficient method of production may change as well.

While cost-effectiveness can inform us about how to produce an output at least cost, it does not address the question of whether the output should be produced at all. This is addressed by the third condition for efficiency, namely, allocative efficiency, which is reviewed next.

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[2] An isoquant shows the different minimum combinations of inputs to produce a given level of output. Different points on an isoquant reflect different production techniques (ranging from the very capital intensive to the very labour intensive) for making the same output level. An isocost shows the different input combinations with the same total cost.

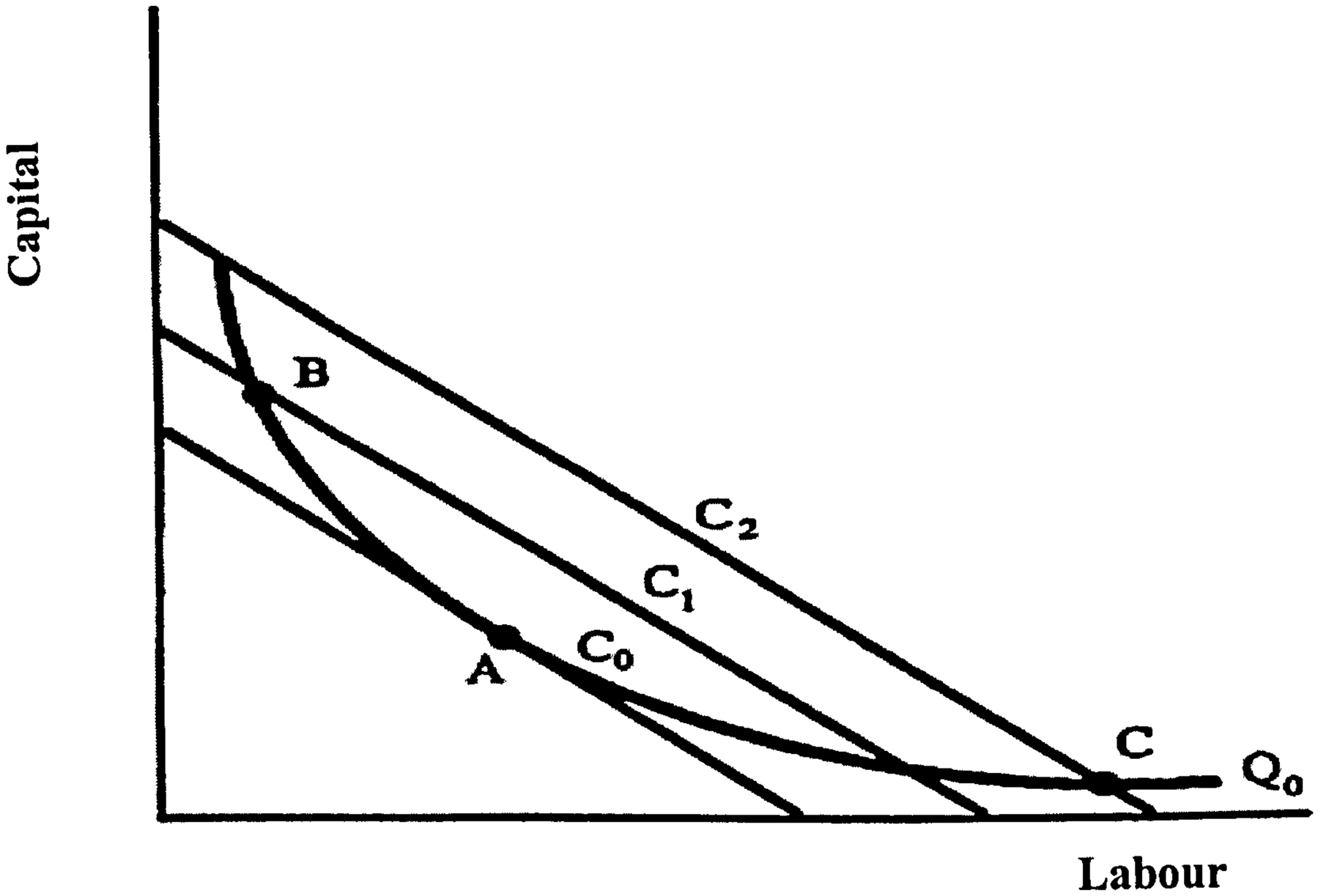

Figure 2.2 Least Cost Techniques.

(c) Allocative Efficiency

There is little point in producing goods in a technically cost efficient way if nobody wants the goods in question. Even if consumers do want some of the goods, they must be produced in the right quantities otherwise scarce inputs will not be used efficiently. This type of efficiency is called allocative efficiency. This links the supply of outputs to their demand by extending the analysis to consider the preferences and values of the members of society who consume the outputs. Allocative efficiency requires that given the existing distribution of income, it is not possible to reallocate resources to make one person better off without making at least one other person worse off. It must be noted that allocative efficiency implies production/technical and cost efficiency because if production or technical inefficiency exists, then the scope exists to produce, for example, extra treatments by using the existing resources more efficiently. These extra treatments can be used to make some people better off without making anyone worse off.

However, allocative efficiency does not necessarily imply social desirability. Hence, it is possible for a community to prefer a "Paretian inefficient resource allocation to

an efficient one if, for example, the members of the community judge it to be fairer in some way" (Reinhardt, 1997). An example of this is a policy that removes public subsidies for private hospitals in favour of expanding free public clinics if there is evidence that the private hospitals are mostly patronised by the rich and the poor patronise the public hospitals. Thus, "the choice among several allocatively efficient resource allocations may be made on the basis of criteria other than efficiency" (McGuire *et al*, 1997), for instance on the grounds of equity.

If all the three types of efficiency explained above hold, it would mean the net benefit to society of each commodity produced and/or consumed by the society is maximised. For each commodity that is traded, this occurs where the marginal benefit derived from an additional unit of the commodity is equal to the marginal costs associated with producing the additional unit. This efficiency condition can be stated as: MSB = MPB = P = MSC = MPC, where

MSB = marginal social benefit, MPB = marginal private benefit, P = market price, MSC = marginal social cost, and MPC = marginal private cost.

It is possible for an allocation of resources to be both technically efficient and cost-effective but allocatively inefficient if producers are supplying too much or too little of any commodity relative to consumers' preferences. For instance, if mothers of young children want counselling services for behavioural problems instead of frequent well-child check-ups, then allocative efficiency might be improved by changing the mix of primary care services even if the well-child examinations were being provided cost-effectively. Efficiency therefore, means both doing things right (technical efficiency and cost effectiveness) and doing the right things (allocative efficiency).

There is no single, correct solution for efficient provision of health care services. Although in theory all countries have access to the same production knowledge of health care services, the relative cost of different inputs (e.g. nurses versus doctors, drug versus hospital days, inpatient hospital services versus day case surgery, etc) varies across countries, and citizen-consumers of different countries have different preferences and values. Therefore, it is possible that countries will display differences

in how they provide services, in which services they provide and to whom they are provided, independently of any differences in efficiency that may exist.

There are situations where the market conditions result in inefficient outcomes, i.e. situations in which some gains from trade are not exploited. When such a situation happens, the market is said to have failed.

2.4 Market Failure

Market failure refers to situations whereby the conditions necessary to achieve Pareto efficient solutions fail to exist or are contravened in one way or another (Brown *et al.*, 1998). Mankiw (1998) defines market failure as "a situation in which a market left on its own fails to allocate resources efficiently". That is, market failure means that the production and/or allocation of a commodity that results from a market operation are inefficient. In the extreme case of complete market failure the market will fail to exist so that certain commodities will not be produced at all e.g. private health insurance markets seem to be completely absent in most developing countries (Asfaw *et al.*, 2004). "The essence of market failure is noted to be the inability of individuals to act cooperatively leading to allocatively inefficient distribution of resources" (Brown *et al*, 1998).

Causes of Market Failure

The origin of market failure in most cases is "transaction costs because exchange transactions, including market exchanges, are not costless to perform" (Brown *et al*, 1998). Transaction costs comprise decision costs, information costs, bargaining costs and legal costs in drawing up contracts. For instance, it might be costly for consumers and producers to be informed about the quality of a commodity they may purchase (e.g. health insurance) and also it is costly to acquire information about the likely course of events over an uncertain future. The main causes of market failure however, have been identified as the existence of public goods and externalities; imperfect competition, e.g. decreasing costs and increasing returns to scale as in the case of natural monopoly; incomplete information; and uncertainty. We discuss those that are relevant to understanding health care financing and the rest can be found in any basic microeconomics textbook.

(a) Public Goods

Public goods are neither excludable nor rival (Mankiw, 1998). Samuelson (1954) states that "each individual's consumption of public good leads to no subtraction from any other individual's consumption of that good." This is the non-rivalness characteristic of public goods. This arises from the indivisibility of the product. Non-rivalness in consumption implies that the marginal cost of adding another consumer is zero. Thus, the opportunity cost of the marginal consumer is zero and as such a competitive solution requires that the market price be zero. Hence, revenues will not cover costs and so a profit-maximising producer will not supply such a commodity and as such, left on its own, the market for such a commodity fails.

The non-excludability characteristic of public goods implies that, once the goods are produced, people cannot be prevented from using them. For a pure public good, exclusion from use is either technically not feasible or if technically feasible, is very expensive to apply. It must be noted, however, that as more people consume a given public good, its quality might diminish. There is no incentive for a profit-maximising producer to supply public goods because, given the non-excludability characteristic of public goods, once he/she produces the public goods, he/she cannot exclude individuals from consuming them and hence, he/she would be unable to charge a price, thereby causing the market for such goods to fail. Examples of public goods are national defence, knowledge[3], and uncongested non-toll roads.

Some health care goods and services are considered as public goods. As stated by Jack (1999) these goods can be classified into two distinct categories. Goods in the first category are characterised by their impact on the physical or environmental conditions surrounding individuals as they live and work. Important examples of these goods in developing countries include actions that improve the quality of the environment, such as vector control (spraying for mosquitoes, which reduces the spread of malaria) and air and water quality control, which reduces air- and water-borne diseases. Goods in the second category have no direct physical effect, but they provide information, which is perhaps the purest of public goods. These include information provided to allow individuals to make better decisions or save them the

[3] Knowledge is considered a public good because once one person discovers an idea, it enters society's pool of knowledge and other people can freely use it (Mankiw, 1998).

costs of finding the information themselves, e.g. accreditation of physicians[4] and control of the quality of drugs by a public authority[5].

(b) Externalities

An externality occurs when the action of one person or group of persons creates a cost or benefit for another person or group of persons. External benefit or economy occurs if the utility of a third person increases as a result of an externality; an external cost or diseconomy occurs if the utility of the third party falls as a result of an externality. This situation influences the decisions of producers and consumers, resulting in an allocation of resources that differs from that which a perfectly competitive market would have produced in the absence of externalities. Hence, externalities generate market failures that can be corrected by government by internalising them through, for example, taxes and/or subsidies depending on the nature of the externality.

Types of Externality

There are basically two types of externalities, namely technological and pecuniary externalities (Brown *et al*, 1998). Technological externalities occur if the consumption or production activities of one agent or group of agents affect the levels of production and consumption of other agents. Pecuniary externalities occur when the behaviour of producers and/or consumers influences the set of prices in the economy; and hence, through changes in the budget constraints, the welfare of other producers and/or consumers is affected. A pecuniary external diseconomy could arise when an increase in the output of one industry causes an increase in the price of one or more of the inputs used by other industries thereby increasing their cost of production. Pecuniary externalities show up as changes in prices and profits but do not alter the technical possibilities of production or consumption.

If an individual is inoculated against some disease, he/she receives a private benefit, but an external benefit is granted to his/her neighbours, who run less risk of catching

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[4] 'This relieves individual consumers of the task of having to judge the quality of doctors, which they may not be able to do very well and/or may not have time to do, for instance in an emergency' (Jack, 1999).

[5] 'So that physicians and individuals can be sure of the nature of medications they prescribe and consume. The public needs to have some degree of trust in the public authority, usually the government, to provide correct and accurate information because the quality of public goods must be sufficiently high for it to be valued by consumers' (Jack, 1999).

the disease from him/her. However, the individual would find it extremely difficult to trade that external benefit to his/her neighbours because the externality is non-excludable and as such individuals are unable to internalise the effects of the externality through private trades. Hence, markets for such commodities if let on their own, would fail.

A common policy response to market failure is to attempt to correct it, usually through some form of government intervention that must be designed to fit the problem that is causing the market failure.

It must be noted that an external diseconomy will result in over-production of the commodity concerned while an external economy will result in over-consumption (under-production). These allocations differ from those that would have been produced by perfectly competitive markets. Hence, the existence of externalities results in outcomes that are not Pareto efficient, leading to market failures, which need to be corrected. In the case of external diseconomies, governments attempt to counteract the market failure by reducing the volume of output of those goods that are over-produced. However, in the case of external economies, the government may choose to correct the allocative inefficiency by encouraging the production of those goods that are under-produced. It can do this either by directly producing the commodity (e.g. health care services in government hospitals) or by providing consumption and/or production subsidies.

As noted by Hsiao (1994; 1995), market failure is common in health care because unregulated markets for health services tend to be inefficient and inequitable. Hence the value judgements implied by markets and price systems that 'ability to pay and willingness to pay are appropriate criteria on which to base access to goods and services, and that the existing distribution of income and wealth that facilitates purchases and consumption is acceptable, are frequently rejected for certain categories of services'. On his part, Hammer (1997) states that market failures in the health care sector serve as the starting point for economic analysis but not a reason to ignore economics in health projects. Section 2.5 looks at the characteristics of health care as a commodity, which taken together, make it different from other commodities,

but before that, the next section looks at how efficiency of health care programmes is measured.

Measurement of efficiency

The efficiency of health care programmes is empirically assessed through economic evaluation. Drummond *et al* (1997) define economic evaluation as "the comparative analysis of alternative courses of action in terms of both costs and consequences". That is, economic evaluation of a health care treatment is a process of valuing the benefits that arise from the programme in relation to the cost of resources that are used to produce the programme so as to be able to make decisions based on the comparative value of two or more programmes. Economic evaluation therefore relates outputs of competing programmes to the resources consumed so as to facilitate choice between competing programmes when resources are scarce.

There are three main techniques that can be used to evaluate health care programmes. These are cost-effectiveness analysis, cost-utility analysis and cost-benefit analysis. Each of these techniques assesses both the costs and consequences/benefits of the programme being evaluated. It must be noted that all the techniques assess costs identically but differ in how the consequences/benefits are measured and valued. How the benefits/consequences of an intervention are measured determines which technique of economic evaluation can be used. Hence, the techniques can be used to address different types of efficiency questions – technical; cost-effectiveness; and allocative efficiency (Blaug, 1997). Benefits can be measured in physical units (for example, 100grams of blood), utility or satisfaction (for example the quality adjusted life years - QALYs) or in monetary terms using, willingness to pay (WTP). Next, we review each of the techniques of economic evaluation.

Cost-Effectiveness Analysis (CEA)

Cost-effectiveness is the analytic technique whereby the costs of a programme, measured in money terms, are compared to the benefits in the physical units of effectiveness that are natural to the programme. For example, using CEA, a malaria prevention programme might be assessed in terms of the cost per cases of malaria prevented and malaria treatment programmes may be assessed in terms of cost per cases of malaria cured or cost per malaria death averted. Cost-effectiveness analysis

addresses technical/cost-effectiveness efficiency, i.e. it provides a basis for which to choose those projects that either yield the largest output for a given budget or minimise the cost of producing a required output level, thereby addressing the technical efficiency question. In using CEA to assess efficiency, a health care programme is efficient if it (Gold *et al.*, 1996; Baxter *et al.*, 2000),

i. costs less and is at least as effective as the other alternatives
ii. costs the same and is more effective than the other alternatives
iii. costs more and is more effective, and the additional effectiveness is considered to be worth the additional cost.

Cost-effectiveness analysis is however, restricted to comparisons of programmes that have a single common outcome of interest.[6] This is because it measures benefits in natural/physical units and as such can only be used to compare alternatives that produce the same kinds of benefits. For instance, cost-effectiveness analysis cannot be used to compare malaria treatment/prevention programmes with kidney dialysis and transplantation programmes. To make such broader comparisons, a common unit of benefits measurement is needed. This common unit of measurement is achieved in two distinctly different ways, one leading to cost-utility analysis (CUA) and the other leading to cost-benefit analysis (CBA). Both of these bring in a measure of value through either value-weighting or preference-weighting that can be used to address allocative efficiency.

Cost-Utility Analysis (CUA)

CUA is the analytic technique whereby the costs of a programme, measured in money terms, are compared to the benefits measured in utility-weighted unit of measurement where individual patients pass judgement on what are effective cures for their ailments. The most common utility-weighted measurement unit used in health care is the quality adjusted life year (QALY)[7], which refers to the extra "quality-adjusted-life

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[6] It must be noted that cost-effectiveness analysis on its own, does not provide any basis on which to decide the optimal size of the budget to be spent or the optimal quantity target because benefits are not measured in a way that makes them comparable with costs.

[7] Quality adjusted life year (QALY) is calculated by multiplying the number of life years added by a health care programme by a standardized weight between 0 and 1 that reflects the health-related quality of life during a time period, where 0 is weight given to immediate death and 1 the weight given to perfect health for the defined period of time. QALYs thus, capture both the quantity of life years added by a health care programme and the quality of life resulting from the treatment.

years" that a patient can enjoy after treatment for a specific illness as evaluated by the patient [Williams, 1985; Tidermark *et al.* 2003; Janssen *et al.* 2002; Brazier *et al.* 2002; Spencer, 2003]. In CUA, the alternatives are compared in terms of cost per the utility-weighted outcome e.g. cost per QALY gained. For example, a malaria treatment programme might be assessed in terms of cost per utility gained from the quality of life gained as a result of the treatment. CUA can be used to compare any kinds of programmes with qualitatively different outcomes but requires the availability of valid preference weights for the benefits. CUA, like the cost-effectiveness analysis technique, is usually used to address cost efficiency questions i.e. CUA is used to determine how to attain the maximum outcome for a given cost. However, if an external agency (like government ministry) has set a maximum cost-per-outcome standard for programmes being evaluated, CUA can also be used to determine allocative efficiency (Phelps and Mushlin, 1991). When using CUA to assess efficiency, a health programme is efficient if it (Baxter *et al.*, 2000)

i. costs less and provides at least the same utility
ii. costs the same and provides more utility
iii. costs more and provides more utility and the additional utility is considered to be worth the additional cost.

Cost-Benefit Analysis (CBA)

CBA is the analytic technique whereby the costs of a programme, measured in money terms, are compared to the benefits also measured and valued in monetary units[8]. That is, in CBA both the costs and the benefits of the programme being valued are measured in the same unit, money. Hence, CBA is the only evaluation technique that can determine in and of itself that a programme is worth being undertaken (i.e. when the programme has a positive net benefit – benefits exceed costs) however, it requires valid preferences using for example, willingness to pay. CBA assumes neither that the budget available for financing nor the output targets of potential programmes are fixed. All programmes with positive net benefits are accepted and all those with negative net benefits are rejected. It must be noted that because the value of all the

[8] This is most often done by using contingent valuation model where relevant individuals are asked how much they would be willing to pay to obtain the benefits of the programme. E.g. for malaria prevention and treatment programmes, the evaluator would describe to the individuals how many life years the programme could be expected to add and what their health would be during those years, and then ask the individuals how much they would be willing to pay to obtain those health benefits.

benefits of programmes are measured in monetary terms, CBA allows the comparison of not only programmes that produce different outcomes in the same sector of the economy, (e.g. malaria treatment and kidney dialysis), it also allows comparison of programmes in different sectors (e.g. malaria treatment and construction of school buildings)[9]. Hence, CBA is the only technique, among the three, that can fully address the question of allocative efficiency on its own. It does so by using the potential Pareto improvement criterion.[10]

Since the empirical part of this study sought to find an efficient and sustainable means of financing health care in Ghana, and in so doing tried to find out how much the respondents were willing to pay for malaria treatment in both government and private hospitals, and also how much they were willing to contribute into a National Health Insurance scheme (NHIS), it (the empirical study) could be taken as helping to value the benefit component of evaluating malaria treatment and how the respondents value NHIS. Thus, the empirical study is in one way a willingness to pay study and could be differentiated from demand studies (Arhin-Tenkorang, 2001) because demand studies rely on sample of populations that express demand through purchase or payment of fees (revealed preference) and neglect consumers whose effective demands were zero at all the price range investigated at the time of the study. However, this does not mean that those whose effective demands were zero and as such neglected by the demand studies were not willing to pay. Hence, even though revealed preference data can be used to estimate demand for a commodity at a particular point in time, it is erroneous to use such data for willingness to pay studies.

Furthermore, since the empirical study used malaria as a case study to determine how much Ghanaians are willing to pay to finance health care and factors that influenced their decisions, it (the study) is in effect a health care demand study. Thus, the study used the contingent valuation model in a new context (health care demand and financing analysis) from how it has usually been used to value the benefits of non-marketed commodities in cost-benefit analysis (see section 6.7 for empirical

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[9] However, there are significant practical challenges involved in comparing such disparate programmes (Drummond and Stoddart, 1995).

[10] Potential Pareto criterion states that a change in resource allocation is an improvement in allocative efficiency if the gainers value their gains enough to, in principle, be able to compensate the losers for the value of their losses, thereby leaving everyone of them better off (Boadway and Bruce, 1984).

applications of the contingent valuation method). The use of the contingent valuation to estimate WTP in such a context is referred to as *WTP-finance studies* (Mataria et al, 2004).

Willingness to pay and the contingent valuation model are known to have developed from the Kaldor-Hicks' potential Pareto improvement criterion (Donaldson, 1999, 1996, 1993). Hence, since this study used the ***contingent valuation method*** to estimate Ghanaians' ***willingness to pay*** to finance health care, even though it seeks to respond to the need for better demand for health care information, the theoretical foundations of the empirical study can be found in welfare/normative economics (Donaldson, 1999). The welfare economics underpinnings of willingness to pay (WTP) and the methods that can be used to measure WTP are discussed in chapter six. For now, we turn our attention to the main characteristics of health care that, together, make it different from other commodities.

2.5 Characteristics of Health Care as a Commodity

There are certain features that can be found with the health care needs and health care delivery system in almost every country. This section presents the main characteristics of health care as a commodity, which together, differentiate health care from other commodities.

a. ***Huge Governmental Involvement***: Firstly, health care can be very expensive, particularly in the case of hospital treatment, accidents and long-term illnesses. Hence, a common feature of health care is the substantial government involvement in ensuring access, regulating health professionals, and in public and private health care insurance. In most countries, health care resources are not allocated wholly or even primarily through private markets. Government involvement in the health care sector is very significant to ensure widespread access to health care services for all citizens in order to produce a healthy population. Thus, the government is a dominant player in providing and financing health services (Ensor *et al.*, 2001). In Ghana, government is the main provider and the major financier of health care delivery. In the year

2000, 53.5% of the total expenditure on health in Ghana was borne by the government (WHO)[11]

b. ***Uncertainty***: Another important characteristic of many types of health care needs (if not all) is uncertainty, making them and their concomitant costs unpredictable because one's future consumption of health care is uncertain (Drummond and Mooney, 1982). Also, there is uncertainty regarding the effects of health care interventions because there might be side effects of health care. It must be noted that, although trial based evaluation can establish whether or not an intervention is effective on the average, its (the intervention's) effectiveness for any single individual (i.e. the marginal effect) may be uncertain. That is, uncertainty is an inherent characteristic of many types of illnesses and accidents -- they (and their associated costs) are unpredictable. As a consequence of this unpredictability, health and health care decisions need to be made in the context of risk. This most often poses a problem for low-income people especially those in countries where health care delivery is market-based. Since this group of people are those who usually need health care most, there is the need to find alternative means of financing health care such as social health insurance so as to make it accessible and affordable to everyone. Health insurance cannot eradicate (or even influence) the uncertainty of illness, however, health insurance can reduce an individual's financial risks and encourage them to use health care at the appropriate times instead of waiting until their health deteriorate, which will make it more expensive to treat or even lead to death.

c. ***Information Asymmetry***: As far as health care is concerned, patients (consumers) very often lack both the knowledge and information to know what is wrong with them and what can be done to restore their health. Meanwhile, health care professionals have the expertise and may direct the patients as to what health care services can be used to restore their health. This creates information asymmetry between the patients and the health care providers, thereby causing the concept of consumer sovereignty to collapse.

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[11] http://www3.who.int/whosis/country/indicators.cfm?country=gha

Thus, because the providers often tell patients what services they need and then provide those services, informational asymmetry creates interdependence between the supply and demand sides of health care markets, thereby violating the basic condition for efficient, well-functioning markets. Information asymmetries are therefore noted to be significant sources of market failure in the health care sector because they give the providers considerable power, which they can use to exploit patients. To this end, Evans (1974) suggest that "the type and amount of care provided is not solely a function of patient need but also relates to the physician's desire to achieve a target income". Thus demand for health care is often supplier-induced due to information asymmetries. This usually occurs when health care providers are paid on fee-for-service basis, thereby creating supply-side moral hazard. However, licensure, professional regulation, and professional ethics are usually used by regulatory authorities to ensure minimum quality standards in health care so as to encourage providers to act as agents for their patients' interests instead of exploiting the informational asymmetry for their (providers') own economic advantage (Jack, 1999).

d. ***Derived Demand***: Health care has a derived demand – i.e. health care is not demanded for its own sake but rather, it is demanded as a "result of a more fundamental demand for health itself" (Drummond and Mooney, 1982). For example, bypass surgery is demanded because of its long-term effects on health, although its direct and immediate effects on well-being could be negative – pain and suffering. Thus, individuals do not make positive choice to consume health care, but rather they consume it because they have to in order to get good health. Health care is only valued to the extent that it improves individuals' health and/or its potential to improve productivity (Jack, 1999). Hence, the demand for health care must usually be placed in the context of all other health-influencing activities because health care is only one of many possible ways to maintain or improve health. Things like diet, lifestyle, and education may also be important in maintaining and improving health.

e. ***Externality***: Health care often creates external effects beyond those which accrue to the recipients of care that result in inefficient resource allocation in

private markets, as shown in section 2.4 (b). As noted by Drummond and Mooney (1982), "all of us have an interest in other people's health and hence their consumption of health services." For example, others may care about your health because they want you to continue working and hence create wealth for the community. They may also like you to be vaccinated against communicable diseases since this reduces their chances of catching the disease.

The above characteristics are present to varying degrees in different health care services. It must be noted that these features of health care as a commodity – uncertainty, asymmetry of information, derived demand, externalities and huge governmental involvement – are not individually unique to health care because each on its own, can be found in other commodities. However, these characteristics are generally prevalent in the health care sector and their combined effect makes health care "different" from other goods. Most importantly, these characteristics of health care as a commodity may lead to market failure and make resource allocation in health care through private, unregulated markets inefficient, inequitable and cost-increasing, thereby requiring substantial governmental involvement to allocate health care as a merit commodity or on equity grounds. As a result of these characteristics of health care, there is the need for every country to have a well-thought out system of financing health care, which should be efficient and sustainable. Usually, the goals of health care financing systems are to obtain

i. better health, which could be a goal in its own right or as a means to other goals such as improved productivity
ii. equity, and
iii. solidarity, which embodies the idea that different groups in society are interdependent and should assist one another.

Health care financing systems need to provide adequate funds so that services can be planned and sustained over time at an acceptable level of quality. They must also be efficient and involve users so that services are appropriate to their (user's) needs and delivered in an acceptable way. As noted in chapter one, the basic aim of this study was to find out more information that can help in the search for efficient and sustainable means of financing health care in Ghana. Hence, having reviewed the

basic economic theory that is needed to understand health care financing and the main characteristics of health care as a commodity and how they influence the health care market, we turn our attention in the next three chapters to review the theoretical and empirical evidence available on the three main methods of financing health care delivery. The advantages and disadvantages of each method will be looked into, giving examples from both developed and developing countries. These will help put into perspective Ghana's experience of health care financing, which will be discussed in chapter seven, and the need to look for alternative means of financing health care that are efficient and sustainable.

A key consideration in deciding how to finance health care is the impact the financing strategies will have on equity (Gilson, 1991). Thus there must be some form of fairness or social justice embedded in the health care system. For instance, primary health care systems usually seek to address health inequalities and provide equal opportunities for people to use health services, which are relevant to their perceived, needs. The issue of equity, according to Gilson, should be the focus of discussions on financing health care, rather than taking second place to efficiency. To her, the various financing options may have undesired effects on access to health care and may even lead to new problems. It must be noted that this dissertation does not attempt to cover the various definitions of equity; instead, it focuses on exploring how to find sustainable means of financing health care and only touches on the equity impacts of the different methods of financing health care where necessary.

CHAPTER THREE

3.0 FINANCING OF HEALTH CARE

Financing of health care involves complex mechanisms that are dealt with differently in different countries. This chapter considers issues in financing of health care, identifying the main sources that can be used to generate revenue to finance health care delivery. The chapter then continues with discussion of government (tax) financing of health care, pointing out the arguments for and against government financing of health care delivery. This, together with discussion of the other methods of financing health care in the next two chapters, will throw more light on Ghana's experience in health care financing and on the alternatives that are available as the country looks for sustainable means of financing health care delivery.[1]

3.1 Introduction:

Health care services involve a significant use of resources in any country, irrespective of who pays. The percentage of GDP spent on health care is sometimes used as a measure of the quality of health care system in a country. In 1992 the USA spent 14% of its GNP on health care while the UK spent 7.1% of its GNP on health care. Most developed countries spend between 6 to 9% of their GNP on health care and in many it is a considerable element of government spending (Clewer and Perkins, 1998). However, in 1992, the Ghana government spent just 1.4% of the nation's GNP on health care, forming 7.8% of total government expenditure[2]. In the year 2000, total expenditure on health care in Ghana was equivalent to 4.2% of GDP with per capita total health expenditure (in international dollars) being $51. The per capita total health expenditure at average exchange rate in 2000 was just US$11(WHO[3]). According to the OECD (2001), spending below a threshold[4] level of GDP on health care will result in sub-optimal care as the capacity for patients to access drugs and medical care will be severely constrained. However, spending a large percentage of GDP on health care does not imply that health outcomes or services are better (Blumenthal, 2001). For example, United States spends more on health as a percentage of GDP than any other nation but there is no conclusive evidence that health outcomes or services are better

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[1] It must be noted that the statistics given in the chapter are based on available statistical data for Ghana.
[2] Calculated from International Financial Statistics, Year Book 1999 and Ministry of Health 1994
[3] http://www.who.int/whr/2002/annex_table5
[4] The threshold was not stated.

in the United States. Health outcomes such as life expectancy at birth, life expectancy at age 60, infant mortality rates and maternal mortality rates are better in Hong Kong than in the United States even though the latter spends larger percentage of its GDP on health care than the former (Yuen, 1999).

As noted in section 2.5a, health services can cost a great deal of money. Often the individuals who need these services cannot afford to pay the full cost on their own at the point of use and choose to forego them, with potentially negative health consequences for themselves and other members of the population. The main inflationary drivers within the health service in most countries, including Ghana, are ageing populations, increased use of expensive technologies, wage pressures from health personnel in what are labour-intensive provider organisations, emergence of new infectious diseases (e.g. HIV/AIDS) and increasing costs of pharmaceuticals and other supplies.

There must therefore be a source of economic support for all the chains of action in health care delivery – the provision of resources, the organised programme operation, and the delivery of services. For instance health personnel must be paid for their work, administrative staff and teachers must be salaried, vaccines, needles and refrigerators must be purchased. Also managerial support is needed if the health care infrastructure is to function properly.[5] All these must be paid for in one way or another.

There are a number of possible sources to raise revenue to finance health services. These include raising resources from outside the health services through taxes (general and specific), insurance (both voluntary and compulsory), donations, self-help, personal expenditure and lotteries; and mobilising resources from within the health services, mainly through user fees (de Ferranti, 1985). Mach (1978) classifies the sources of funds for financing health care into indirect financing and direct financing. According to Mach, sources of indirect financing include government (central and local); compulsory insurance (including any government subsidies);

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[5] Although the processes of management – administration, planning, regulation and evaluation – may lie in the background and not be so visible, they are essential parts of every health care infrastructure.

voluntary insurance; charity; employers; and foreign aid. Direct financing refers to payments by recipients in return for services.

Generally, however, the sources of financing health care are grouped under three main headings, namely government-financed (through taxation), insurance, and direct user payments (user charges) [Brooks, 1973]. This chapter and the next two chapters examine these three main means of financing health care delivery; followed by a review of published empirical works on user charges as a means of financing health care since user charge system is the method of financing health care in Ghana at the time of the study. We begin with government financing of health care delivery.

3.2 Government Financing of health care

This is the situation whereby the government finances the provision of health care as part of its budget, mainly through taxes, so that consumption of health care is virtually free (zero priced) at the point of use. Examples of health care systems that are mainly government (tax) financed include the UK National Health Service (NHS), Norwegian, Australian, Austrian, Canadian, Danish, Finnish, Italian and Swedish health care systems (European Observatory on Health Care Systems, various). With a tax-based financing, health services are paid for out of general government revenue. There are a number of different sources of funds available to governments to finance health care. These include general tax revenues – income tax, corporate tax, value-added tax (VAT), import duties, wealth tax, excise duties, sales taxes, lotteries, etc. – deficit financing, social (national) insurance contributions, and external assistance. Sometimes too, there are special taxes earmarked for health care, for example, cigarette taxes. Traditionally, general tax revenues have been the main source of health care financing in Ghana and most developing countries. In the year 2000 for instance, general government expenditure on health care as a percentage of total health expenditure on health in Ghana was 53.5% (WHO) showing that health care is mainly financed by the government even though user fees are charged.

The key features of government (tax)-financing of health care are that (Bennett and Gilson, 2001):

i. the whole population is included in the risk pool

ii. contributions are not based on health conditions or utilisation of health care but on some measure of income, wealth or expenditure (depending on the tax system), and

iii. contributions are not earmarked for health, but go into a general pot, which is then allocated to different sectors according to political priorities.

The proportion of total gross domestic product (GDP) collected as general tax revenues in every country varies widely. During the 1990s, the government of Ghana derived on the average 77.1 per cent of its total revenue from taxes, 9.6 per cent from non-tax revenue, 5.8 per cent from divestiture of state assets and 7.4 per cent from foreign grants. In the 1990s, Ghana experienced some increases in the tax-GDP ratio, which describes the government's tax effort and hence revenue mobilisation effort (Table 3.1). By the year 2000, the proportion of revenue derived from taxes and foreign grants had risen (to 84% and 10.7% respectively). In the financial year 2000, the government derived 84 per cent of her total revenue from taxes, 7 per cent from non-tax revenue, 5.7 per cent from divestiture receipts and 10.7 per cent from foreign grants (Ghana Statistical Services, Quarterly Digest of Statistics, 2001). However, these increases were not large enough to compensate for massive increases in government expenditure including health care expenditure.

Table 3.1 Ghana's Tax – GDP Ratio

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000*
Tax-GDP Ratio	10.6	11.3	11.2	13.3	15.6	14.4	14.5	14.9	14.0	15.0	16.3

Source: *Ghana Statistical Service, 2001* ** Provisional*

A tax-financed health system can be a fairly reliable, stable and adequate funding source for health services if there is a well developed administrative structure and tax enforcement regime, pooling funds from a number of tax sources.

Main Sources of Tax

Taxes and other forms of general government revenues can be either direct or indirect. Direct taxes, which are paid directly by individuals or organisations to government, include personal income tax and wealth tax, corporate profits taxes, and personal or

corporate capital gains tax. Indirect taxes, which pass through an intermediary, include consumption or expenditure taxes (also known as sales tax, luxury tax or value-added tax) and excise duties. Direct taxes can usually be more easily adjusted to reflect individual ability to pay. For example, the income tax rate can be set at 30% on income below ¢2,000,000[6] per year and 40% on income above this amount so as to make the tax system more progressive to protect the poor. However, indirect taxes such as sales tax are usually set at the same rate (for example 10%) for everyone and as such are most often regressive.

In low-income countries, duties on imports and export taxes are usually the most important components of general tax revenues. However, it must be noted that import duties raise the prices that consumers pay for imported goods. This occurs because the importing firms attempt to maintain their profit margin by passing on as much of the duty to consumers as market conditions permit. Oil and mineral exporting countries frequently use export taxes to finance government activities including publicly financed health care delivery. Because of generally strong demand for these commodities, increases in export duties can be readily passed on to consumers in other countries. However, one of the problems with export duties is that the demand for all commodities (including oil and minerals) is elastic in the long run. Raising prices through export duties will encourage substitution away from the commodity and/or competition from less efficient producers.

During the 1990s, direct and indirect taxes accounted for an average of about 19 per cent and 58 per cent of total government revenue or 32 per cent and 68 per cent of total tax revenue respectively, in Ghana (Ministry of Finance, 2001). The period also witnessed changes in the relative composition of government tax revenues, which reflected tax policy changes and exogenous changes in the tax base as well as improvements in tax administration.

3.3 Arguments for a Tax-Financed Health System

There are four main arguments that are usually advanced in favour of having a government or tax-financed system of health care delivery. These are the merit goods,

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[6] ¢ is the symbol of the Ghanaian currency cedi.

external benefits (positive externalities), imperfect information (information asymmetry), and equity arguments.

(a) Merit Goods Argument

Health care is often seen as merit good (Drummond and Mooney, 1982). Unfortunately, the textbooks do not agree as to what a merit good is. Some say that they are commodities provided on the basis of need such that those with a particularly low level of income are able to consume them. Defined thus health care is often seen as a merit good since some people would not be able to afford health care without government subsidy. (Most especially so in Ghana where the daily minimum wage was less than one US dollar in 2002 – the daily minimum wage was ¢7,150 but about ¢8,000 equals one US dollar). However, other people see merit goods as those that people will choose to under-consume because they will fail to see correctly the benefits to themselves of the consumption of the good. That is, it is not that consumers lack income or even information but that they are unable to make judgements on the basis of that information which would maximise their welfare. Begg *et al.*, (1997) define merit goods as "goods that society thinks everyone ought to have regardless of whether they are wanted by each individual". Accepted this way, the merit good argument is essentially paternalistic. The argument therefore amounts to saying that other people, in this case the government, can make decisions for you better than you are able to make them yourself causing the consumer sovereignty principle to break down. Hence, the government must provide and finance health care for the population. There is no obvious distinction between what is and what is not a merit good but irrespective of how one defines a merit good, health care certainly has a strong claim to be one especially in a low income country like Ghana and as such, there is the basis for governmental involvement in health care provision. According to Drummond and Mooney (1982), "while the merit good argument might reasonably be applied in the case of care for children and psychiatric care, it is much more open to question in the health care field as a whole".

(b) Externality Argument

The second area where a case is usually made for the provision of government-financed health care centres on the concept of 'external benefits' (Brown and Jackson, 1998; Mankiw, 1998). An external benefit occurs where an action confers benefits on

parties not directly involved in an exchange. If an individual buys a commodity, he/she benefits from it. This benefit is internal to him/her. However, sometimes individual's purchases bring benefits to others as well. This is an external benefit.[7] An illustration of such an external benefit in the context of health care is inoculations against communicable diseases. If one chooses to be inoculated against malaria it increases the chances of him/her not catching it. That is a private internal benefit. It is a benefit to him/her. However, his/her inoculation also decreases the risk of other people around him/her catching it as well. Clearly, this presents a powerful case for government intervention, in that the benefits to society as a whole, the external benefits plus the internal ones, are greater than the benefits accruing to those purchasing the commodity in a market. Otherwise, such commodities may tend to be under-consumed. It must be noted, however, that the consumption of most health care has no such direct external effects. For instance, if one breaks his hand, whether or not it is mended properly does not affect the chances of others 'catching' the broken hand. However, the broken hand may have indirect external effects on the economy in the form of lost productivity/income from both the one inflicted and his/her caretakers, that is, caring externality. Most health care confers private benefits only. Hence, powerful though the externality argument is, its power embraces only a limited amount of health care provision.

(c) Information Asymmetry Argument[8]

The third area in which government-financed health care is advocated is in relation to the lack of information on which decisions by consumers are taken. The argument here is that when consumers make decisions to buy any commodity it is because they believe the purchase will improve their welfare. Markets are therefore, efficient only if consumers have sufficient information to make informed choices. However, this may not be the case in the physician–patient relationship. The patient goes to the doctor because he/she lacks knowledge. The health care delivery markets, therefore, are not efficient in this case because the necessary conditions for efficient exchange are not present. This justifies the removal of a free market system such that the physicians have no incentives to cheat on the basis of their superior knowledge, e.g. undertaking expensive medical treatment of little value on the patients. However,

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[7] See section 2.4b for the meaning and types of externalities
[8] see section 2.5

information on all aspects of life is not costless and as such there is an optimal volume of information that the market will provide at a price that reflects its cost. Hence, in the case of health, there is nothing to stop an individual from asking for advice from a number of different medically able people. Also, the individual can adopt what is termed 'doctor shopping'[9]. Thus, we do not have to put ourselves at the mercy of one doctor only, unless the additional cost of acquiring the additional information from others is high relative to the benefits. On this basis there is no case for providing and financing health care on a non-market basis by the government. It does not matter that consumers do not have perfect information. They need only to be aware that the information they have is not perfect.

(d) Equity Argument

The major concern of most people about leaving health care provision to market forces centres on whether the poor could afford to buy health care. These people argue that we should not think only about questions of efficiency but also about equity, when it comes to finding ways of financing health care (Gilson, 1988, 1991). It is this equity consideration that presents the problem of using a market for the provision of health care. It is felt by many that the distribution of income in almost every country is simply too uneven for using the market to decide on health care provision. Given uneven distribution of income in society, we could argue that it is more just to distribute health care on a non-market basis, even if efficiency considerations suggest otherwise. This is because a market for health care would bear heavily on lower income groups. Hence, government should finance the provision of health care. However, a health finance system which uses scarce resources, paid for by all taxpayers, to provide services to non-poor patients at zero-prices is far from being equitable or far from being fair to the poor (Akin, 1986). This is especially so if the scarce resources are used to provide health services needed by the urban elites while the rural poor lack access to basic health care (Asenso-Okyere *et al.*, 1995). More so, such systems of financing health care are not sustainable. Hence, those who can afford (i.e. those who have the ability to pay) must be made to pay for their health care so that the government's limited resources can be used to provide health care for the poor. However, this requires being able to identify who is poor and who is not,

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[9] Doctor shopping is the behaviour of consulting two or more doctors during the same illness or consulting different doctors for consecutive illnesses.

which is sometimes done through means testing. In Ghana, there is lack of reliable data so it would be quite difficult to identify who is poor and who is not.

Issues involved in government/tax-financed health care system

Tax-financed health care delivery systems depend largely on physicians to sort out demand, distinguishing relatively serious conditions from trivial conditions and allocating resources appropriately through treatment or referral. This requires an efficient and effective referral system, which usually leads to the gatekeeper systems. For instance, in the UK, general practitioners (GPs) are the first point of contact with the NHS and as such act as gatekeepers to the secondary, tertiary and specialist health care delivery system. Unfortunately, this gatekeeping system leads to long waiting lists that sometimes impact negatively on health care delivery.

The tax-financed system may act as a redistribution system channelling funds from the healthy to the sick or from those with means to those with needs. This, however, depends on the characteristics of the tax system, which might have progressive elements such as income tax, proportional elements such as national insurance (in UK), and regressive elements such as VAT. Also, it requires that the bulk of the revenue generated be spent on providing health services needed by the poor instead of concentrating on urban hospitals.

Furthermore, there is no danger of adverse selection[10] with a tax-financed health care system since all citizens are covered and payments are not related to risk.

A public tax-financed system of health care delivery does not imply that service provision will necessarily be undertaken by public enterprises. It is quite common for publicly financed purchasers to contract with private, voluntary or charitable providers to provide health care services.

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[10] Adverse selection refers to a situation when people with a high probability of a health loss systematically join an insurance plan – thus predominating its membership – while those with a low probability of a health loss do not join. Thus those who can easily afford the contributions/premium have no interest in joining the scheme while those who cannot easily afford are the most interested in participating. The consequence of this can be very serious for the health insurance scheme because those who are more likely to fall sick are usually the poorest people, while those who are healthy are also well-off. This eliminates the benefits of pooling risk through insurance schemes.

3.4 Disadvantages of Government-Financed Health Care

Tax-based system of finance may suffer from problems with efficiency. Any tax other than a corrective tax (for example, for externalities) or a lump-sum tax creates inefficiencies because it distorts prices faced by individuals and organisations in the economy, breaking the chain of marginal conditions required for efficiency (that is, MSC = MPC = P =MPB = MSB)[11]. In the case of either National Insurance contributions (typically implemented as a payroll tax in UK) or government taxation, the price of some good or service is modified by a tax. An income or payroll tax, for example, affects the relative prices of labour and leisure, thereby potentially influencing the labour supply decisions of individuals. Excise taxes such as those on tobacco and other goods, affect the mix of goods consumed, for example, decisions such as whether and how much individuals smoke. General consumption or sales taxes affect decisions regarding present and future consumption and savings. Corporate taxes, if set at rates much different from other countries, may affect the location decisions of firms. For instance low taxes may entice firms to relocate to a country and high taxes may prompt firms to relocate elsewhere. This type of 'efficiency' cost is called the "excess burden of taxation".

It is believed that a tax-financed health care delivery system creates moral hazard[12] for consumers and providers (Bennett and Gilson, 2001). This is because the cost to a patient of a treatment is dramatically reduced leading to no direct financial pressure on consumers to limit their demands, as there might be if they had to pay directly for those services. They might adopt unhealthy lifestyles, which are more likely to result in subsequent needs for treatment than might be the case if there were no safety nets. They might simply overuse the service by attending hospitals for trivial conditions which they would ignore or treat themselves in other circumstances such as if they were paying from their own pockets at the point of use. Also, providers may have little sense of the costs of treatments and services they provide and may not have a proper sense of economy in their use of public money. They may even induce demand in the sense that if they are paid on fees-for-service basis, there will be incentive to

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[11] MSC represents Marginal Social Cost; MPC represents Marginal Private Cost; P represents Price; MPB represents Marginal Private Benefit; and MSB represents Marginal Social Benefit. See section 2.3c

[12] Moral hazard means that people may take advantage of free health care or their membership in a health insurance plan by using services more frequently than if they were paying for health care directly from their pocket or had they not been members of an insurance plan.

provide more of a particular service. They might also be tempted to exaggerate the shortcomings of their services and facilities, as a ploy to obtain higher levels of state funding (Clewer and Perkins, 1998). All these will lead to supplier-induced demand for health care, which is a supply side moral hazard.

Although general tax revenues tend to be the single most important source of health care financing in most countries, including Ghana, they are an unstable source because of the fluctuating relationship between budgeted funds and their actual availability and disbursement.[13] Budget projections often include overestimates of tax collections. When funds actually available for disbursement fall short of expectations, changes in priorities may occur. The health sector, often lacking strong political support, may receive proportionately lower appropriations than had been initially projected. For instance, as can be seen in table 7.5 (chapter 7) the percentage of Ghana's GDP spent on health care kept falling during the late 1970s to mid 1980s when the country was experiencing economic crisis.

Also, there is a limit to what can be collected from taxes without damage to the economy (for instance, by making exports too expensive) and without conflict with the wider health objectives of the nation. There may be room for higher taxes on imported luxuries, but at some point tax revenue is bound to fall if luxury goods are priced out of the market. There are administrative difficulties in collecting more money from income tax. This only leaves open the possibility of taxes which fall most heavily on the poor. And making the poor poorer by taxation could seriously damage their health status.

Furthermore, political pressures that reduce the efficiency and equity of health care delivery can influence the allocation of general tax revenues within the health sector. For example, most health services are delivered in the urban areas of Ghana while rural areas receive only limited services (Asenso-Okyere, 1995). This situation exists despite the fact that the majority of the population (about 70%) live in rural areas.

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[13] This instability is partly due to the wide swings in the prices of primary products that are major sources of exports, non-filing of tax assessment returns by large portions of the population in developing countries, and non-release of external donor funds due to the governments' inability to meet some conditionalities attached to the loans/grants.

Moreover, government-financed health systems frequently emphasise expensive hospital-based programmes utilising costly equipment (mostly imported) and serving the economic and political elite of the country. Meanwhile, were the equivalent resources devoted to expansion of the country's health centres and health posts, a much larger volume of the population would have been served.

In Ghana, the government's tax revenue collection efforts are adversely affected because of

i. low levels of income of a large portion of the population and inequality of income distribution
ii. subsistence farming in rural areas and informal activities in urban areas, which engage a majority of the population who do not then pay any direct income taxes to the government
iii. low and unstable prices for primary commodities exports (such as cocoa and gold) in the world market
iv. poor administrative capacity and corruption and mismanagement of public funds.

These factors limit the government's public funding system in general. Hence, even if funding of health care out of general taxation could be one of the most equitable methods in Ghana, there are a number of issues that need to be addressed to improve tax revenue collection before it can be sustainable. For instance, revenue collection must be improved by bringing in the group of people who currently escape paying tax, closing loopholes and enforcing tax payments more effectively, and adopting fewer but broader taxes with simple rate structures, which are generally easier to broadcast and enforce. Also, corrupt government officials must be severely punished and their punishment widely publicised to deter others who might be contemplating any corrupt practices. These will help increase government tax revenue, which can be channelled into the health sector to improve the training and payment of health personnel.

3.5 Summary of chapter three

This chapter identified the main sources of generating funds to finance health care delivery as government (tax) financing, insurance and user charges, and then discussed the advantages and disadvantages of government financing of health care. The chapter reviewed the main arguments for and against government financing of health care. The main problems associated with publicly financed (i.e. tax-financed) health care systems include large waiting lists, questionable quality of services, lack of choice between health care providers and frivolous use of services (Bennett and Gilson, 2001). Also, tax-financed health systems perform quite badly in terms of user involvement (Bennett and Gilson, 2001). Moreover, in a tax-financed health system, there will never be enough resources to go round, so the gain of one patient is always at the expense of another. These make the publicly financed health systems ineffective, inefficient and in most developing countries unsustainable. The solution lies in the approach where the government becomes one of a number of providers and in which services are funded from a variety of sources. Hence, there is the need to look at other forms of raising funds to finance the health care, which might help to improve the health system. The next chapter looks at health insurance as a method of financing health care delivery.

CHAPTER FOUR

HEALTH INSURANCE AS MEANS OF FINANCING HEALTH CARE IN GHANA

4.0 Introduction

This chapter discusses health insurance as a method of financing health care delivery in Ghana. The chapter looks at the types of health insurance schemes, advantages and disadvantages of each type, conditions for successful health insurance schemes, with an empirical review of examples of each type of health insurance scheme, from both developed and developing countries. The objective of this chapter is to show the effects that each type of health insurance could have on health care delivery in Ghana. It will help readers to understand which form of health insurance would work successfully in Ghana and the potential problems that could be encountered as well as how to avoid these problems.

4.1 Definition of health insurance and general issues

Health insurance is a private or public system of protection against the losses owing to medical expenses. It can also be defined as a method of providing members of a defined group or community with protection against the cost of medical care (Atim *et al.*, 1998; Bennett, 2004). It is based on the principle of pooling of risks, and therefore, the redistribution of financial resources from that segment of a community that does not incur high health care costs to those segments of the community that do. The objective of health insurance is to cover future risks of ill health. By regularly laying aside sums of money either to private insurance companies or to some government-run scheme, the contributor who becomes ill is then guaranteed treatment of his or her illness by an appropriate health facility. By taking the money from large numbers of people the private companies or the government are able to 'spread risks' over these large numbers and hence able to afford, at any one time, to cover the health service fees for that proportion of people currently ill. Thus, raising revenue at a collective level permits risk pooling. While a single individual cannot accurately predict how much money will be necessary to pay for all the health services he or she may use in a lifetime and may not be able to save the required amount, a group of reasonable size can make such predictions and raise the necessary revenue.

Health insurance is therefore about sharing of risk and ensuring financial cover should the individual need medical care, the cost of which may be well beyond his or her means. Because under normal circumstances there are more healthy people than there are sick ones, it is possible to pool together the contributions received and pay the medical claims of those who do fall ill. Those who are healthy still enjoy the benefit of being covered themselves should they require medical care. Thus, health insurance provides protection for the insured against financial hardship resulting from illness or injury.

However, health insurance benefit, whether national or private, is not a free gift given out by the government or insurance company; it is a benefit that must be earned by contributions in the form of premium payments like any other form of insurance. For instance, if an individual takes a fire insurance policy, he or she pays a premium for a benefit that is many times bigger than the amount paid in the case of fire burning the insured property. In the same way, if an individual pays a premium under health insurance scheme a benefit is derived that is much larger than the amount paid, in the case of ill health.

Health insurance works better when a large cross-section of the community is insured. When risks and resources are pooled among a large group of persons with different probabilities of requiring health care, the security of individuals is enhanced. A large group ensures a better spread of risk and that can lead to lower premia. Hence, this is a necessary condition for making an insurance scheme viable.

Health insurance is an integral part of a viable national system of cost recovery because it provides people with a mechanism for pooling resources against the risk of inability to afford the cost of medical care as well as against the risk of a financial ruin due to excessive medical expenses (Mwabu *et al.*, 1998). Hence, since this dissertation focuses on finding sustainable means of financing health care in Ghana, it is important to review health insurance schemes as a means of financing health care. We therefore look at the types, advantages and disadvantages, conditions necessary for the successful implementation of, and examples of health insurance schemes.

4.2 Types of Health Insurance

Health insurance may apply to a limited or comprehensive range of medical services and may provide for full or partial payment of the costs of specific services. Benefits may consist of the right to certain medical services or reimbursement of the insured for medical expenses. A large variety of insurance schemes are therefore possible. Mainly, health insurance schemes could be privately run or government-run. Thus, there are basically two main generic categories of health insurance schemes, namely National/Social health insurance schemes and private health insurance schemes. The defining criteria are usually based on whether or not they are voluntary as opposed to compulsory, and whether or not contributing rates (premia) are based on individual risk assessments. There are variations of these two generic categories. For instance National/Social health insurance schemes may include community-based schemes whilst private health insurance schemes may include employer-based schemes.

4.2.1 *Private Health Insurance*

Private health insurance schemes are offered on a voluntary basis and are based on assessment of risks of each individual so that high-risk individuals (e.g. people who smoke or have some form of medical history) are charged a higher premium to join than low-risk individuals. Different benefits are usually available for selection, according to needs and ability to pay. This is, usually, done by offering policies with different levels of coverage so that applicants can choose based on their preferences and self-assessment of risk. Theoretically, applicants with higher risks are more likely to opt for more expensive policies with higher coverage, whilst those with good health will tend to opt for cheaper policies with less cover. The agencies that provide voluntary health insurance coverage are insurance companies, medical societies, unions, community groups and mutual associations (Bennett *et al.*, 1998; 2001).

Private insurance can be used as a sole revenue-raising approach or as a supplement to other approaches. With private insurance there is a clear link between payment of premium and entitlement to services, which are almost always restricted to a defined level of entitlement. In some cases insurance companies might be persuaded by governments or by market opportunities to take on groups of patients some of whom will have pre-existing conditions, making them poor risks in actuarial terms. Private insurers may operate to generate profits or on a not-for-profit basis. Private insurance

may provide access to a largely separate system of care in private hospitals or it might provide additional facilities or services above those normally available in a state-run institution. Such top-up benefits might include better quality hotel services or compensation for lost income while incapacitated. The limited entitlement may mean that unfortunate, or underinsured, individuals may exhaust their entitlement and then become dependent on other sources of funds or face accessibility problems like it happens in the US (Quinn and Buatti, 2000).

In private insurance schemes the customer will have a greater influence on the range of services provided, especially if the insurance market is efficient with a large number of providers competing for customers who are able to move from one insurer to another without prohibitive switching costs (i.e. equal entry and exit). It may be that where premium inflation is high, customer pressure will act to reduce the range of services or to increase the significance of co-payments and other mechanisms used to dampen demand and limit the rise in premium. In the USA for instance, it is common to sign up with an insurer for one year and to review your health insurance on an annual basis (Quinn and Buatti, 2000).

Also, governments may offer tax relief for payment of insurance premia as in the case of UK senior citizens or as in the case of US employers who contribute to insurance programmes (Clewer *et al*, 1998). This can have a range of foreseen and unforeseen economic and social effects such as increasing demand, increasing prices and creating an inefficient allocation of resources.

Factors that influence the development of private health insurance schemes are partly economic but also cultural and historic (Witter, 2002). In most Latin American countries, the proportion of citizens covered by private health insurance schemes is relatively high (e.g. about 27% in Chile) whereas in Asian countries of comparable GDP per capita, with the exception of Korea where private health insurance is mandatory and finances the majority of health care (Witter, 2002), coverage is much lower. This is due to the cultural beliefs of social solidarity and mutual trust, which tend to favour social insurance schemes.

Private health insurance coverage in low-income countries is very low, about 1% (WHO website[1]) and the proportion of total health expenditure covered by private health insurance is most often below 1% (this was zero in Ghana in the year 2000 – WHO). This could be due to

i. lack of affordability because private health insurance is usually considered luxury commodity giving access to high quality health services for the rich rather than low cost access to basic health care
ii. the historic pattern of high public funding for health where free health care is seen as a right even if the reality is different
iii. lack of government encouragement for the development of private health insurance schemes because health care is seen as a social good and as such vigorously encouraging private insurance could cause political problems.

Advantages and Disadvantages of Private Health Insurance

The advantages of private health insurance schemes include (Bennett and Gilson, 2001; Bennett *et al.*, 1998)

i. Services are likely to be efficiently managed and delivered.
ii. There is more equity in premia, which are usually directly related to the risk insured.
iii. Private insurance is flexible and will readily make adjustments to benefit schedules and other conditions as a consequence of competitive pressures.

The requirement of flexibility is particularly important for private health insurance because of the rapid rate of developments in medical science, practice and facilities. A compulsory social or national health insurance scheme lacks that flexibility as it is geared to conditions prevailing at its inception and it depends on legislation and political expediency for its adjustments.

The main disadvantage of private health insurance is that the principle of mutual support does not apply, thus making it expensive to insure certain groups of people. For economic reasons, private insurance schemes shy away from certain segments of

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[1] http://www.who.int/whr/2002/annex_table5.xls

the society, thus depriving them of the needed coverage. It generally covers the relatively elite and politicised group (Bennett and Gilson, 2001).

Also, it is sometimes argued that employer-based private insurance can impede the flow of workers between firms, a phenomenon known as 'job lock' (Quinn and Buatti, 2000). For example, many workers in the United States (which relies heavily on employer-based private insurance), with diagnosed medical conditions hesitate to move from one employer to another because many insurance companies will not cover pre-existing conditions, and changing jobs often means moving from one health insurance plan to another (Quinn and Buatti, 2000). This leads to labour market inefficiency. Also, a worker's share of private insurance premia, like income taxes, may affect individuals' decisions about the trade-off between work and leisure time.

Private insurers can attempt to influence the pattern of entitlements and services in ways that will be attractive to their customers. This includes short waiting times, consultations with known consultants, increased patient choice over admission and related arrangements, known standards of care and related facilities, privacy and other consumer benefits. Since many consumers are interested in the price of their premium, the insurers will be interested in cost control, and other measures to achieve value for money. The insurers will be happy to use a combination of co-payments if they are attractive to customers and reduce the overall level of premium. They may direct insured persons to low cost services such as those provided by health maintenance organisations in the USA, which provide something between a well-equipped general practice and a polyclinic service referring a patient to external specialist services if required (Quinn and Buatti, 2000). These are intended to prevent cost escalations.

Furthermore, the pattern of services provided through private insurance schemes depends on what the customers are willing to pay, what risks they are willing to take in terms of possible co-payments, the limits to medical entitlements they are willing to bear, and the quality of service such as reputation of staff and institutions they require. For the provider the competitive pressures are real and low-cost or high-value sources of differentiation are important in order to keep operational cost low. Some private health insurance providers will compete on the basis of quality, facilities and

excellence, which is sometimes referred to as competing on the basis of amenities, while others will compete on the basis of value for money, offering low cost or tailored solutions to the needs of particular groups of patients.

Moreover, a private insurance scheme will normally have clear limitations as to individual entitlements and these are usually established at the beginning of a sickness episode. The provider needs adequate information systems so that charging can reflect the use of services and entitlement can be monitored. The insurer also requires mechanisms to ensure that health care providers' charges are reasonable, services rendered are appropriate and that the services received are the most cost-effective for a particular patient. It is sometimes necessary to take financial guarantees from the patient to cover any uninsured costs that are incurred.

The American example of a private insurance oriented health system

The American health care system, described as the most expensive in the world (Blumenthal, 2001), is based on the assumption of private insurance taken out by the employed, supported by a vast safety net scheme for the elderly, poor, mentally ill and those who are not insured (Medicare and Medicaid). The system seems to work in that individuals eventually find care, but often this is only after their conditions have deteriorated and care is likely to be more difficult, more expensive, and perhaps less effective. Almost 88% of Americans are insured through a variety of private insurers and have a limited entitlement for health care (Clewer *et al.*, 1998). It is claimed that this group is likely to experience the best care in the world while their entitlement holds out. However, there is evidence that some Americans are underinsured or without any insurance cover at all meaning that they have to rely on their own resources, family, or other charitable funds for treatments (Donaldson and Gerald, 1993). Clancy and Danis (2000) state that approximately one-sixth of the US population has no insurance coverage whatsoever, which is bound to pose accessibility problems. Also, Quinn and Buatti (2000) state that while most Americans receive health insurance coverage through an employer or a family member's employer, these options are often not available for young adults.

Although there are differing perceptions of the extent to which the US population is underinsured (for example, with views ranging from one-sixth (Clancy and Danis,

2000) to 12% (Clewer and Perkins, 1998), it is clear that there is a large group of people who have no insurance and thus difficulties in accessing health care. These imply that with a market-run private insurance system of health care like that practiced in US, those who do not have the ability to pay the market premium will not be covered and as such face financial problems when accessing health care. In the USA, lack of private insurance has been identified as being strongly associated with delays in seeking medical care and low use of the medical system for preventive care (Quinn and Buatti 2000).

To help mitigate the effects of financial inaccessibility, systems are put in place to help those who would be affected. The military and veterans in America have their own high-quality health care system, which may make use of military facilities or may contract for care with private hospitals or other health care institutions. The elderly Americans are covered through a scheme called Medicare in which the costs of their health care are shared between federal and state governments. A similar cost-sharing arrangement applies to the poor, some of whom are covered through the Medicaid scheme. Both of these schemes are designed to enable eligible persons to receive care through the private hospitals rather than being dependent on the local state hospitals or emergency rooms which are frequently under-resourced and overcrowded, providing as their name suggests basic health care to those who have no alternative.

Woolhandler and Himmelstein (1991) identified some technical inefficiencies associated with the U.S. system of health insurance, whereby a multitude of private insurance companies cover most Americans compared to a single-payer, publicly administered health insurance system like Canada's. They state that

"... The existence of numerous insurers necessitates determinations of eligibility that would be superfluous if everyone were covered under a single, comprehensive program. Rather than a single claims-processing apparatus in each region, there are hundreds. Fragmentation also reduces the size of the insured group, limiting savings from economies of scale... Competition among insurers leads to marketing and cost-shifting, which benefit the individual insurance firm but raise systemwide costs... Co-payments, deductibles and exclusions are expensive to enforce..." (p.1256-7). Also, "... The existence of multiple payers ... imposes bureaucratic costs on health care

providers. Hospitals must bill several insurance programs with varying and voluminous regulations on coverage, eligibility, and documentation. Moreover, billing on a per-patient basis requires an extensive internal accounting apparatus for attributing costs and charges to individual patients and insurers..." (p.1257). This technical inefficiency is very costly. Woolhandler and Himmelstein estimate that in the U.S. administrative cost accounts for 19-24% of health care spending, while for Canada their estimate is 8-11%. According to them, if the U.S. health insurance system were as technically efficient as Canada's, the annual savings would be in the order of $100 billion.

The Americans have had the most incentive to try to reduce the cost of care and so many of the cost control mechanisms such as prepayment mechanisms, diagnosis-related groups, global hospital budgets, health maintenance organisations and co-payment mechanisms associated with health insurance have been attempted and developed in the USA. The fact that none of these mechanisms have been entirely successful is seen by the high cost of the US health care system (OECD 1990, 1995).

It is sometimes argued that private health insurance is a mechanism through which the demands placed by high income groups on public health care systems can be reduced and as such free more public resources for the lower income groups. However, the strength of this argument depends on whether the released resources are actually used to support health services needed by the poor as well as on the regulations governing private health insurance and how it interacts with the rest of the health care system.

It must be noted that private health insurance usually spreads risks for an individual or a family but does not pool risk on a large scale due to limited coverage. Meanwhile, 'transaction costs' (Brown and Jackson, 1998) associated with private health insurance schemes (such as administration, marketing, billing, contracts, monitoring, etc.) tend to be high – evidence shows that this cost is between 10 and 50% compared to between 5 and 10% for social insurance schemes and even some of the cost do not exist in social schemes, e.g. marketing, since they are mandatory (Bennett and Gilson, 2001). These costs tend to increase as competition increases leading to a spiral of increasing premia. Hence, private health insurance is seen as an inefficient method of raising revenue to finance health care in low-income countries.

4.2.2 National/Social Health Insurance

Social health insurance is where the state acts as the insurer and insists that its citizens take out a minimum level of insurance through a central agency or through a series of insurance companies or sick funds, which act as an agent of the state. These companies or funds often have their roots in trade unions, occupational, regional or religious groupings. The government generally sponsors National Health Insurance schemes and membership is usually compulsory for specified segment(s) of the population. National/social insurance is made feasible by the principle of solidarity, which works well in a society that acknowledges or accepts this type of mutual support. Premia/contributions are not usually based on individual assessment of risks. The government may decree that all members of the population be insured or it may restrict its requirement to low-income or high-risk groups, essentially those who might be unwilling or unable to finance what is thought to be an 'appropriate' level of health care (Creese and Bennett, 1997; Atim *et al.*, 1998; Bennett and Gilson, 2001).

Conventional social insurance schemes are commonly linked to employment and the contributions, usually a proportion of earnings, are typically collected as a payroll tax and administered as part of a social insurance fund separate from general government revenues. Hence, conventional national health insurance schemes require an active and large formal sector economy. The core group normally covered by this system is made up of workers in the formal sector whose participation is compulsory so as to avoid the problem of only the less healthy people seeking enrolment (adverse selection). For instance, in Argentina formal sector workers who participate in the statutory sickness fund, Obra Social, make a compulsory payroll contribution of 3% of wages (plus 1.5% for each additional family dependent), with 3-6% contribution paid by employers. Taxable income for purposes of calculating the contributions is $3750 per month (Medici *et al.*, 1997).

There seems not to be any consistent pattern of benefits under national or social health insurance schemes (Bennett and Gilson, 2001). However, they commonly provide for hospitalisation, surgery, essential drugs and medicine, general practice care and occasionally special care, laboratory services and dental care. Laws and legislative

instruments are used to prescribe the specific benefits provided under a national or social health insurance scheme.

Social health insurance programmes may operate as independent programmes (in which case they hardly provide comprehensive medical care to whole population) or may be one component in financing more extensive medical care (the major component being general tax revenue).

A social insurance system ensures that earmarked funds are available for the purchase of health care and these are channelled through a variety of independent but regulated sickness funds. With a social insurance scheme there is no direct competition for funds between competing services, e.g. health and education, although government will be concerned about the impact of the level of health premia on employees and employers since they might be a significant cause of inflationary wage pressure or increasing unit cost of production and potential damage to competitiveness.

The key features of conventional social/national health insurance schemes are (Bennett and Gilson, 2001)

i. compulsory membership
ii. payroll-based contributions, which requires active formal sector
iii. specified benefits package
iv. autonomous management by sickness funds
v. common use of cross-subsidy premia
vi. usually used as part of a wider social security schemes.

Motivations for establishing National Health Insurance Schemes

There are a variety of motivations for establishing national health insurance schemes, which include the fact that as a means of revenue mobilisation, they are sometimes used as supplements or alternatives to declining revenue from general taxation in order to safeguard the sources of financing health care and make it sustainable. Also, they are most often used to extend coverage levels of health care because it is believed that when coverage levels are high, equity will improve since most people will have access to at least, the same level of health care.

Conditions required for a Successful National Health Insurance Scheme

There are some basic conditions that are required for a social or national health insurance scheme to be operated successfully. These conditions, which could impact on the design and operation of a national health insurance scheme, have been identified as (Creese and Bennett, 1997; Atim *et al.*, 1998; Bennett and Gilson, 2001):

(a) the prevailing health policies and goals,
(b) the state of the health care delivery system,
(c) demographic issues including occupational distribution of the labour force,
(d) income levels and the economic potential and growth prospects of the economy,
(e) the existing system of health care financing,
(f) social and cultural attitudes, and
(g) availability of administrative and technical personnel.

(a) Health Policies and Goals

The principal objective of a national health insurance scheme is usually the provision of appropriate and high quality services for the prevention of diseases and for treatments that have a large impact on the population's health (Normand *et al.*, 1994; Normand 1999). Hence, a proposal for the introduction of a national health insurance scheme needs a detailed review of the existing health policies to determine whether they are appropriate and conducive to the use of national health insurance as a means of financing health care. It is expected that a national health insurance scheme would contribute to the achievement of health policy goals. Therefore, the goals of the government's health policy must be clearly stated and be conducive to the introduction of the scheme as either the main or a supplementary funding mechanism. Appropriate health policies should be such that they achieve a maximum impact on the health of the population. They should also seek to raise the standard, quality and depth of health care, and make health care accessible and affordable to the majority of the population. Health policies should regulate the activities of health care providers and set minimum health care standards and procedures to protect consumers of health services. The above stated health policy considerations constitute part of what is considered as appropriate environment for the introduction of a national/social health insurance scheme.

(b) Health Care Delivery System

Utilisation of health care is expected to increase with the introduction of a national health insurance scheme. In this regard, it is important that there exists a health care delivery system that is capable of meeting the expected increases in utilisation otherwise people will lose confidence in the scheme causing them to leave and prevent others from joining the scheme.

(c) Demographic Issues

The size of the population and extent of population coverage, age structure of the population, its occupational distribution and morbidity patterns are key variables that affect the design and operation of a national health insurance scheme. The central aim of any national health insurance scheme is to make sure that all citizens have access to health care, especially at the time of need, which pre-supposes that a national health insurance scheme must cover all citizens. Nonetheless, one major problem from this principle is how to translate 'the right of access for all' (Atim *et al.*, 1998) into actual access for all. Lack of resources to cover those who cannot afford payment of premium creates limitations on the extent of coverage. Consequently, participation of the whole population in health insurance can be the medium-term objective in the process of establishing a national health insurance scheme.

Also, the age structure of the population has material implications for a national health insurance scheme. A highly dependent population implies a small economically active group who will be required to contribute to the insurance scheme to cover a large dependent population. This is likely to make premia very high and may deter lower income earners from willingly joining the scheme.

Again, the occupational distribution of the labour force of the country in question (i.e. those actually employed) has implications for the design of a national health insurance scheme. The existence of a large proportion of formal sector employees is more conducive for health insurance scheme as incomes are certain and premia can be easily deducted at source. In situations where an appreciable number of the work force are self-employed and operate largely in the informal sector, (e.g. traders, mechanics, artisans, fishermen and small-scale farmers like we have in Ghana), it

becomes administratively difficult to reach and register all of them. The problem of assessing and collecting premia from such self-employed groups may also limit coverage under the scheme since incomes of persons in this category are unstable and irregular. In the case of agriculture, income depends on crop yields and prices of produce, which also vary very often. Besides, agricultural incomes in Ghana are seasonal and would require special arrangements for the payment of premia.

(d) Economic potential

Before introducing national health insurance schemes, countries need to examine whether their macro-economy can sustain the scheme. This is because health expenditure may rise too rapidly in relation to the incomes and budgets of consumers, employers and governments (Ensor, 1999). For a national health insurance scheme to succeed, the economy should be able to generate sustained employment and hence, income for the labour force to facilitate greater participation by the population.

(e) Existing Health Care Financing System

The existing method of health care financing could have an impact on the introduction of national health insurance mechanisms and the level of premium that could be charged. If the majority of the population receive health care at public health institutions, either free or at heavily subsidised fees, then no matter how poor the services may be, one would expect some resistance to the introduction of premium payment for health insurance. This can be avoided though, if it could be proved that a health insurance scheme would offer additional benefits. Hence, existing user fee system in health facilities may facilitate the smooth establishment of national health insurance schemes because individuals may have realised how difficult it is to raise resources to finance health care at the point of use due to the uncertain and unpredictable nature of health care needs.

(f) Cultural and Social Beliefs

Social and cultural beliefs and attitudes of the population have relevance to the designing of a national health insurance scheme. They can impact upon issues such as definition of family units and the inclusion or exclusion of traditional medical practitioners as service providers, method of premium collection, etc. There are some cultural beliefs in Ghana such as the solidarity in times of bereavement (where people

make compulsory donations towards funerals, called "NSAWABO") and mutual support during farming seasons (where a group of people work together on each others' farm in turns, called "NNOBOA") together with the 'SUSU'[1] system of savings that can be capitalised on to establish national health insurance schemes to finance health care. Thus with little education, people will get to know that pooling of risk and resources (insurance) is part and parcel of their lives and has a lot of benefits for them.

(g) Availability of Qualified Personnel

The success of a national health insurance scheme depends, among other things, on the calibre of the administrative and technical personnel who handle the scheme. The skills needed to administer a health insurance scheme are different from those used on other types of health service management. The establishment of national/social health insurance requires a break-up of the traditional bureaucratic structure of health administration that link purchasers and providers directly. In this way, instead of health care providers receiving annual budgets, they will have to compete for work. The insurance funds will reimburse providers based on their work and also monitor the quality of services provided. Hence, for a national health insurance scheme to succeed, a group of tested qualified personnel should be engaged in its administration.

From the above, it is evident that the introduction of a national or social health insurance scheme must be preceded by a thorough analysis of the variables that are likely to hinder such a scheme, and the scheme must be designed in a way that will attract society to accept it. As one of the conditions for making it viable, there must be a reasonable number of participants to start with. Also, viability requires that in the longer term, the insurance scheme should be able to earn sufficient premium income to cover payments to health care providers, meet administrative costs of the scheme, and make a reasonable margin as a cushion for any adverse contingency and against inflation. In Ghana, health care users face considerable costs in accessing health care due to user fees. However, there are some cultural and social beliefs (named above) in the country that are more conducive to the establishment of national health insurance schemes that can be used to raise large and sustainable financial resources to replace

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[1] See section 16.6

the existing user fee system as a means of financing, at least, basic health care in the country. Hence, this dissertation argues for the establishment of such schemes in the country.

Advantages and Disadvantages of National/Social Health Insurance Schemes

The advantages of a National Health Insurance scheme include:

i. combination of the idea of mutual support with pooling of risk;
ii. low cost to the insured in the form of low premia because of the absence of profit motives;
iii. it provides the government with additional source of funds for financing health care.

Health insurance mechanisms can generate large amounts of revenue for health services. It can be a practical and sustainable means through which governments, especially those in developing countries can get out of the expensive business of across-the-board subsidies for hospital care, and thus release funds for public health, preventive and primary services that benefit the poor. Also, it protects the low income individuals against catastrophic health expenditure at the point of use.

The disadvantages of a National Health Insurance scheme include:

i. high administration costs usually caused by inefficiencies and bureaucratic structures;
ii. it is difficult to include the population in the informal sector because of the problems of assessing their incomes as well as collecting their premia;
iii. if premium is levied as a fixed proportion of income, then the scheme will be less progressive and unfavourable to lower-income people;
iv. government will have to support any ailing national health insurance scheme with financial subsidy, which will put additional financial burden on any government that is trying to avoid subsidy on goods and services.

Examples of conventional National Health Insurance Schemes

This section describes the main features of conventional social/national health insurance schemes as they have operated in practice from some developed countries so as to show how they have been designed and their performances in practice. The

aim is to highlight the features of the conventional National Health Insurance schemes that finance the health systems of these developed countries in Europe and North America and then review the recent innovative health insurance schemes established in some Sub-Saharan African countries. It must be noted that no theoretical 'classical' model of health insurance is universally applicable (Moens, 1990; Carrin *et al.*, 1999). However, this review will provide insights as to how Ghana can model a National Health Insurance scheme that will be capable of accommodating households that have irregular cash incomes.

Germany

According to Clewer and Perkins (1998), the German health care system is noted to be perhaps the classic example of social insurance. Social Health Insurance was first introduced in Germany in 1883 (Barnighausen *et al.*, 2002). Here, insurance premia are deducted from the payroll and the individual can choose for them to be paid into district, national or factory insurance funds of which there were about 1,100. There is a strict separation of inpatient and ambulatory care and hospitals are not permitted to have outpatient departments. Local doctors are largely specialists and they act as gatekeepers to the more expensive hospital services. The insurance funds negotiate with the provider hospitals on a regional basis, but the proliferation of funds makes it difficult to exert real purchasing power over the providers.

It is sometimes argued that "the German system is not a social health insurance scheme at all but a hypothecated payroll tax in which the proceeds are 'ring fenced' for the provision of health care" (Clewer and Perkins, 1998). This permits a greater public influence over the level of expenditure on health in Germany. However, each fund has to balance its books and so there are significant inequalities in the levels of premia, which relate to the comparative efficiency of funds and also the balance of risk represented by those covered. One fund may have an overrepresentation of the elderly and chronically ill while another may have a high proportion of young and fit members (i.e. there may be the problem of adverse selection). Also, premia have been rising significantly causing a concern about cost control. Ambulatory care is paid for on a fee-for-service basis, which tends to inflate demand for, and use of, services [leading to supply side moral hazard – (European Observatory on Health Care Systems, 2000)]. Meanwhile, attempts are being made to control hospital costs by the

use of global hospital budgets. Incidentally a lack of central manpower planning has resulted in a serious oversupply of doctors matched by a worrying undersupply of nurses, which suggests something about the limited degree of central planning in the German system. An examination of the German social health insurance revealed that (Barnighausen *et al.*, 2002)

i. small, informal, voluntary health insurance schemes may serve as learning models for fund administration and solidarity, but to achieve universal coverage government action is needed to formalise these schemes and to introduce a principle of compulsion
ii. the mandated benefit package should be adapted incrementally in accordance with changing needs, values and economic circumstances so as to ensure sustainability
iii. self-governance may serve as a source of stability and sustainability as well as a means of decentralising and democratising a health care system
iv. costs can successfully be contained in a fee-for-service system if cost-escalating provider behaviour is constrained by either political pressure or technical means.

Canada

Canada's social insurance system is widely regarded as a model worthy of emulation by its US neighbour (Clewer and Perkins, 1998; Woolhandler and Himmelstein 1991). Each province has its own health insurance system and the national government funds 40% of health care costs provided that the insurance system meets a number of key conditions. A provincial health insurance system must provide comprehensive health cover and services to all of its citizens; it must be accessible in the sense that there are no limits on health services or extra charges to patients; it must be portable, enabling all benefits to be received in other provinces; and it must be publicly administered through a public not-for-profit organisation. All provinces in Canada have insurance schemes that fit these criteria. The provincial insurer is the only direct payer for health services, giving it considerable power and also reducing a wide range of administrative costs. For instance, there is no need to conduct complex tests to check entitlements or eligibility. Hospitals are paid a global budget and do not have to bill separately for services, and physicians are paid on a fee-for-service basis. Negotiations take place each year at provincial level to determine a schedule of fees

and to agree budgets with providers. Most hospitals are set up on not-for-profit basis and doctors work in a variety of independent and group settings. Patients are able to choose their doctors and services are free at the point of need. As in the UK the allocation of services depends on the medical definition of relative need and there are a few waiting lists, but this is not a serious problem. A system of provincial technology licensing makes sure that expensive technologies are located in specialist centres and that their diffusion is carefully controlled. This may be seen as having cost control and quality benefits in that patients are not subject to new technologies until they have been tested and doctors have appropriate experience in their use.

Holland

Holland operates a social insurance scheme in which the low and middle income groups (61%) are obliged to pay for health care insurance and the remaining high incomes (39%) choose to pay health care insurance (Clewer and Perkins, 1998). Both groups receive employer's contribution and retirement and unemployment funds are required to have a health insurance element to cover those who are not employed. The insurers are obliged to accept all middle- and low-income people regardless of condition or risk, operate as economically as possible, and negotiate the lowest fees and hospital budgets from providers. There are various mechanisms for offsetting the potential costs of high-risk patients and a complex system of annual negotiations ensures that there is an agreed set of fees and budgetary rates for all providers. The general practitioners (GPs) act as gatekeepers and there is a minor system of co-payments to try to dampen demand. There is an exceptional arrangement for medical expenses operated through the sickness funds and insurers, which covers the whole population for long-term care that would go beyond the range of insured entitlements.

Israel

In Israel a National Health Insurance law was passed in 1995 to establish the National Health Insurance (NHI) to help correct some aspects of their health system that was perceived to be contrary to efficiency and equity (Shalev and Chinitz, 1997). Until the introduction of the National Health Insurance Law 1995, 96% of the population were insured by 4 non-profit sickness funds. Despite nearly universal coverage and favourable health input indicators, pressure for reform built up during the early 1990s due to increasing financial deficits of the largest of the 4 sickness funds, inequity due

to selective enrolment by some of the funds, and growing private finance of health services (Shalev and Chinitz, 1997). Under the NHI, all citizens are required by law to join one of 4 non-profit sickness funds, which must accept anyone who wishes to enrol. Individuals may switch sickness funds once a year, which introduces an element of managed competition. Sickness funds receive a risk-adjusted capitation payment from the government, which is to be used to provide a standard basic basket of services defined by law. The basket listed by law is very comprehensive and covers preventive as well as almost all acute care in both the community health centres and the hospital. There is no price competition among the funds over provision of the basic basket. Sickness funds may charge extra premia only for supplemental insurance, which does not cover services included in the basic basket.

The NHI law sets the cost of the basket together with an index for updating it each year. If revenues from health taxes are insufficient to cover this cost, the government is required to make up the difference. According to Chinitz (1995), despite the legislative attempt to guarantee adequate funding, the amount the government is required to provide from general tax revenues is a constant source of controversy. Hence, the health system under the NHI suffers from large deficit as well. This financial pressure has made updating of the basket of basic services more salient and difficult. The NHI law allowed for a transition period, originally 3 years but later extended by 1 year, during which sickness funds could continue to impose conditions (e.g. cost sharing and other restrictions) regarding access to basket of services which they had applied before NHI came into effect.

National Health Insurance Schemes in Latin American and Asian countries

Health insurance schemes represent a large part of the financing of national health care delivery systems in Latin America (Griffin and Shaw, 1995; Ron, 1999). With varying degrees of success, countries like Brazil, Ecuador, Mexico and Guatemala have extended their insurance systems into rural areas.

Health insurance schemes are also being used in several Asian countries. There are community-based health insurance schemes in Bangladesh (Desmet *et al.*, 1999). In India, there is a well-known prepaid health plan sponsored through the National Dairy Development Board (Griffin and Shaw, 1995). This health plan deducts its premium

from members' sales of their cash crops. There is health insurance scheme developed for the private sector employees in Thailand, which was started in 1990. This scheme is financed in a tripartite manner by employers, employees and government. However, since the scheme is focussed on private sector, it covers only 7% of the Thai population (Tangcharoensathien *et al.*, 1999). The scheme uses capitation as method of paying providers. This in principle, should support cost-containment and stimulate competition so as to improve efficiency.

The Philippines finances health care through a compulsory insurance system that covers about one-third of the population, reimbursing services from both private and public hospitals (Griffin 1992; Ron, 1999). Some of the insurance schemes began in 1972 and others began in 1994.

National Health Insurance Schemes in Sub-Saharan Africa

This section aims to show that social/national health insurance schemes have been operated in some Sub-Saharan African countries.

Vogel (1990) found, in a survey of twenty-three Sub-Saharan African (SSA) countries covering the period 1971 to 1987, that only seven countries (30%) had formal health insurance systems in place. The percentage of the total population insured ranged from 0.001% in Ethiopia to a high of 11.4% in Kenya. To arrive at these figures, Vogel restrictively defined health insurance as a formal pool of funds, held by a third party, or by the provider of health care, in the case of a Health Maintenance Organisation. Thus, Vogel's conservative definition of formal health insurance did not consider employer-provided health care as a form of health insurance. Vogel described prevailing government health insurance arrangements in SSA as:

a. Free health care provided and financed for all citizens out of national tax revenues, as in Tanzania.
b. Health care provided by government and financed through the general tax fund and through cost recovery, as in Ghana.
c. Compulsory social security for the entire formal labour market, as in Senegal.
d. A special health insurance fund for government employees, as in Sudan.
e. A discount at health care facilities for government employees, as in Ethiopia.

f. Other public "insurance" such as those entitling government employees to private medical care as a fringe benefit, as in Kenya.
g. Mandated employer coverage of health care for employees, as in Zaire.

In another development, the World Bank conducted a survey of 37 countries in SSA to determine the presence of formal and employer-provided health insurance schemes (Nolan and Turbat, 1993). Using the same restrictive definition as Vogel, they found that 14 countries had formal insurance systems in place (almost 40%). Another 4 countries had some kind of employer-provided programme, eighteen had no formal system, and the status of one country could not be determined. Also, the World Bank's survey revealed that coverage of these schemes ranged from less than 10% of the population in most countries, through about 15.5% in Burundi and Senegal, to 25% in Kenya. Private insurers were active in about half the countries studied, with public insurers and employer-based schemes in the rest.

Also, Griffin and Shaw (1995) reviewed social security systems throughout the world which revealed that in 1991, among 47 SSA countries 7 (15%) had formal social security systems providing medical benefits either through direct service or reimbursement, 15 (32%) had an employer mandate forcing the employer to pay for certain medical services, and 17 (36%) had no formal system.

Furthermore, Vogel (1990) observed that small local voluntary risk pools were operating as in Rwanda; employers were voluntarily providing medical care directly to their employees, as in Zambia; and some employers provided medical care under contract with private health care providers, as in Nigeria. Private and parastatal firms in the formal sector provided medical allowances, reimbursed workers for expenses, operated clinics and hospitals for their employees, or contracted with private and mission hospitals and clinics to provide services. In Zaire, employer-organised insurance schemes comprised about 30% of revenue in Kasongo Health District with a catchment population of 30000 urban and 165000 rural residents. About 60% of the District Hospital's revenue derived from insurance sources, compared with about 13% of health centre revenue (Criel and Van Balen, 1993).

Additionally, a survey of 200 employers in Dar es Salaam and three regional cities in Tanzania organised in 1992 found that three basic approaches to insurance were operating but only one fits Vogel's definition of insurance (Abel-Smith and Rawal 1992). First, the National Insurance Corporation (NIC) managed insurance policies for forty-three Tanzanian employers covering about 2000 employees (half of whom worked for NIC itself), which was clearly low coverage in a country of 25 million people, but it was a start on true insurance. Second, the Tanzania Occupational Health Service covered about 250,000 employees in 1992 under contracts with their employers (down from 500,000 in 1989). This system could be classified as a form of prepaid plan. Third, all but seven of the 200 surveyed employers had some kind of formal scheme for their employees, namely, self-insurance. About 50% had contracts with private or mission facilities or ran their own clinics or hospitals; about 20% reimbursed employees' medical expenses, the remaining 30% used other variations of these two approaches.

Innovative Insurance Schemes in some Sub-Saharan African Countries

Examples of innovative social health insurance schemes are evident in Guinea-Bissau, Burundi and Zaire. Having been established in developing Sub-Saharan countries, which face similar financial barriers in their health care system like Ghana, these experiences are reviewed so as to identify the innovative factors that have helped to make them successful such as accommodating individuals and households that have irregular and/or seasonal cash incomes (Arhin, 1994; McPake *et al*, 1993). This is followed by a discussion of the Ghanaian health insurance situation and how social insurance could be used to improve health care financing in the country.

A. The Abota Village Insurance Scheme in Guinea Bissau

The Abota system entails prepayment for essential drugs and the provision of primary health care at the village level by the community (Chabot *et al.*, 1991). 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 Agents de Saude De Base, and by birth attendants at the village health posts (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.

The earliest Abota scheme began in 1980 in a few villages as part of a general village health care programme. 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 was widespread, totalling 462 villages in 1991, and was an integral part of the country's health system (Griffin *et al.*, 1995). Since 1983, patients referred by village health workers to the public health facilities had been exempted from payment of consultation fees upon showing evidence, usually a receipt, of having contributed to Abota. Furthermore, the government, in Guinea Bissau's ten year health plan (1984-1993) emphasised the role of village-based primary health care, thereby making the efficient functioning of the Abota system critical to the country's health strategy.

The Abota revenue was used to purchase essential drugs and bandages from nearby government health centres or sectoral hospitals. The ultimate supplier was the Central Medical Store situated in the capital city. In each village, the village committee decided the procedures for collecting contributions, purchasing drugs and overall monitoring of the system. As a consequence of this autonomy, prepayment terms varied substantially from one village to another. In 1988, the annual contributions per adult male varied from P.G. 20 - 500[1]. In two of 18 villages surveyed by Eklund and Stavem (1990), only men paid and in another two villages, contributions were on household basis. Other villages accepted in kind contributions of agricultural produce (Chabot *et al.*, 1991), which may have encouraged subsistent farmers to enrol.

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[1] In 1988, 350 P.G. (the Guinea Bissau Peso) was equivalent to US$0.31.

B. Carte d`Assurance Maladie (CAM) in Burundi

This is a national health insurance scheme introduced by the government of Burundi in 1984 (Arhin, 1994). Purchase of a CAM card by a household entitled its members (restricted to two adults and all children below 18 years of age) to free health care at all public health facilities. The card was sold at a fixed price irrespective of the household size. In June 1992, the price of the card was 500 Fbu (US$1.85) – (Arhin, 1994). Persons without cards were required to pay user charges for government health care. The level of user charge per episode of illness treated was determined by the health worker at his or her discretion and generally varied with the age of the patient and the quantity and type of treatment received. All services provided by the government were covered by the CAM scheme and therefore, in theory, CAM card holders who sought health care at government facilities should not incur any out-of-pocket expenses at the point of use. However, due to the shortage of drugs and other inputs, CAM holders, like fee-paying patients, were sometimes given prescriptions to purchase drugs on the open market.

The names of household members entitled to use a card were 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, purchase a CAM card in order to obtain free hospital care without actually contributing to risk-sharing. This no doubt, will affect the financial performance of the system. The cards are not accepted by non-government health facilities, such as mission and for-profit clinics and hospitals.

The revenues obtained from the sale of CAM cards and user charges paid by non-cardholders, are retained by the "commune"[2] committee. 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

[2] The "commune" is the lowest level of local administration in the country

provision of health care directly 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 sale of CAM cards, whereas an average of only 1% of commune revenues was used to finance health care (McPake *et al.*, 1992). The government through the Ministry of Health's budget funds health worker salaries and drug costs. Low membership due to inability to pay the premia and poor quality of health services delivered at participating health facilities (especially lack of drugs), together with 'adverse household selection' (Arhin, 1994) are the main problems that the scheme face. These impact negatively on the financial performance of the scheme. However, the scheme performs a very important social function for those registered members who lack access to cash income, mostly women because access to health care does not require the permission of the main decision maker who decides how household cash income is spent (Arhin, 1994).

C. Bwamanda Scheme – Zaire

The Bwamanda scheme was established in 1986 in a rural district of Zaire with the support of a local non-governmental organisation (NGO) called *Centre de Developpement* (CDI) as part of a wider rural development project and 'through the application of operations research' (Moens, 1990). A preference heuristic, with considerable involvement of health care providers, was used to identify this type of financing scheme while mathematical model was developed to determine premia (Moens, 1990). The scheme offered families the opportunity to pay annual premia, which allow them to be refunded 80% of their hospital costs when they are referred. During the annual enrolment period of one month, the personnel of the health centre and representatives of the village committees collect membership premia. As proof of payment, a stamp indicating the year, the amount and the name of the health zone is entered on the family record, one for every family member. Children born between two enrolment periods are automatically covered. The family is registered in the 'membership register' and the membership number is written over the stamps to validate them. The nurse responsible for registration remits money equal to the value of sold stamps to the administrator of the health zone who deposits it into a separate health plan account. Over a period of ten years, between 50 and 75% of the families in the district enrolled each year and cost recovery in hospitals doubled from 40% to

80% (Griffin and Shaw, 1995). The factors that helped to make the scheme successful are the fact that (Moens, 1990; Griffin and Shaw, 1990)

a. the scheme was part of a wider development programme, and was able to rely on effective consultative mechanisms in designing and managing the project;
b. the health services in the district were well organised before the introduction of the scheme, with a strong district management team and effective financial and referral systems. Thus, the pre-paid health plan was completely integrated into the health delivery system
c. the project never aimed for full cost recovery, and the hospital continued to receive support from the NGO throughout the period
d. moral hazard was reduced through a number of measures, namely, patients had to be referred; they had co-payment of 20% of the cost; and the hospital was paid flat fee according to type of admission rather than fee-for-service
e. the hospital was the only one in the district and had good reputation for quality
f. premia were the same for everyone, well publicised and other developmental measures aimed at boosting literacy, and the farmers' incomes were introduced to make the premia more affordable to most households
g. adverse selection was avoided by enrolling whole families
h. funds were invested in non-perishable drugs so as to avoid being devalued by inflation.

Griffin and Shaw (1995) provide a comparison between the Carte d'Assurance Maladie (CAM) in Burundi and Bwamanda scheme in Zaire, which is quite instructive. The Bwamanda scheme (which is a district health insurance scheme) has done far better in terms of enrolment rates, premium levels, and the use of funds (USAID, 1993). The relatively high enrolment rates can be attributed, first, to the fact that most of the population believes the scheme provides access to good quality health services. Second, high fees are charged at the hospitals, so there is real financial risk associated with an illness requiring hospitalisation, and thus an incentive to join the scheme. Third, the premium is affordable to most of the population, even though premia have been increased every year to keep pace with high inflation rates by linking the price to the value of two kilograms of soybeans, a commonly produced crop. The revenues from premia and co-payments directly finance the operating costs of the zone's health facilities. Substantial revenues were generated from the

combination of prepayments and co-payments for the prepayment scheme, and were used to finance health services in the zone. All hospital costs for beneficiaries were covered by premium income in 1987 and 1988, and cost recovery in the hospital went from 48% in 1985 (before insurance) to 79% in 1988 (Griffin and Shaw, 1995). However, there were some equity concerns because premia were the same for all, two kilograms of soybeans. It could have been made more progressive. In Burundi, however, the quality of care in public facilities is reported to be poor, with drug stock outs being common (World Bank 1993). A survey of the rural population found that this was the leading reason for not buying or renewing the CAM health card (Arhin, 1994). The very low fees charged at health centres also undermine the need for the card. The low level of the premium, which has not been adjusted since the scheme was introduced in 1984, also limits the contribution of the CAM. Finally, revenues from CAM sales revert to local government authorities and thus do not finance health service directly. As a result of these factors, revenues from CAM sales represented only about 3% of Ministry of Health recurrent expenditures in 1990.

D. The Maliando Mutual Health Organisation in Guinea-Conakry

The Maliando MHO was established in 1998 in a rural district of Guinea-Conakry. This was a voluntary scheme aimed at improving access to quality health care. The benefit package under the scheme included free access to all first line health care services, free paediatric care, free emergency surgical care and free obstetric care at the district hospital. It also included part of the cost of emergency transport to the district hospital. To benefit from the package, the households had to pay an annual insurance premium of about US$2 per individual. Also they had to pay a small co-payment for first line health services. In 1998, the Maliando scheme covered only 8% of the target population and in 1999, the subscription rate fell to about 6% (Criel *et al.*, 2003). Criel *et al* found that failure to understand the scheme did not explain the low rate of subscription because members and non-members had an accurate understanding of the concepts and principles underlying health insurance. These people value the scheme's re-distributive effects, which goes beyond household, next of kin or village. Also, the individual premium of US$2 per annum is seen to be fair. However, there is a problem of affordability for many poor and/or large families who cannot raise enough money to pay the premia for all the household members. The

main reason for the lack of interest in the scheme is given as the poor quality of care offered to members of the scheme (Criel *et al.*, 2003)

The characteristics of the Bwamanda schemes in Zaire that made it more successful and those of the CAM scheme in Burundi that made it unsuccessful will be taken into consideration and adapted to the Ghanaian society when making recommendations for the use of social health insurance schemes to help raise adequate and sustainable levels of funds to finance health care in Ghana.

Other Forms of Health Insurance Scheme

a. Employer-Based Health Insurance Schemes

Some companies provide free medical services to their employees as part of collective bargaining agreements based upon trade union or employee groups (Nolan *et al.*, 1993; Abel-Smith *et al.*, 1992; Vogel, 1990). Most of these schemes are group self-insurance schemes and retain a particular service provider on a fee-for-service basis to extend facilities to employees and in some cases, a specified number of registered dependants. The arrangement normally provides for both in-patient and outpatient care. Other employers may maintain their own clinics with a resident doctor to cater for the health needs of employees and their dependants.

The greatest problem associated with this scheme has been identified as cost containment arising mainly from abuse by employees and over-servicing by health care providers i.e. both demand and supply side moral hazards (Atim *et al.*, 1998).

b. Community Health Insurance or Mutual Health Organisations (MHOs)

A community-based health insurance scheme is organised locally by the community on voluntary basis. Premia are paid by households and are generally not based on individual risk assessments. It is a non-profit organisation, based on the principles of solidarity and mutual self-help, whereby the resources of many individuals are pooled together to enable each one of them to be able to get access to health care when the need arises without any significant financial barriers. Thus, these insurance organisations are aimed primarily at providing relief from point of service user fees for health care, thereby promoting unrestricted access to quality health care. They do

this by mobilising the contributions and resources of members, both individuals and families.

Community-based health insurance (CBHI) schemes are seen to be appropriate for providing insurance coverage to people with limited protection from other sources like those who are not engaged in formal sector employment. Also, the schemes are relevant to low-income countries where government revenue is limited and there is extensive reliance on out-of-pocket payments (Bennett, 2004).

There has been increasing advocacy for community-based health insurance schemes as part of a broader solution to health care financing problems in low-income countries. This is aimed at improving access to health care services especially for the poor. Hence, Community Health Insurance or Mutual Health Organisations are becoming very popular in Africa in recent times. In Central and Western Africa, the number of MHOs has risen from 67 in 1997 to approximately 827 in 2000 (Kelley and Atim, 2000). In Ghana alone, unofficial sources state there are 157 MHOs (Chris Atim, quoted by Bennett, 2004). Meanwhile, the Ghana government's health financing policy, which is being developed, seems to give key role to Community-Based Health Insurance schemes.

The MHOs began to spread in response to the health care sector crisis that African countries are experiencing, and more specifically, because of (Kelley and Atim, 2000):

- The introduction of user fees at existing publicly supported health facilities.
- The introduction of the fees in a context of generally unacceptable quality of public services, which reinforce people's willingness to pay for better quality care.
- The rise of alternative, private sources of health care provision frequently associated with good quality.
- The general democratisation and development of civil society.

Conditions for successful Community Health Insurance Schemes or MHOs

For community health insurance schemes or MHOs to work effectively, they need to be democratic and accountable to their members. The elements that are required for a

successful community health insurance scheme or MHO as could be seen from the available literature (Moens, 1990; Criel *et al.*, 1993; Arhin 1994; Atim *et al.*, 1998; Bloom *et al.*, 1999; Ron, 1999; Carrin *et al.*, 1999) are:

1. There must be a thorough study of the environment in which the scheme is going to operate – with information about all relevant features such as demographics, disease prevalence, utilisation rates of health services, costs, history of similar organisations in the past, relations between different communities and ethnic groups in the area, etc carefully considered. This helps to determine the optimal combination of services to offer and the contribution rates required, as well as to design effective strategies for marketing and mobilisation.
2. Quality improvements in health care must be built into the objectives of the scheme or into its agreements with the health care provider(s). Nobody wants to pay for poor quality services and as such health insurance schemes will never succeed if they are built around poor quality provider(s).
3. The management of the scheme should be democratic, accountable and participatory. In addition, there must be an oversight (watchdog) committee accountable only to members, who can check the management and executive organs including staff and report on abuses and complains. This will ensure fair treatment for all and compliance with correct procedures and the rules of the scheme.
4. Initially, the scheme must target a relatively manageable (smaller) area or group(s) for its membership and expand coverage as it gets more confident. However, if the scheme is a big one from the start, or is organised over a large area, it must decentralise its management. This will increase participation, help extend coverage and enable it to combat abuses such as fraud and moral hazard more easily.
5. The benefits package for the scheme must be well defined, and optimal levels of premia set so as to make the scheme more viable and attractive. To avoid over-use of services, the scheme should consider asking members to make a very small co-payment[1] (a small percentage); not too big to prevent access to the services but also sufficient to make people think twice before they abuse services[2].

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1 Co-payment is the proportion of the cost of health care borne by a patient.

[2] Successful community health insurance schemes in Africa tend to cover health care costs such as hospital admission only up to around 80%, with the member paying the 20%. Some schemes place a

6. In calculating the premia, the scheme must take into consideration the likely increase in utilisation that will come as a result of the insurance scheme. This is called a safety margin. Atim *et al* (1998) suggest that if the scheme has no means of checking the increase in utilisation that has happened in other schemes, then it should allow around 15% as a safety margin. In addition, it is considered good practice to allow for building a reserve fund that can cushion the scheme against unforeseen rises in expenditure due, for instance, to epidemics. It is usually recommended that a reserve fund be sufficient to cover six months of the health care bills of the scheme. The reserve fund does not have to be constituted all at once in the first year, but a percentage allowance should be added every year to the premium in order to build up this reserve fund over a period of time, say, three years.
7. There must be a waiting period of not less than three months from the time people start contributing to the scheme till the time they can start benefiting from its services. Experience has shown that six months waiting period is much better (Atim *et al.*, 1998). The aim of the waiting period is to safeguard mainly against adverse selection and to accumulate sufficient funds to pay the health care bills that will start to arrive shortly after the scheme begins to operate, even if they turn out to be much higher than predicted. It is important for the scheme to demonstrate that it can pay all bills and not leave members uncovered after they had paid their dues, otherwise people will loose confidence drastically and will be very difficult to regain, which will have adverse effect on enrolment.
8. The best solution to adverse selection is compulsory membership, where the communities themselves decide that everybody must contribute to the scheme. In most cases, however, a community health insurance scheme is not able to compel whole groups to join (Moens, 1990; Arhin 1994). Even so, the scheme can insist that once someone joins, then all of their family members too must join (very important to protect against only sick people joining) and/or, make it possible for people to join via existing associations or organisations with which the scheme has made an agreement. For example, spare parts dealers' association, the market women's association, car mechanics' (fitters) association or transport owners' association could be the vehicle by which members join, with incentives

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maximum limit on the number of hospital admission days they will cover per person or the amount of health care bills per person per year (Atim *et al.*, 1998; Moens, 1990).

(discounts) given to the associations if they register all of their members. Usually, such associations have mechanisms by which they can compel all their members to participate in an activity for their common good. In the case of compulsory family membership, the scheme can give financial incentives to people to register more, not fewer, family members. For instance, the scheme can reduce the contribution per head as the number of family members registered increases.

9. Effective and participatory marketing and communication techniques appropriate to the community in which the scheme operates must be developed. The scheme must avoid top-down approaches that emphasise going out to "educate" the community about the scheme. Organisers must treat the target group and members as adults who have something to teach the scheme about their problems and how to solve them. Also, marketing of the scheme must involve discovering the actual health needs of the target group and how these evolve over time. For instance, consumer satisfaction surveys must be carried out from time to time to allow the scheme to offer what is relevant to the group and not what the scheme's managers think is the best for the members.
10. Advice must be sought on the best method of paying the health care provider(s) for the services covered for the community health insurance members. Schemes must not automatically accept the fee-for-service (that is when the provider charges for every single act of treatment separately). This is known to be a very expensive and highly inefficient method of payment because it most often leads to supply side moral hazards whereby providers induce demand for their services. If possible the scheme should negotiate for a better system of paying providers. There are much better and more efficient methods of provider payment that avoid the dangers of fee-for-service and encourage the provider to improve quality and reduce costs e.g. capitation, fixed payment per person and global budget.

In most cases, MHOs are usually more than a financing mechanism. They are a system of social solidarity, grassroots self-help groups, and thus make a positive contribution to social life. Also, they act as intermediate bodies between the state and the citizens in order to help in the development of democracy (Schneider *et al.*, 2001). MHOs thus, have the potential to be a tool of empowerment for ordinary people and to contribute to the building of civic society, which most notably, differentiates MHOs from private insurance schemes.

Some governments have seen MHOs as one of the mechanisms for raising revenues from communities to run health services in an era of dwindling budget allocations to the sector (Moens, 1990). However, they also usually acknowledge that MHOs can play a crucial role in extending access to health care to poorer communities. In Mali, Senegal, Zaire and Burkina Faso, governments have taken notice of MHOs and are trying to help their development through legislation and other forms of assistance (Kelley and Atim, 2000).

Despite their popularity in African countries in recent times, there is very limited understanding of community-based health insurance schemes and how they interact with other elements of health care financing system. Analysts anticipate an evolutionary path for community-based health insurance schemes whereby the schemes gradually become more regimented and integrated into a more comprehensive structure of social safety net (Carrin *et al.*, 1999; Arhin-Tenkorang, 2001). Bennett (2004) provides a conceptual framework for developing and extending community-based health insurance schemes. The framework shows the effects that such schemes can have on non-members; government subsidies to both the schemes and health care providers; and issues raised by the existence of multiple risk-pooling schemes in a particular context. It aims to help identify the key policy issues concerning community-based health insurance as means of financing health care.

Ghana's Health Insurance Situation

In Ghana, a National Health Insurance scheme is yet to be fully implemented. There have been several calls for the introduction of health insurance schemes in the country since the 1970s. The government even commissioned a study in the Eastern Region to look into how best to establish such a scheme so as to capture the bulk of the population. A pilot scheme was to be implemented in the Eastern region but the scheme never started. As far as is known, only an educational campaign to sensitise the general public was launched at Koforidua (the regional capital) in 1996. Recently, there have been reports in the Ghanaian media that about 42 community-based social health insurance schemes have been established as a prelude to the establishment of a national health insurance. A Bill has also been introduced in the Ghanaian Parliament for the legislative backing for the national health insurance scheme. However, as far

as the author is aware, some members of parliaments have asked for suspension of the debate of the bill in parliament for further nation-wide consultations to seek the views of all stakeholders in the scheme. The researcher requested for a copy of the legislative instrument but the clerk of parliament could not make good on his promise to send me a copy.

Meanwhile, some private health insurance schemes have been implemented in Ghana. Examples of these private insurance schemes are the Metropolitan Health Insurance Scheme (METCARE) provided by Metropolitan Insurance Company, and Provident Xpress Medical Insurance Scheme provided by the Provident Insurance Company.

The only well-documented experience with social health insurance in Ghana is a community health insurance scheme introduced at the St. Theresa's hospital in the Nkoranza district of Brong-Ahafo region in 1992 to cover the cost of inpatient care (WHO, 1995). The benefits covered under the scheme are full costs of admission in the medical, surgical and maternity wards. Admissions for normal deliveries are excluded. 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 members of a family must register. The premia are calculated per person and so vary with the size of the family. Registration is renewable annually, during the last two months of the year only.

The scheme is administered in a three-tier structure:

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 (Ministry of Health and Non-Governmental Organisations).
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.

A District Insurance Coordinator, who is a salaried officer and a member of IMT and the Insurance Advisory Board, is responsible for coordinating registration at the district level, evaluating record sheets and accounts, and coordinating refunds, zonal coordinators and field workers.

In an assessment of this scheme, the W.H.O (1995) stated that "the scheme has two main objectives:

(i) to reduce financial losses being incurred by the hospital especially on inpatients most of who could not pay their bills;

(ii) to improve people's economic access to curative care in the hospital.

The Nkoranza District Health Insurance Scheme has enabled many poor customers to receive major health care at token fees. It has also improved the cash inflow and operational efficiency of the only hospital in the district. The community health insurance scheme, which operates through risk sharing and spreading of payments over time, has been "a fairly successful and economically pragmatic approach to health care financing to extremely vulnerable groups" (WHO, 1995). Hence, it would be expected that such a scheme could be replicated in other districts of the country.

General comments on health insurance

Health insurance schemes have been proposed as a way to mobilise additional funds for health care and at the same time improve access of the poor in society. The idea is to make those who can afford insurance premia pay for private or social insurance and then policy makers use the freed tax-based government revenue to improve the health services for the population groups that cannot afford the premia or that are not covered by the insurance schemes.

It is common knowledge that setting up health insurance schemes as well as the running of such schemes are characterised by large administrative costs, which can be quite substantial. There will be the need for an administrative set-up which can manage contract negotiations with providers, monitoring of contracts, consumer behaviour, assessment of cost of benefit packages and probabilities of service needs etc. (Carrin *et al.*, 1999). These administrative costs have to be financed. The government may also need to increase its administration related to the regulation and

monitoring of the private insurance market. Also, government needs to clarify the relationship between health insurance schemes and other actors in the health sector in order to increase the chance that such schemes will become major sources of health finance (Bloom *et al.*, 1999; Bennett, 2004). Furthermore, it should be noted that a profit-making insurer does not have a particular interest in containing health care costs or promoting efficient health care consumption from a societal perspective. As long as a sufficient number of people are willing to pay the increased premia the activities of profit-making insurers will continue. The result may well be increasing health care expenditures[1] but only for a small group of the population resulting in inequitable distribution of health resources. Hence, government may need to contribute more funds to health insurance schemes via general tax revenue in order to stimulate the redistribution of health cover, which might be weak between rich and poor (Bloom *et al.*, 1999).

With regard to access to health care a lot depends on how the insurance scheme is designed because if care is not taken, one could easily end up in a situation in which access for the uninsured group is worsened. This is for example likely to happen when there are an under-supply of qualified staff (as is the case in Ghana due to mass exodus of health practitioners from the country to seek greener pastures abroad[2] (Martineau *et al.*, 2004)) and the demand for staff to service the covered groups increases.

Health insurance schemes most often focus on groups in formal employment since this is the simplest group administratively, and in terms of premium collection. It is, however, also a group with a relatively good health status, which means that the additional resources mobilised may be used for services demanded by these groups, which from a societal point of view may not be the most cost-effective.

The resources available for health care may increase somewhat under a health insurance system, but as with direct user payments not all persons will be able to pay the premia. Hence, the revenue generation potential of the scheme will be restricted by the subsidies that will have to be given by governments to cater for that group.

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[1] As has happened in the United States (Blumenthal, 2001)

[2] www.irinnews.org/S_report.asp?ReportID=36970&SelectRegion=West_Africa

Besides, the costs of designing an insurance system may increase due to increased administration costs, lack of incentives for cost containment, difficulty of finding the right balance between price and quality of care, and general problems of cream-skimming[3], adverse selection and moral hazard (caused by information asymmetries) (Carrin *et al.*, 1999).

Finally, health insurance is most easily introduced for higher-income formal sector employees who live in urban areas. There are often marked inequalities in the services provided to insured and uninsured populations. This suggests the need to explore empirically how income levels and occupation types influence people's willingness to contribute into a national health insurance scheme and how much they are willing to pay as monthly health insurance premia.

Although they would potentially increase the resources for health care delivery, neither national health insurance nor large-scale private insurance schemes have been implemented in Ghana to date. An experiment with a small scale insurance scheme was taking place in one community (Nkoranza Community Scheme in Brong Ahafo region) but with regard to rural risk-sharing schemes for people outside formal employment the potential for revenue-raising is likely to be very encouraging if well-implemented and adapted to suit local economic environment.

4.3 Summary

This chapter has discussed health insurance as a method of financing health care delivery. The chapter looked at types of health insurance, advantages and disadvantages of each type, conditions conducive for successful implementation of health insurance and empirical review of examples of each type of health insurance, from both developed and developing countries. It was realised that community based health insurance schemes are a promising and innovative attempt to improve access to health care, health outcomes and social protection in the case of illness in developing/low income countries. Given the unique ethnic, lingual and cultural diversity in Ghana vis-à-vis the socio-economic conditions in the country, the

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[3] This is the process of drawing low-risk individuals into low-premium insurance schemes

community based health insurance approach may be quite valuable because it allows adaptation to local conditions. Hence, this dissertation seeks to reiterate the recommendation made by Bennett *et al* (1998) that governments, especially those in developing countries like Ghana, should recognise that community based health insurance schemes can play important roles in strengthening policy objectives of increasing access to health care in an equitable manner because well-designed and well-operated health insurance schemes can increase the purchasing power of the poor, particularly in contexts where relatively large sums of money are already spent as out-of-pocket payments in health facilities. More importantly, the factors that caused the social/community health insurance schemes to either succeed or fail in Zaire, Burundi, Guinea Bissau and other developing countries were identified and will be of great help in Ghana's quest to find efficient and sustainable means of financing health care. These factors will be taken into consideration when recommendations are made in chapter 16 (see section 16.5) for the establishment of National Health Insurance Schemes based on community health insurance.

As noted earlier in the introduction to this chapter, health insurance is an integral part of cost recovery system in health care (Mwabu *et al.*, 1998). The other component of cost recovery is direct user payment at the point of use, which is discussed in the next chapter.

CHAPTER FIVE
USER FEES AS A MEANS OF FINANCING HEALTH CARE IN GHANA

5.0 Introduction

This chapter discusses direct user payments at the point of use (user charges/fees) as a means of financing health care delivery in Ghana. The chapter contains issues on the theory of user charges, potential applications of the theory of user charges, a model for assessing the effects of user charges given different demand conditions, issues involved in the implementation of user charges, a review of empirical literature on health care user fees, mostly in developing countries and the case for and against the use of user charges as a means of financing health care. The aim is to bring out the beneficial and regressive effects of user charges as a means of financing health care so as to inform attempts to find efficient and sustainable means of financing health care in Ghana.

5.1 Theory of User Fees

User fees (charges) refer to contributions to costs by individual users in the form of a charge per unit of service consumed, typically in the form of cash and paid at the time of use. Creese (1990) defines it as "shifting the burden of payment onto users of health care in the form of charges at the time of use" and Arhin-Tenkorang (2001) defines it as "the payment of out-of-pocket charges at the time of use of health care". Thus, it is a system whereby anyone who uses any health care delivery facilities is made to pay for the services he/she enjoys at the time of use. This, it is argued, evokes market mechanisms that influence the distribution of health care among potential consumers (Arhin-Tenkorang, 2001). User charges therefore go beyond concretising the idea that it is desirable for consumers, regardless of their income, to make contributions to the financing of health care in addition to those they make through taxes (Arhin-Tenkorang, 2001).

User charge as a system of financing publicly provided services has its origin in the benefit principle of taxation and is seen as an alternative to general taxation as a means of financing public spending (Hardwick *et al.*, 1990).

Supporters of user charges maintain that, according to the benefit principle, it is inequitable to raise taxes to finance social services that benefit identifiable groups (World Bank, 1987; Hardwick *et al.*, 1990). These social services may include health services, water supply, civic amenities, education, sewerage disposal, social work and council housing.

The case for user financing of health care has been based on two broad types of arguments: that user financing makes possible

(i) expansion of the resource base for the service, and

(ii) a more efficient and effective use of the available resources.

Thus, the supporters of user charges claim that user financing will lead to an expansion of the coverage and/or an improvement in the quality of basic health services. It will also generate allocative efficiency and create a sense of 'ownership', which will lead to greater responsibility on the part of the users and more accountability on the part of the providers of services. All of these factors, it has been argued, will ultimately contribute to better access for all, and hence to greater equity (World Bank, 1987). These people argue that user charges will promote efficient and effective resource utilisation because costs will motivate users to avoid excessive use of services (leading to demand-side efficiency) and will create greater accountability on the part of the service providers (leading to supply-side efficiency). The quality and sustainability of service delivery will thus be enhanced. Therefore, technical efficiency, cost efficiency and allocative efficiency can be achieved under a user charge system.

The supporters of user charges go on to argue that governments, local authorities and other public bodies are encouraged to oversupply 'high cost' social services at almost zero price (de Ferranti, 1985; World Bank, 1987; Griffin, 1987; Hardwick *et al.*, 1990). This is because in the absence of a price, there is no effective constraint on demand so that queuing, delays, staff shortages and a general deterioration in the standards of these facilities may result. Considering the National Health Service (NHS) in the United Kingdom as an example, it is argued that tax-financed medicine is less efficient than market-financed medicine since only market-financed medicine reflects the true choices of consumers (Hardwick, *et al.*, 1990). Thus, tax-financed

medicine may result in the over-consumption of particular medical services because the consumer-patient does not take into account the full costs of supply leading to demand side moral hazards.

Thus, the most basic economic argument in favour of fees for services have to do with the notion of efficiency in the use of scarce resources (Akin, 1986). The argument is that no one should consume goods or services unless their value to them at least equals the value of the most useful alternative goods and services that could be produced with the resources used. When goods and services are priced at the cost of all resources used in providing them, such efficiency in resource allocation will be achieved. A direct result of this line of argument is that health services provided for "free" (that is, zero-priced) will be used not only by those for whom they are of significant value but also by those for whom the value of the service is only slightly greater than or equal to, zero. In zero price cases, services that are very expensive to provide will be used by people who value them very little. Meanwhile the resources used to produce these not-highly-valued services will be unavailable for producing other services, which are highly valued. Hence, fees are suggested as the means to differentiate among those who truly "need" the service and those who do not. It must be pointed out that these arguments tend to forget that individuals incur other, usually non-monetary costs in terms of time and lost income, when seeking health care and that those who usually need health care are the poor who find it difficult to pay the fees.

Also, the assumption underlying this economic argument is that those who have income are those who "should" have income – in other words, that the amounts of income accruing to each person are socially correct. The argument continues that if the income distribution is incorrect, it should be corrected directly by grants to the needy, rather than by interfering with the pricing system's efficiency producing characteristics. Knowledge from microeconomics on income redistribution show that an increase in disposable income is a better policy than a distorted relative price of health care, if one wishes to help lower income groups, because it increases their welfare. That is by giving lower income people more money, they are able to buy goods and services that they need most (that is, they are able to use their consumer sovereignty), which may include health care. However, if one feels that the

externalities or merit goods argument is valid[1], one may not want the low-income consumer to choose combinations of health care and other goods which lead him to higher utility but lower than needed health care consumption. In this case, the restricted options offered by free health care provision may be a better option.

Thus far, the argument usually put forward by the proponents of user fees in the public health sector is that charges can be used to rationalise the use of care, mobilise local additional sources of revenue within the health sector, encourage community participation, and as such make the delivery of health care more efficient, equitable and financially sustainable (de Ferranti, 1985; Griffin, 1987; World Bank, 1987). These people argue that a user charge system would disproportionately benefit the poor as the newly raised revenues from fees are used to improve the quality and coverage of services, and as freed government revenues are redirected towards under-funded programmes such as preventive care that are perceived as being more beneficial to the poor.

The main arguments against applying user charges in the fields of health care are (Hardwick *et al.*, 1990):

(a) The demand for these services may become elastic if high charges are imposed. For instance, an individual may find himself in the difficult position of having to choose between his own health and his children's education.

(b) The costs of administering charges may exceed the revenues collected thereby making it uneconomical.

(c) Some medical expenditure is wealth-producing for the economy as a whole, for example, they help to create a healthy labour force and as such should be tax-financed.

(d) Medical expenditure on infectious diseases must be tax-financed because of externalities.

(e) Free medical care may be justified on equity grounds as a means of redistributing income and wealth.

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[1] See section 3.3 for explanation of these arguments.

In Africa, free government health care has usually dominated but initiatives taken since the early 1980s mainly focussed on the introduction or extension of user fees. It has been argued however, that fees may discourage people from using health services because willingness to pay (which is used as the basis of argument by supporters of fees) is not the same as the ability to pay, particularly among the poorest sections of the population in the low-income countries (Gilson, 1991). Further, the effect of poverty on access to health care is even aggravated by seasonal income variations in rural areas, as the striking of illness most often does not necessarily coincide with the availability of cash income (Creese and Bennett, 1997).

It is a known fact that the consumption of health care is, in general, heavily subsidised in almost every country. Although symbolic user charges exist in many Sub-Saharan countries (including Ghana), the major source of financing of public health care has been government and donor funds. According to the WHO, in the year 2000, the general government expenditure on health as a percentage of total expenditure on health in Ghana was 53.5%.[2] User charges are, however, increasingly being used as a means of increasing revenues as well as an incentive mechanism for efficient use of patient driven health services. In 2000, user charges (out-of-pocket payments) formed 46.5% of total expenditure on health in Ghana. There is the need to differentiate between user charges as used in this study, which refers to charges levied on individuals who make use of health facilities, basically government health facilities; and the out-of-pocket payments as defined by the World Health Organisation (WHO). To the WHO, "out-of-pocket spending is the direct outlays of households including gratuities and payments in-kind made to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or to the enhancement of the health status of individuals or population groups. Includes household payments to public services, non-profit institutions or non-governmental organisations, excludes payments made by enterprises which deliver medical and paramedical benefits, mandated by law or not, to their employees" (WHO official website). This explains why the out-of-pocket payments form over 46% of total expenditure in Ghana because they include monies

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[2] Source – http://www3.who.int/whosis/country/indicators.cfm?country=gha

spent at chemist and pharmacy shops, which are mostly not classified as part of user fees raised in government health facilities.

In Ghana the revenues from user fees (as used in the study and for which data is available at the Ministry of Health) are currently very limited. Nevertheless they can turn out to be quite an important contribution at the health centre level. For example, the internally generated funds through user charges often make the difference between a health services centre that functions because drugs and other medical supplies are available and one that does not (Waddington and Enyimayew, 1989, 1990). Despite the low contribution to the overall budget for the health sector, the internally generated funds at health centre level finance a major share of non-wage recurrent costs. Table 5.1 shows the contribution of user charges to health care financing in Ghana for some selected years that figures are available.

Table 5.1 Cost Recovery in Ghana's Health Care and MOH's Recurrent Expenditure (Millions of Cedis)

Year	*Recurrent Expenditure*	*User Charges*	*User Charge as Percentage of Recurrent Expenditure*
1985	3765	194	5.2
1986	6942	528	7.6
1987	6866	851	12.4
1988	9410	967	9.8
1989	15201	1170	7.7
1990	19653	1607	8.2
1991	26229	2049	7.8
1992	34452	2714	7.9
1993	45256	4331	9.6

Source: MOH, 1994

It could be seen from table 5.1 that revenues from user fees in government health facilities form a small percentage of even the recurrent expenditure on health not talking about capital expenditure. Meanwhile, these fees are said to be preventing people from utilising health care due to lack of ability to pay (Waddington and Enyimayew, 1989, 1990).

5.2 Potential Effects of the Application of the User Charge Theory

This section reviews the effects that user charges may theoretically have on the production and consumption of publicly provided health care, which could be compared with the review of the empirical literature on user charges in health care, discussed in section 5.4.

The feasibility and desirability of user fee policies are judged according to the potential for raising revenue, the changes brought about in patterns of utilisation of medical care, and the effects on the welfare of the population, especially the poor (Gertler *et al.*, 1990; Griffin, 1992). User charges have the potential to increase the financial resources of the health sector by shifting part of the cost to users of health care and by freeing resources as frivolous use of services are curtailed. These revenues when directed to improve services that are used by the majority of the population, usually the poor, will tend to increase the welfare of the population.

Griffin (1992) uses the concept of consumer surplus to illustrate the economic issues at the heart of the debate between the argument that user charges for health services will improve welfare and that charges burden the poor and reduce the effectiveness of public programmes. He introduces the concept of consumer surplus[3] as a measure of welfare, based on willingness to pay, to show how changes in price bring about changes in demand and supply, and hence, in welfare. He illustrates the market for health both in and out of equilibrium, arguing that whether user charges are likely to improve or reduce welfare depends on the current state of the market and policies to be implemented. Consumer surplus (i.e. welfare) can be increased by charging poorer patients reduced fees, (that is by practising price discrimination as other authors propose – Gertler *et al*, 1990). If quality improves this will have the effect of shifting the supply curve outwards, thus expanding the scope for raising consumer surplus (welfare). Griffin (1992) states that as a 'prudent working hypothesis' it can be assumed that an increase in price will have some negative effects on those already using government health services, which will be expressed through a reduced probability in seeking care and a smaller quantity purchased. It must be noted that if

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[3] Consumer surplus is a buyer's willingness to pay minus the amount the buyer actually pays.

quality of health services improves as a result of the additional resources gained from fees, it may increase the welfare of those who gain access to the service. The problem with this line of argument though, is what happens to those who are denied access due to the user fees.

The imposition of fees may well put into jeopardy the health care of current users who cannot or will not pay for health care at the government facilities. Economists have argued that public health benefits (positive externalities) from curative health services are limited therefore charges should be applied to these services. However, putting off or delaying treatment because of costs can raise the cost of treatment once it is sought, and if death results after prolonged or recurrent illness the future support costs of a family can be significant. Stanton *et al* (1989) state that the inadequate understanding of the consequences of not seeking treatment may cause households to put off seeking medical attention when it must be paid for, until symptoms become severe; thereby raising treatment costs.

Under a user-charge system of health care, the very poor and females are likely to be unable or unwilling to pay for health care (Stanton *et al.*, 1989).[4] These same people are the principal beneficiaries of free government health services and will be the most affected by imposition of fees. Fees may also be a serious deterrent to proper health-seeking behaviour and could seriously undermine the effectiveness of governments' health care system in improving the nation's health. Hence, it is suggested that anthropologists, health care providers and economists, prior to the institution of user fees, undertake ethnographic analysis in the government health care system and that such measures (user fees) should first be introduced in an experimental format with a rigorous and comprehensive evaluation (Stanton *et al.*, 1989). To the best of my knowledge, there is no record to show that this was done before user charges were introduced in government hospitals in Ghana.

In circumstances where close substitute services like private providers are available at roughly comparative cost and within reasonable distance, the demand for health care

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[4] This was explored in the empirical part of this study to find out whether income and gender influenced individuals' willingness to pay for their health care or willingness to contribute into a national health insurance scheme in Ghana.

in government hospitals will be reduced even for relatively modest user charges (de Ferranti 1985). On the other hand, demand may not be significantly reduced when substitutes are not available except if the level of charges is set much higher. Thus demand for health care is seen to be highly inelastic.

It has been shown that the poor would not necessarily be excluded from receiving health services as a result of user charges (de Ferranti 1985), but the fact remains that unless special provisions are introduced such as exemption mechanisms, the poor might experience relatively greater welfare loss than the rich would. Hence, exemption schemes can be used as solutions to the regressive problems created by fees. However, it must be noted that exemptions may undermine the cost recovery capacity of user charge system (Cross *et al*, 1986; Vogel, 1988; McPake, 1993). Exemption schemes may lead to abuse of the user charge system by those who face the least problems of ability to pay, which may make people sceptical about the formally imposed mechanisms. For example, Waddington and Enyimayew (1989) state that people "...were remarkably unenthusiastic about the idea of widening eligibility for exemption" due to the abuse of the exemption scheme in Ghana.

5.3 A Model for Analysing Effects of User Fees

This section presents the main arguments of a model that can be used to assess the effects of user charges in publicly provided social services like health care and education, on the population. The model presents important insights into how to assess the efficiency and equity impacts of the introduction of user charges in the health sector, hence the decision to review the model in detail in this dissertation.

Birdsall (1987) presents a strategy for analysing the efficiency and equity implications of user charges in the social sectors of poor countries. Her argument is based on a second-best solution to the pricing problem proposed by Thobani (1982, cited by Birdsall), which states that for a given government subsidy, the price or user charge for a service should be raised whenever there is excess demand for that service with the additional revenues being used to expand and improve the quality of the service. However, care must be taken to ensure that the increase in fee does not reduce demand to the point where there is excess supply. Basically, Birdsall's model is a

framework for making demand analysis of the effects of user charges in the social sectors like health.

Looking at how user-charges increase efficiency, Birdsall sets out a simple model of household demand for services both when excess demand is observed and when excess demand is not observed. An increase in price for a service need not lower demand, and may even increase it if the price increase is associated with a change in the nature of the service. For instance, it is argued that if fees are imposed/raised and demand is inelastic, the resulting revenue can be used to improve quality or reduce travel time and costs (by cutting down on distance to service facilities). With quality improvements (or reduction in travel time and costs), demand is likely to increase, which would raise the social benefit (after accounting for increased marginal costs).

The model states that the quantity demanded of a service is a function of income, the prices of the service and all other goods, travel costs (including opportunity costs of travel time), the opportunity cost of work foregone, the quality of the service and the expected returns. The function describing a household j's demand for a service can thus be written as:

$$D_j = D_j(P, Q, K, W_c, Y_j, C_j P_o)$$

where P refers to user charge/fees; Q is the quality of service received; K is distance in kilometres and other factors affecting transport costs to and from the service facilities; W_c is the opportunity cost of work foregone; Y_j is household income; C_j is the expected returns and P_o the prices of other goods.

Birdsall's model helps to analyse the effects of user charges both in the situation when excess demand is observed and when excess demand is not observed.

The Argument Given Excess Demand

If there is excess demand because government could not afford to provide enough of the service at no charge, then an increase in the price charged could permit the government to expand the service and reduce the degree of rationing. For example, if the private demand is very low, even a very small increase in fee could eliminate excess demand because in theory, it is possible to have considerable excess demand at

zero price and a large decline in demand at even a low positive price. In fact, since direct fees may constitute a small proportion of the total costs of health services to individuals (the larger cost being in terms of for example time lost from work, transport cost, etc.), reasonable guesses about the demand can be made on the basis of knowledge of what proportion of total costs a particular fee would represent. In any event, setting of a fee that is appropriate (in the sense of being as close as possible to the equilibrating point) is one of the reasons for doing the kind of demand analysis set out in Birdsall's model.

The Argument When There Is No Excess Demand

Most often, excess demand in the social sectors in developing countries is obvious. For instance, patients queue for several hours to obtain health services. However, there may be situations where there are no indications of excess demand. For instance interest in free vaccination of children, prenatal care and contraceptives use in rural areas or poor neighbourhoods of cities may be low so that there may be an apparent excess supply. Thus even for a service provided free (and in amount below the social optimum), there may be no excess demand and there may even be excess supply. Often it is precisely among the poor that demand appears to be low, suggesting that even a small increase in price would reduce demand to a level even further from some social optimum.

It is true that an increase in price for a given good or service will normally lower demand. However, publicly provided services in sectors like health are virtually never homogeneous goods over time or space. Hence, an increase in price for a service need not lower demand and may well increase it if it is associated with a change in the nature and quality of the service. For a fixed user fee, the demand of one set of households (e.g. urban, compared to rural) could be higher than that of another set, even given they were identical with respect to household income, opportunity costs of work foregone, etc., if they face two different situations with respect to quality of service where they live or the distance to service facilities.

Birdsall concludes therefore that, to achieve a net benefit outcome:

i. the fee elasticity of demand should not be perfectly elastic (if it were, no additional revenue would be raised).

ii. the elasticity of demand with respect to quality/distance should be positive and exceed the (negative) fee elasticity in absolute terms.

iii. any increase in marginal cost associated with the quality improvement or distance reduction should not completely absorb the increase in revenue associated with the fee.

Stated differently, to predict whether a net benefit (improved efficiency) is likely, it is necessary to know the shift in demand with a change in quality or distance, i.e. the elasticity of demand with respect to those factors; the slope of the demand curve, i.e. the elasticity of demand with respect to the fee; and the technical relation which describes the increase in marginal costs associated with a given increase in quality or decrease in distance.

Birdsall presents country evidence from Mali's primary schools to suggest that fees can increase demand through improvements in service quality and/or reduced travelling time/cost, and that a substantial portion of the recurrent costs of services can be recovered.

Equity Implications of User Charges[5]

The equity implications of user charges are also considered by Birdsall using the demand model as a framework to examine the distributional impacts. To the extent that the poor already have access to services of reasonable quality, an increase in fee may reduce their demand.

Analysis of the equity effects of user fees requires knowledge of the elasticities of demand with respect to fees and the other determinants of demand, differentiated for various groups defined in terms of income. Obviously, if the set of elasticities (fees, distance, quality, etc.) were invariant across income, there would be no need to distinguish among income groups, but there is no reason to assume they would be. Similarly, if the marginal costs associated with specific changes in quality or distance were the same regardless of the income group being served, there would be no need to distinguish among income groups; but again, this is unlikely to be the case.

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[5] Will fees exclude the poor or will it be discriminatory to favour the poor?

Considering equity implications of user charges, Birdsall again develops the arguments for both situations when excess demand is observed and when there is no excess demand.

It is concluded that, when excess demand is not observed amongst the poor, fees may be equitable if distance or quality factors restrict demand, and the rich and poor face different regimes of quality or distance. The actual effect of the fee will depend on:

i. the fee elasticity of demand of the rich being sufficiently inelastic to assure increased revenues;
ii. whether the elasticity of demand of the poor with respect to quality/distance is positive and exceeds the negative fee elasticity in absolute terms; and
iii. sufficient fee revenue being raised to finance both the improvement in quality of the service to the poor and service expansion.

Some authors argue that there is a trade-off between the efficiency and equity objectives of user charges (Jimenez, 1986; Gilson, 1991, McPake, 1993b). However, Birdsall has shown through her model that as long as there is excess demand among the poor, an increase in fee charged will not only be efficient, it will also be more equitable, given that the resulting expansion of the service benefits the poor. Moreover, if the cause of lack of (excess) demand among the poor is primarily a factor other than a user fee (e.g. if it is a problem of quality or distance), then an increase in a fee which allows the government to purchase more quality or lower average distance can also be both efficient and equitable.

Another source of complementarities between equity and efficiency goals is that the difference between social and private benefits of the use of health services is often greater among the poor than the rich. This may be because perceived private benefits are lower among the poor because of lack of information[6]; because actual private benefits are lower (due, e.g. to discrimination in labour markets on the basis of ethnic or religious affiliation that happens to be associated with income); because the social benefits of such services are greater among the poor; and because due to imperfect capital markets the poor are less able to finance investments they would otherwise

[6] The "uninformed consumer" is one explanation for lack of demand for preventive health services.

make in health. The result is that rationing of a service that works against the poor is not only inequitable; it is also likely to be inefficient from a social point of view.

Given that there are differences in social gain that depend upon the individuals who benefit from a service, some rationing may be efficient, if it excludes individuals or groups whose consumption of a service below marginal cost entails no social benefits, but assures inclusion of individuals whose consumption does entail social benefits (Birdsall 1987). An example is queuing for health services, which eliminates those who need the subsidised service least. Unfortunately, in the real world, most forms of rationing do not work in this manner; they probably turn to favour those already better off. For instance, in most developing countries including Ghana, hospitals are mostly sited in the urban centres where about 30% of the population live whilst the rural areas lack basic/rudimentary health facilities.

Birdsall (1987) outlines the data requirements for the demand analysis and information needed on costs to serve as a guide to anyone who would like to use the model for demand analysis of the effects of user charges.

5.4 Implementation Issues of User Charges in Health Care Services

The major problem of health care providers in most Sub-Saharan African countries including Ghana is how to generate additional revenue outside government sources to offset cost in running health facilities. Providing free health services to all in these countries can lead to problems with allocative efficiency, internal efficiency of public programmes, and inequity in the distribution of benefits (Horwitz *et al.*, 1988). It has therefore been suggested that fees be charged at government facilities, especially for drugs, curative care and private rooms in hospitals. Obuobi (1985) recommends five alternative systems of financing health care that can be adopted singly or jointly, and all of them advocate some sort of payment by the user. Also, incentives for greater efficiency can be introduced through user fees by charging more for those clients who do not use the appropriate services or referral system, and encouraging health workers to prescribe more carefully (Gilson, 1994). Efficiency may also be improved through essential drugs programmes, controls over the purchase of medical technology, and more effective use of health staff. This section presents issues that have been found to influence the implementation of user charge policies in the health sector.

To capture the benefits of user-fees

i. services should be accessible and of reasonable quality.
ii. freed revenues should be channelled into under-funded programmes providing public benefits such as preventive services (which should remain free of charge), and to increase the number and quality of facilities for the poor.
iii. the poor must be protected (Horwitz *et al.*, 1988).

It has been suggested that the principal purpose of user fees in Sub-Saharan Africa should not be to recover cost but to facilitate redistribution of resources from the hospital sector to primary health care facilities and reduce patients over use or wastage of health system because user charges for full cost recovery would create serious inequalities in health service delivery (Mwabu, 1990; Gilson and Russell, 1994). Experience with user fees in Sub-Saharan Africa has shown that user charges have been able to cover only about six to eight percent (6% - 8%) of the recurrent budget of the health sector in the region (Vogel, 1990; McPake, 1993a). Given the low per capita income in these countries, the cost of providing health care will be too high to be recovered primarily through user charges. However, unless direct payment for health services is related to the actual cost of providing for it, charging of fees cannot make much impact as a source of financing health care (Obuobi, 1985).

Also, if fees are to be substantial enough to cover a significant proportion of hospital costs, then they must be done bearing in mind their effects on health services and users' welfare (Barnum and Kutzin, 1990). From an analysis of studies done in Cote d'Ivoire, Peru, Malaysia, Philippines, Ethiopia, Kenya, Nigeria and Sudan, Barnum and Kutzin found that users are generally not highly responsive to charges. But in terms of quality of service, the introduction of fees will lead to a decline in the demand for services, if quality of service is not perceived to be high. To succeed, user fees should be able to provide correct signals for the direction of health care utilisation as for example to discourage unwarranted use as well as for the efficient use of health sector resources.

Again, it is recommended that user-charge policy be combined with decentralisation of management of the health services (Horwitz *et al.*, 1988). This is because

decentralisation will give local units greater responsibility for planning and budgeting, for collecting fees, and for determining how collected funds will be spent. It is also advocated that revenues from fees should be retained as close as possible to the point at which they are collected. This will improve incentives for collection, accountability and ensure expenditures reflect local needs and foster managerial talent at the community level because the system of fee collection affects the amount and use of revenue collected. However, evidence suggests that some revenues kept at the district levels are not reinvested to improve health care delivery and are more disturbingly, allowed to shrink in non-interest bearing accounts (Waddington and Enyimayew, 1989, 1990 and Nyonator and Kutzin, 1999).

Furthermore, it is known that user fees could deter vulnerable, low-income groups from seeking health care, particularly when service quality is deemed to be poor (Gilson, 1994). However, the poor may be protected from the negative impact of user fees if sufficient revenues are generated to improve local services, and if exemption mechanisms exist. Options for protecting the poor include low or zero fees in local clinics, voucher systems based on the certification of poor households by local community leaders, staff discretion in collecting charges, and means testing.

The negative impacts of user fees can be reduced by:

i. imposing charges that reflect the cost of services, for example, treatment at a clinic being less costly than hospital treatment;
ii. beginning the introduction of fees in the most sophisticated facilities accounting for the greatest expenditure;
iii. introducing full cost fees for services reserved for the wealthy; and
iv. exercising caution in the introduction of charges for health services used by the poor (because increased revenues can be outweighed by administrative costs and problems of identifying those who should be exempted (Bloom, 1991)).

In conclusion, it has been argued by some that user charges for government-provided health services can help solve inefficiency and equity problems because charges increase resources for the system as a whole and allow government resources to be shifted to more cost-effective (preventive) programmes, which will tend to benefit the poor more than the rich by better addressing their health problems. Hence revenues

must be channelled into under-funded non-salary expenditures in order to increase internal efficiency. Also, careful targeting will improve equity.

Therefore health services should be categorised into "preventive" and "curative" and "non-patient related" and "patient-related" services (de Ferranti, 1985) and based on this categorisation charges should not be made for non-patient related services. For these services user-charges are infeasible and should be zero or negative because they:

i. are non-exclusive;
ii. involve mass campaigns where the aim is to reach the entire target group;
iii. have public benefits; and
iv. are merit goods (de Ferranti, 1985).

For patient-related services, charges can be levied because they are feasible since

i. free-riders can be excluded;
ii. there is no metering problem;
iii. in general, collection costs will not be excessive; and
iv. administration will be manageable.

Considering whether users have enough information about their need for health care, it is suggested that:

i. efficiency prices should be charged for first contacts in curative care,
ii. referral services should qualify for below-marginal-cost pricing in some situations; and
iii. preventive services should be exempted from full marginal-cost pricing (de Ferranti, 1985).

In terms of equity, although user fees are regressive when compared to other means of financing services, such as progressive income tax, fees can be used to benefit the poor by extending and improving basic services (Diop *et al.*, 1995). Thus, the net effect of fees depends on how the revenues are used and the poor protected through discriminatory pricing and exemption schemes.

Consequently, when implementing user fees in the health sector, planners should be aware that:

i. different strategies will be appropriate for different types of services,
ii. fees will be higher or lower depending on the objective of the fees.

It is sometimes argued that charges for in-patient services have several implications, which include the fact that

i. they are provided in response to referral from doctors, hence there is no frivolous use;
ii. they may discourage patients from complying with the appropriate treatment;
iii. providers may be encouraged to over-prescribe treatment; and
iv. patients lack knowledge of what is best for them.

For these and other reasons, policies involving itemised charges for diverse kinds of in-patient services should often be avoided. However, a by-pass fee for those not using the referral process or fees for accommodation for visitors could be used as alternative means of raising revenues.

Furthermore, political and cultural factors influence the feasibility and potential sustainability of cost recovery programmes (Blakeney, 1989). Such factors include the stance of potential groups in support or opposition to the programme; public acceptance of cost recovery or commitment to 'free' services; a nation-wide commitment to health; and social cohesion.

Besides, economic and managerial factors are also influential for the success of user charge policies. Economic feasibility depends on local and national economic strength, patients' ability and willingness to pay, ability to balance public health and economic objectives, and exemption policies. Managerial feasibility rests on accountability, commercial orientation, supply management capacity, and human resources capacity.

5.5 Review of empirical literature on user charges in Ghana

Research has been undertaken to assess the effects of the use of user charges in financing health care in Ghana. This section therefore reports the main points of the research conducted in Ghana to examine the effects of user charges in government health facilities stating the methodology used and the main findings.

Waddington and Enyimayew (1989, 1990) used three main methods to collect data for studies conducted in Ghana in the Ashanti-Akim district (in Ashanti Region), and Volta Region to examine the effect of user charges on health care utilisation. These methods are:

i. collection and analysis of, as far as possible, the outpatient utilisation data for all health facilities nine districts of Volta region and Ashanti-Akim district in Ashanti region.

ii. in order to find out more about the administrative practices involved in the collection, banking and spending of revenue, Ministry of Health facilities in each district were visited. Senior staffs were interviewed about fee levels, exemptions, administrative procedures for the collection and safe-keeping of revenue, and the use of revenues.

iii. focus group discussions were conducted and a*d hoc* groups made up of two urban and two rural (one male and one female in each group) were interviewed in order to find out about people's experiences with various forms of health care.

The authors found in the Ashanti-Akim district that after the imposition of user fees in government health facilities, there were noticeable drops in utilisation levels in both rural and urban health units. Whilst the utilisation levels at the urban centres recovered after eighteen months to their previous levels, those at the rural health units never recovered from their drastically declined levels. This signifies that the impact of user charges is felt much more in the rural areas than at the urban centres. Income levels in rural areas are lower than those in urban areas and this explains the differences in the utilisation pattern. This tends to show that it is the poor who suffer most from the imposition of user charges.

These findings were confirmed in the study in the Volta region, which retrospectively monitored the effect of user charges on outpatients' attendance. Here too, Waddington and Enyimayew (1990) noted an immediate and sharp drop in outpatient attendance from 20,800 to 10,500. The decline in utilisation was even more marked if it is borne in mine that the population growth rate was an average of 2.5% per year (World Bank, 1988). The decline in utilisation after the 1985 fee increase was not confined to

Volta and Ashanti Regions. Nationally, outpatient utilisation fell from 4,468,482 in 1984 to 1,607,380 in 1985 and 2,051,501 in 1986 (Dakpallah, 1988 cited by Waddington and Enyimayew). Also, they noted that more males than females stopped using services in both urban and rural areas after the introduction of higher fees, which contrasts with evidence from Bangladesh (see Stanton and Clemens, 1989). There was a massive increase in the proportion of users in the 15 - 44 age groups, which was particularly marked in urban areas. The percentage in all other age groups declined, particularly in the over-45 group. It must be noted that the determinants of utilisation rates are manifold and it would be over-simplistic to attribute all the changes to user charges. The quality of service – and in particular the reliability of drug supplies – is also of great importance. Unfortunately, it is very difficult to measure quality retrospectively.

In discussion with health facility staff, Waddington and Enyimayew observed that many people could not afford the fees but exemptions from charges were rarely made. Some patients were wrongly or over prescribed. Also, the revenues collected, which were intended to be spent on improving services and facilities, were most often not spent at all but left in non-interest bearing accounts.

It is evident from their paper that the primary concern of health care users was the availability of drugs. Often prescriptions could not be fulfilled by the hospital and had to be bought in town or drugs had to be bought at extra cost from health workers selling drugs privately within the government health facilities. While fees were acceptable in principle, the interviewees felt that fees were too high for the poor people. Moreover, inability to pay was an issue for some people and resulted in people not attending health services at all, which may have potential adverse effects on the health of the population at large.

According to Waddington and Enyimayew, the user charge policy did not achieve its objective of raising sufficient revenue to recover 15% of recurrent costs. Also, efficiency did not improve because as utilisation fell, the unit costs for outpatients in the lesser-used health centres were significantly higher than those at hospitals. Also, the reluctance of health workers to spend revenues retained at the health facilities meant that quality did not improve. Again, the rural poor did not benefit from

government efforts to reduce their costs because most charges were for drugs, which (charges) were standardised across all sections of society.

They concluded therefore that though there is pressure on the health ministry to raise revenue through charges, the opportunity cost of the needy groups reducing their utilisation outweighs the benefits of raising more revenue. They recommend therefore, that a more effective policy would be to alter fee schedules to encourage greater utilisation in rural areas and amongst under-5s.

In a study conducted by Nyonator and Kutzin (1999) in the Volta Region of Ghana, they found that there were no incentives for people to use the lower level facilities since fee levels were determined by the individual facilities and there may be no difference between the charges at the hospitals and the health centres. Hospitals therefore had a strong incentive to compete for primary care patients since the facilities depended on user charges and the hospitals were well equipped with more qualified personnel than the health centres. They saw that the efficiency problem had not been realized and addressing the fee structure across types of facilities had not been a priority concern at that time. Also, exemption practices in the health facilities were not clear. Less than 1% of the number of recorded patients was given exemption. They also found that most of the people exempted were health staff. At the regional hospital, only two out of the 41,881 attendants were identified as paupers. Data collected by the researchers revealed that the user fee contributed to about two-thirds of health centre non-salary cost and more that 80% of hospital non-salary cost in public sector facilities in the Volta Region during the period of their study. They further acknowledged that both government and mission health facilities depended on user fees in order to sustain service delivery. With a decrease of 60% of government budgetary allocation for non-salary operating expenses, they recognized the user fees as a means of financial support to the health sector.

They concluded that:

i. fees were generating more revenue than in the earlier period;
ii. the system and management skills for using fee revenues effectively had greatly improved;

iii. revenue-raising through fee collections was dominating other concerns of facility managers and health workers, at the expense of the health and health care needs of the poor.

Agyepong (1999) in her article on reforming health service delivery at district level in Ghana, noted that in the Dangme West district of the Greater Accra Region of Ghana, user fees had been fairly successful in terms of revenue generation, cost recovery and establishment of a revolving drug fund.

Asenso-Okyere, *et al* (1998) examined the impact that the introduction of user charges in the health sector was having on the health-seeking behaviour of patients. They used qualitative research techniques (focus group discussions of cohorts of the population, and in-depth interviews of health workers and selected opinion leaders) to collect data from three districts in three different regions in Ghana.[7] Among other things, their findings indicate that:

i. the cost recovery policy (user charges) has led to an increase in self-medication and other behaviours aimed at cost-saving. According to them, there were indications of delays in seeking treatment among patients, that is, people adopted 'wait-and-see' strategies expecting their illnesses to be self-limiting. They then resorted to self-medication to avoid user charges and transportation costs to and from health care facilities. Where these patients lacked knowledge about appropriate medication, they sought advice from drug store operators as to what to buy for a particular illness. This had led to longer delays in reporting diseases to hospitals and clinics. The implication of these delays is that when the diseases were eventually reported, they may require specialised care, which may be even more expensive. This reinforces the findings by Stanton *et al* (1989) in Bangladesh of user fees leading to delays in seeking health care.

ii. there was a perception of an improvement in the drug supply situation and general health care delivery in government health facilities as a result of the introduction of the user fees. However, they failed to find out how the perceived improvement is influencing the health care seeking behaviour of patients.

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[7] However, they do not explain how they selected the districts neither do they explain how they picked their focus group discussants.

iii. although cost of services appears to preclude access to clinics and hospitals or cause undue delays, traditional beliefs are still an important reason for the choice of traditional medicine by patients in Ghana.

These authors therefore recommend that enhanced training be organised for drug peddlers and drug store operators, especially in rural areas; and that the user fees exemption mechanism be worked out properly and implemented so that the very needy ones are not precluded from seeking health care at hospitals and clinics.

Asamoah-Twum (1994) found that most people did not patronise the public health institutions due to the 'high' user charges, which meant that there had been a decrease in hospital/health care utilisation. The high cost of attending hospital had compelled people to administer drugs on their own. That is, there was an increase in self-medication. She did not however, state how these people came by the drugs they administered on their own. She interviewed patients and health care providers (doctors and nurses) to collect data; and used simple percentages and qualitative techniques for her analysis. According to Asamoah-Twum, "though user charges have sound objectives, ... it is not so beneficial to both the citizens especially those at greatest risk, that is the poor; and the nation as a whole."

5.6 Review of empirical literature on user charges from other countries

Creese (1990) after reviewing experiences with increases in user charges and their effects on the utilisation of health care concluded that "the bulk of the available evidence appears to confirm that whilst user-charges for health care can generate additional income, they also deter the patients at greatest risk, and for whom the most cost-effective interventions (both preventive and curative) are not available". The demand-diversionary effect of charges thus appears to be having important effects because it is not simply 'frivolous' utilisation that is being diverted. "...it seems clear that a trade-off between health status and revenue-generation is being implemented, often unwillingly. Equity in health is thus deteriorating – already measurably, in access to care terms, and probably also in health status differentials between socio-economic groups." Thus, there is evidence of reduction in utilisation as a result of increases in user charges and those affected most are the poor. Hence, an increasing reliance on direct payments is likely to damage overall efficiency and equity, by

rationing access to care according to ability to pay, and making access to care harder for the poorest – and neediest.

However, the welfare losses that result from a fee increase (denied access to some, less utilisation by others) could be a source of welfare transfers, at least in principle. If fee incomes were channelled into improvements in service quality and accessibility, and the needy populations are given priority for the use of these resources, the user-charge system could be a redistributive vehicle, taxing the better off and further subsidising access to care for the indigent (Creese, 1990; Griffin, 1992; Diop *et al.*, 1995).

Thus even though user charges have a potential contribution to improving the financial base of the health sector, they also deter those people whose health care needs are greatest. Carefully discriminating fee system is therefore necessary to ensure that revenue is provided only by those who can afford to pay (that is those who have the ability to pay), and the resulting income used to improve the quality and accessibility of health care targeted at the poor.

After reviewing the economic literature on health care user fees in developing countries, McPake (1993a) concludes that user fees may improve the lot of the majority if the costs of administering the fee collection system can be minimised and the revenue is reinvested in improving the quality of health services, but this improvement comes at the expense of vertical equity.

In another paper, McPake (1993b) concluded that user charge policy in health care is likely to have regressive implications which will not be easy to reverse using exemption policy. She argued that even though many studies have recommended that a policy of price discrimination by facility, geographical area and service is most practical way of trying to counter the regressive effects of user charges, price discrimination poses implementational difficulties and will not be completely effective.

One interpretation of the World Bank's policy paper on user charges is that user charges for health services in developing countries are likely to improve welfare (Akin, 1987). However, Gertler *et al* (1987, 1988a, 1988b – cited by Griffin 1992) have shown through empirical simulations that consumer welfare could fall when charges are imposed. Other commentators are concerned that retreat from tax-financed health services will burden the poor and reduce the effectiveness of public programmes, thereby also reducing social welfare (Abel-Smith, 1987; Pan American Health Organisation, 1988).

Diop *et al* (1995) using quasi-experimental design in Rural Niger, demonstrate that combination of user fees and quality improvements can increase access to quality health care for rural populations in general and the rural poor in particular. They argue that utilisation of public health facilities is more sensitive to time constraints related to accessibility of public health facilities than to financial constraints introduced by the implementation of cost recovery. Thus, the role of geographical access (represented by distance) on utilisation of health services is more important than the role of financial access in determining the level of demand for health care.

Their findings provide strong evidence of important utilisation, spending and equity gains of cost recovery if combined with quality improvement. Utilisation increases that occurred represent the net impact of price and quality changes, with the positive impact of improved quality at the government facilities outweighing the negative effects of the price increase. That is, the positive effects of the quality changes (principally the availability of drugs) were found to cancel out the negative effects of the price rises due to the implementation of cost recovery. It is argued therefore that quality has a stronger influence on utilisation, especially for the poor, than price within a certain range of fee level (like those charged in the Niger pilot tests). Hence, quality improvement through the wider availability of drugs and the introduction of public payments to finance the improvement, lead to a shift in demand from the informal sector to the formal sector.

Also, Diop *et al.*, 1995 provide strong evidence that some form of social financing, prepayment, or other risk-sharing mechanism that can reduce fees at the time of use

and provide more revenue to finance improvements may have advantages over pure fee-for-service (user charges) methods in rural African settings.

On their part, Lucas and Nuwagaba (1999) examine the impact of health care charges, both at public facilities and by private sector providers of health care, on household budgets in some communities in two poor rural districts of Uganda. By means of qualitative fieldwork, they consider people's attitudes to the introduction of user charges at public facilities, the extent to which user charges have influenced health care seeking behaviour and whether attempts by households to find sustainable coping strategies, either individually or through community organisations, have been successful in ensuring adequate health care for all their members.

Among other things, their study surprisingly showed little variation in health care seeking behaviour between rich and poor households, except that the utilisation of hospitals by the latter group was much lower. However, their study made no attempt to consider the quality of treatment. They also argue that reported treatment costs are lower for poorer households, which might indicate that either they are charged less for required treatment (for example, richer households may be prescribed more drugs than they require) or that they receive less or poorer treatment, for example, in the form of partial prescriptions.

According to Lucas *et al* (1999), though there was a residual resentment at the introduction of fees for a service that many believed they had 'already paid for in taxes', the official charges levied at facilities were generally seen as affordable and acceptable if they were associated with improvement in quality. However, there was considerable evidence of a range of routine illicit charges that considerably inflated the cost of care. They state that though there is a long history of such practices in Uganda, and public sector salaries are so low that they are almost inevitable, there was concern that the introduction of user fees was being used to blur the distinction between official and unofficial charges, and justify their imposition.

They state further that the impression gained at facilities in the two districts for their study was that health staffs have considerable autonomy. They (staff) appear to decide on charging practices, credit arrangements, and qualification for payment exemption

and often take on 'trainees' or 'assistants', whose official status is unclear. Record keeping at most facilities does not allow effective monitoring of services or auditing of finances, which could prove a considerable problem if it is intended that at least part of the official fees should be used to improve services.

Mwabu *et al* (1998) provide evidence from Kenya that reinforces a major concern of financing health services through user fees in lower income areas that, fees might prevent a sizeable fraction of the population from seeking health care. The study shows that medical care expenditures rise with income, so that in a situation of fee-for-service, it is often the poor who would not afford medical care. This finding implies a need to exempt the poor from user charges in order to ensure equity in health care. It also implies a need to establish a system for collecting household data for use in updating the exemption criteria as the poverty profile of the population changes over time. Finally, they suggest that user charges on curative services can alter the long-run age structure of the population via spillover effects on preventive services. The limited evidence they reviewed shows that user fees for curative services may raise or reduce demand for preventive health care, such as prenatal and immunisation services, depending on the nature of spillover effects of fees. To the extent that the use of such services affects fertility and mortality rates, the indirect and probably substantial effect of fees on age composition of the population cannot be ruled out.

5.7 The case for and against user charges based on literature evidence

Based on the literature on the use of user charges as a means of financing health care, the cases for and against it can be looked at under three headings, namely, revenue-raising, efficiency-enhancing and equity-enhancing.

a. Revenue raising

It is argued that user charges increase the financial resources of the health sector by shifting part and/or all of the costs of production to users; and also by freeing resources as frivolous use of services are curbed. These revenues are usually retained in the local health facilities allowing for noticeable improvements in quality of services, and also reorientation of government resources away from curative toward preventive and under-funded care. Also, user charges encourage community

participation in decision-making in areas affecting the health-status of the community members. It is argued further that, user charges make the health sector financially more self-sufficient and insulate it from contractions in government budgets. Vogel (1988) has praised the Ghanaian health services for their success in raising revenue through user fees. However, these revenue-raising arguments for user fees are usually countered by the fact that the revenue-raising potential of user charges is severely constrained in practice by factors such as weak administrative and management capacity (Arhin-Tenkorang, 2001), seasonality in the availability of cash, and the absence of credit facilities (McPake *et al.*, 1993; Bennett *et al.*, 1998). Also, the fee revenues are seldom fully retained locally and where they are retained there are few institutional arrangements in place to ensure that these resources are used effectively. There is evidence that retained revenues in facilities in the Volta Region and the Dangbe west district of Ghana were left in non-interest bearing accounts and wasted (Waddington and Enyimayew, 1990; Nyonatoor *et al.*, 1999; Agyapong, 1999). Again, it is argued that the resources generated through user charges may lead to central government substitution away from the health sector thereby pushing for full cost recovery, which could cause more problems for the citizenry, mostly the poor who need health care most. Finally, as happened in Ghana, user charges are usually imposed on the communities with little or no prior consultations, which limit community participation thereby engendering resistance, non-payments and non-adherence by health personnel. Hence, the revenue generating targets are usually not achieved.

b. Efficiency-enhancing

The level of efficiency gains that can be obtained from user charges is determined by the service's public goods characteristics or the level of externality, the initial market characteristics i.e. the quality and quantity of services provided relative to the demand, price elasticities of demand and supply of the service, and the administrative costs of implementing the scheme (Jiminez, 1986). Based on these assumptions, it is argued in the literature that user charges enhance efficiency because they encourage rational utilisation of services among users by limiting the use of services for frivolous reasons, reducing patients' inappropriate use of the referral system and thereby curtailing demand side moral hazards (de Ferranti, 1985; Horwitz *et al.*, 1988). On the supply side, user charges increase the degree of accountability which

service providers have towards community. The opponents of user charges usually counter these arguments because according to them, most frivolous utilisation of health care are curbed by high indirect costs of accessing the services such as travel time, travel costs and lost income (Gilson and Russell, 1994; Gilson, 1991). Also, most patients are not in the position to determine how serious their symptoms are so as to know their medical needs, hence they cannot differentiate between frivolous and necessary medical needs. Meanwhile, user charges do little to curb the frivolous use of health services by the affluent groups because fee levels are usually relatively low for them and as such can afford, suggesting that people who have the ability to pay can frivolously use the health care system at the expense of the poor who really need it. Moreover, in the presence of information asymmetry and incomplete agency relationship between the health care providers and patients, which is one of the unique characteristics of health care as a commodity (Drummond *et al.*, 1982a &b), user charges penalise patients for decisions made by providers over which the patients have little or no discretions. Finally, the efficiency arguments for user charges ignore the uncertainty – both in timing and quantity required in future – associated with consumption of health care (W.H.O, 2000).

c. Equity enhancing

Arguments for the equity-enhancing benefits of user charges are that user charges plus quality improvements make government health facilities more attractive to all income groups as retained revenues and freed government resources are used to improve quality of services and increase health facilities especially those used by the poor (Diop *et al.*, 1995; World Bank, 1987). It is argued that many people are willing and able to pay moderate user charges (that are less likely to impose undue financial burden on their households) for health services that are perceived to be of higher quality. Also, it is argued that it is administratively feasible to formulate and implement effective pricing and fee collection strategy that protects the poor. However, there are considerable informational, administrative, socio-cultural and political constraints that tend to undermine the implementation of an effective exemption scheme in order to gain the equity-enhancing benefits (McPake *et al.*, 1993). It has therefore been suggested that a health equity fund that identifies the poor and pays on their behalf may be an alternative to generally ineffective fee exemption policies (Hardeman *et al.*, 2004) if the equity enhancing effects of user charges are to

be attained. Also, user charges do little to improve the health status of the poor, particularly the rural poor, as long as the existing resource allocation within the health sector continues to favour urban curative services. Furthermore, some households, especially the poor and chronically ill who persist in paying with the greatest difficulty may do so by diverting resources from the purchase of food and other basic necessities or selling off productive assets vital for the future well being of their households. Moreover, it is argued that a willingness to pay for traditional care (which is usually used as the basis of argument by the proponents of user charges) may not indicate a willingness to pay for orthodox western medical care if the traditional and orthodox western medicines are perceived not to be substitutes for all groups of illnesses (McPake *et al.*, 1993, Stanton and Clemens, 1989). Since traditional care is most of the time delivered at the home of the patient in exchange for payment in kind, a willingness to pay for these services may not indicate a willingness and ability to pay for orthodox western care at more distant government health facilities and in cash. Because of these, the equity-enhancing potential of user charges is seldom realised.

5.8 Summary

It is evident from the literature that the issue is not whether fees should be charged – fees are being charged already – but rather how to employ user fees to promote better, more equitable health care and to create a self-sustaining mechanism for financing health care. Among the reasons advanced by the proponents of user fees for health care delivery are: mobilisation of revenue from users to help finance health care expenses; promoting efficiency in health care delivery; fostering equity in health care services; rationalising the referral system; and revitalising the private sector involvement in health care delivery by inducing a shift in demand for health care services from public (government-run) to private health care delivery facilities.

The World Bank (1987) suggests that the revenue raised through user fees would enable the extension of better quality government services to the currently under-served rural (low-income) areas of many developing countries. However, Gilson (1988) questions this argument asking, "if those who most need health care in these areas are unable to afford its price, how can they benefit from such a strategy?" A system of user fees is thus a barrier to access for the less affluent population groups

(Mwabu *et al.*, 1998; Creese, 1990; Abel-Smith, 1987). This problem is recognised in many countries and therefore additional subsidies are often given to financially disadvantaged groups such as children, the elderly, the poor etc. These additional subsidies often amount to full exemptions from user payments, i.e. free care[8], although partial exemptions such as half consultation fees for children as found in Uganda are also found. Also, the poor people are often exempted, at least in principle if not in practice. There is evidence to the effect that exemption schemes are abused by those who can actually afford to pay (McPake, 1993b). The identification of the very poor is a problem since no satisfactory way of undertaking means testing has yet been found. Many different strategies have been chosen from letting community leaders evaluate the ability to pay to letting social workers determine the financial ability of a person or a family. Exemptions are, in reality, seldom given on the grounds of poverty (Creese and Kutzin, 1995).

The potential revenue generation from user fees is limited by the fact that many patients pay substantial unofficial fees and the ability to pay increased user charges on top of this may be small (Lucas *et al.*, 1999). Measures to control illegal charging, for example, through open and transparent fee schedules and information to patients, may be ways to increase the potential government revenue from user charges.

Traditionally, user fees have been viewed as having a negative impact on the utilisation of modern health care facilities; however, there is evidence that people will pay for quality care. Evidence from the literature suggests that when introduction of user fees is accompanied by simultaneous improvements in quality of service, the negative effects of user fees can be offset (Lavy and Germain, 1994; Diop *et al.*, 1995). Vogel (1991) states that using fees to improve the efficiency and the quality of health services can bring about a net social gain. Demand shifts induced by quality improvements are crucial to bring about this gain – that is, the fall in demand due to higher prices must be less than the increase in demand due to the better quality of services (Birdsall, 1987).

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[8] Ghana's policy on user fees theoretically exempt children under 5 years, people aged 70 and above, pregnant women and people with some stated diseases such as e.g. TB. However, in practice, these exemptions are hardly granted. The researcher has a personal experience where he has had to pay for an over 70 year old woman diagnosed with one of the exempted diseases.

It has been argued that if appropriately implemented and efficiently administered, user fees can make health care delivery more equitable, foster private sector development, and promote a self-sustaining financial base for better health care that will benefit even the poor. However, the actual contribution of fees to operating costs rarely reflects these potential for several reasons. Policies mandating these fees tend to be poorly administered, facilities are often not efficient in collecting unpaid bills, patients are unwilling to pay for low quality services, and abuses of exemption schemes are widespread. Thus, user fee policies have a long way to go to realise their potential contribution to cost sharing (Shaw, 1995). Shaw suggests actions that must be taken simultaneously if user fee policies are to jointly maximise the desires and needs of patients seeking health care and the goals of national health care systems.

Finally, the literature on user charges shows that user charges have excluded vulnerable segments of populations in developing countries, including Ghana, from access to basic health care with damaging implications for equity (Waddington and Enyimayew, 1989, 1990; Mwabu *et al.*, 1998). It is known that the success or otherwise of a user charge system depends, to a large extent, on the willingness and ability to pay of the citizenry who make use of the health system. However, evidence of willingness to pay for health care on the part of the poor people, which is widely cited by the World Bank and the other advocates in defence of user charges in government health facilities, has been misinterpreted as evidence of ability to pay, without reference to the costs associated with coping mechanisms adopted in response to health costs (Lucas and Nuwagaba, 1999; Arhin-Tenkorang, 2001). Even though user charges have played significant roles in the financing and delivery of publicly provided health services in many developing countries, including Ghana, out-of-pocket payments (user charges) have been judged as "the most regressive way to pay for health, and the way that most exposes people to catastrophic financial risks" (WHO, 2000). Therefore, there is the need to find alternative means of financing health care that does not require people to pay at the point of use but is efficient and sustainable.

Hence, the empirical section of this study uses the contingent valuation model to find out if Ghanaians are willing to pay for their health care and if so, how much and in what form. Also, because general income levels are low in Ghana and as such a large

percentage of the population will have difficulties in paying for their health care at the point of use, the study finds out if Ghanaians are willing to contribute into a National Health Insurance scheme and if so, how frequently and how much they would be willing to pay.

Having reviewed the main methods of financing health care (chapters 3 to 5), pointing out the strengths and weaknesses of each, the stage is set to explore which method may help to make financing of health care in Ghana more sustainable. Since the empirical section of the study sought to use the contingent valuation model to estimate WTP and willingness to contribute into a national health insurance, the next chapter reviews the theoretical foundations of, and empirical literature on WTP and the CVM so as to put the methodology of the empirical study into perspective.

CHAPTER SIX
THE THEORY OF WILLINGNESS TO PAY and CONTINGENT VALUATION METHOD OF ESTIMATING WILLINGNESS TO PAY

6.0 Introduction

This chapter reviews the theoretical and empirical literature on willingness to pay (WTP) and the methods that can be used to estimate it, including the contingent valuation method (CVM). The content of the chapter include the welfare economics underpinnings of WTP and CVM, the conceptual framework of WTP, the hedonic pricing method, travel time method and the use of CVM to estimate WTP, the biases inherent in the CVM, and brief reviews of empirical applications of the CVM to estimate WTP related mostly to health care commodities in order to justify the use of the CVM for the empirical part of this study.

Before reviewing the theoretical foundations of WTP it must be noted that some authors have argued that WTP is a function of the value placed on a commodity and the individual's ability to pay (ATP) (Gafni and Feder, 1987; Appel et al., 1990; Thompson et al., 1982; 1984; Berwick and Weinstein 1985; Garbacz and Thayer 1983). This sometimes leads to the criticism that WTP accords the rich more power in the allocation of commodities than the poor. However, 'this argument is not straightforward because of the association of people's preferences with ability to pay and the disparities of WTP for given options within categories of ability to pay' (Donaldson, 1999; Olsen and Smith, 2001). That is, there is difference between WTP and ATP. Accepting ATP as a problem in WTP studies leads to important value judgement on the methodology "which may be seen as running counter to economic history in the use of free market as the ideal allocative mechanism" (Smith et al., 1999, p.12). It all depends on whether the current income/wealth distribution is optimal or not because individuals' ATP depends on the level of their disposable incomes. However, as has been observed, "equitable distribution of wealth does not exist in most (if any) places, and does not seem to be the goal of Western societies" (Gafni & Feder, 1987; p.16). There is evidence in literature that even though some people may be willing to pay for certain commodities such as health care, but because their income levels are generally low, they are unable to pay and as such if the markets for such commodities (for example, health care) are left unregulated, these

people will not have effective demand (Donaldson, 1999). Thus, using WTP values unadjusted for income distribution to decide which programmes to pursue will skew resource allocation to preferences expressed by the wealthy (Olsen and Smith, 2001). Hence, it will be erroneous to assume that WTP automatically translates into ATP when considering allocation of non-marketed commodities like health care. One may have to look at the social welfare and equity implications of the policy under consideration.

6.1 The Welfare Economics Underpinnings of WTP and the CVM Estimation of WTP

Welfare economics is the branch of economics that seeks to make judgements about the desirability of undertaking particular policies. It deals with how the world ought or should work. Its purpose is to assess how well the economy works (see section 2.3). Judgement of programmes is usually based on the idea of the Pareto-efficiency criterion, named after the Italian economist Vilfredo Pareto (1909). The criterion states that if a programme or policy change makes at least one person better off without making anyone else worse off, then that programme or policy ought to be undertaken, since it would increase social welfare.

The theoretical basis for the use of WTP to value non-marketed commodities is generally deemed to lie in the Kaldor-Hicks (or potential Pareto improvement) criterion (Kaldor 1939; Hicks, 1939). When the potential Pareto criterion is expressed in WTP language, it states that "if the maximum amount that the gainers would be willing to pay for a change is greater than the minimum amount that the losers would be prepared to accept in compensation, then the change should go ahead whether or not the compensation is paid" (Donaldson 1996).

Thus the potential Pareto improvement criterion is that if WTP for a change or policy is greater than compensation that would be demanded, the change should go ahead or the policy should be undertaken. This is consistent with the principle of economic efficiency, which requires resources to be directed to their highest valued uses (Donaldson, 1996). For this to happen, the benefits forgone due to the change or policy (as valued by the losers) must be minimised and benefits gained (as valued by the gainers) must be maximised. For example, suppose a policy of user charges

improves access to health care for the wealthy but reduces access for the poor. If gains to the wealthy were sufficiently large to be able to compensate the poor, the potential Pareto criterion would deem this policy efficient even if the wealthy do not in fact compensate the poor for their reduced access. Thus, equity and efficiency criteria may conflict. It must be noted that a problem reversal of preferences may arise because hardly, if ever, is it feasible to pay compensation without incurring administrative costs. Moreover, "if payments could be made, losers would have an incentive to overstate their valuation of loss in the belief that more compensation could be extracted" (Donaldson, 1996). Similarly, gainers would have an incentive to understate the value of their gain in order to reduce any payment they may need to pay. Thus, estimation of the true values may be unlikely due to strategic behaviour on the part of the losers and/or gainers.

To make the Pareto criterion operational in measuring welfare change, an appropriate consumer benefit measure is used such that the total benefit accruing to the targeted group by the change or policy can be assessed correctly. The concept of consumer surplus is one such measure usually used (Griffins, 1992). Consumer surplus is defined as the area under the ordinary (Marshallian) demand curve and above the price line. This is derived as the difference between the total utility enjoyed by the consumer and the amount he/she paid for the commodity. Thus, total utility for the consumer is the sum of the amount paid for the commodity and any consumer surplus (Dixon *et al* 1994).

The concept of consumer surplus, as traditionally used by economists, has been shown to have a number of problems that limit its applicability for measuring welfare changes resulting from price or quantity changes (Samuelson, 1947; Silverberg, 1978). These problems are largely due to the fact that the ordinary (Marshallian) demand curve does not hold the level of satisfaction or utility constant, but rather it holds income constant. That is, the Marshallian demand curve tracks the "full price effect" which occurs when the provision of a good changes. Typically, it has been used in most economics textbooks to show how the quantity consumed of a normal good increase when its price falls. However, a practical problem arises in estimating the Marshallian demand curve for non-priced public commodities.

Without the characteristics of private commodities like rivalry and exclusivity of consumption, a commodity cannot be traded on the market and as such the price/consumption data (i.e. revealed preference data) required for estimating the Marshallian demand curve will not be directly observable. To solve this problem we can estimate the Marshallian demand curve through the use of a surrogate market, for instance, by using reduced drug spending as a proxy for the value of price reduction of health care. However, a more fundamental theoretical problem remains in that the presence of real income effects (of price changes) means that consumer surplus itself can be an inaccurate measure of the welfare change resulting from a change in the provision of the commodity (Mitchel and Carson, 1989).

For most public goods, the individual consumer is usually faced with a quantity rather than price constraint because the goods are usually unpriced. Moreover, these goods more often have much higher income elasticities than those associated with many market goods (Bateman and Turner, 1993). The large income effect arising from a change in quantity provision may undermine the consumer surplus measure of welfare change. To move from the ambiguity of consumer surplus to a more theoretically accurate measure of welfare change, there is the need to compensate for the income effect by holding real income constant, thereby moving from the use of Marshallian demand curve to the use of compensated (Hicksian) demand curve – compensating variation (CV) and surplus (CS) or equivalent variation (EV) and surplus (ES) (Mitchell and Carson, 1989).

The Hicksian measures hold utility constant at either the initial level (compensating measures) or at an alternatively specified level (equivalent measures). Also, depending on whether the consumer is free to vary his/her consumption level of the commodity in question or whether he/she is constrained to consume a fixed quantity only, the Hicksian measures can be grouped into either measures of variation or measures of surplus. The Hicksian variation measures are to be used when the consumer is free to vary the quantity of the commodity in question, and the surplus measures are to be used when the consumer is constrained to buy only fixed quantities of the particular commodity (Mitchell and Carson, 1989).

More often, policy-makers focus on the potential consumer benefit from a proposed change using the consumers' current or initial level of utility as the reference point. Moreover, if the proposed change is welfare increasing then the appropriate welfare measure is the compensating surplus. This measure can be interpreted as the consumers' maximum willingness to pay to gain a quantity increase in the provision of the public good (in the case of this Ghanaian study, quality malaria treatment) and still maintain their initial levels of utility (Mitchell and Carson, 1989).

The calculation of benefits using either of the two appropriate Hicksian demand curves requires the actual construction of the demand curves so that the area under the curve, representing the welfare change, could be estimated. In reality, the task of estimating demand functions for public goods is very difficult. The difficulty arises not only from the substantial methodological effort that demand estimation requires, but also from the lack of accurate market data for public goods (Kolstad and Braden, 1991). This leads to the use of the CVM whereby hypothetical markets are created for the non-marketed commodity and individuals are asked to state how much they would be willing to pay for the commodity if the market really existed. The advantage of using the CVM to estimate WTP and for that matter, the demand curve, extends to more than just generating the data needed to construct the demand curve. The valuation process can be conducted from the contingent valuation results without the need to estimate the actual demand curve (Varian 1984).

For a proposed welfare change i.e. a change in provision that increases utility, the compensated surplus measures tells us how much money income the individual should be willing to give up (WTP) to ensure that the change occurs (Bateman and Turner, 1993). In a contingent valuation study, the proposed improvement in the provision of the commodity is presented in a hypothetical market and the individual is asked to express his/her maximum WTP to benefit from the consumption of the commodity whose provision has been improved. We therefore turn to discuss the conceptual framework of WTP and the CVM in the next section.

6.2 Conceptual Framework of WTP and the CVM

Willingness to pay (WTP) as used in this study is defined as the maximum amount individuals are willing to pay for a good or service. People's WTP is important

because consumer responses to prices influence commodity utilisation levels and patterns, and revenues collected therefrom. For instance, the efficiency and equity impacts of prices for health care will be influenced by individual's willingness and ability to pay. WTP is usually used to estimate the benefits/value of non-marketed commodities to be used in cost-benefit analysis. Therefore, WTP offers great potential for policy makers as it provides a single measure of value, which is rooted in economic theory (Mitchell and Carson, 1989). More generally, WTP may be important in helping to judge alternative health care financing schemes.

Although the concept of WTP for publicly funded goods has been around for a long time (Dupuit, 1844 cited by Donaldson 1993) it is only since the 1980's that the technique has been used to value the benefits of health care (Thompson *et al.*, 1982; Garbacz and Thayer 1983; Diener *et al.*, 1998). The following sections review the relevant aspects of WTP and the use of the contingent valuation method to estimate it to put the empirical portion of this dissertation into perspective. Other methods that could have been used to estimate WTP are also reviewed and the reasons why these methods were not chosen for this study explained.

6.2.1 General issues involved in the use of WTP

There are six essential properties of WTP that aid the understanding and the use of WTP values in valuing non-marketed commodities. These are that:

Firstly, WTP can be converted to a change in utility by multiplying the WTP by the marginal utility of income (Johansson, 1995). This means that WTP will always have the same sign as the change in utility as long as the marginal utility of income is positive, which it will be for a non-satiated individual, i.e. an individual who prefers a higher income.

Secondly, the WTP for a total change in the size of a commodity is independent of the order in which the exogenous (independent) variables change. This means that the WTP of different changes in a commodity can be added together to get the total WTP of the total change as long as the WTP of each change is estimated sequentially on the basis of the previous change. For example, if both income levels and health care change and we estimate the WTP for the change in income level first, the additional WTP for the change in health care should be estimated on the basis of the individual

having already paid the WTP for the change in income level. That is, the individual's WTP for the change in health care should be elicited conditional on the individual having stated his/her WTP for the change in income level. Hence, "WTP is usually referred to as a path-independent measure" (Johansson, 1995). However, it must be noted that the WTP of independently assessed changes cannot be added to get the WTP of a combined change.

Also, it is easier to collect data empirically about WTP under conditions of certainty rather than under conditions of uncertainty (Mitchell and Carson, 1989).

Furthermore, WTP for a commodity is sometimes estimated by using market demand curves (Johansson, 1995; Lavy *et al.*, 1993). On ordinary demand curves income instead of utility is held constant, hence the utility of an individual will increase as one moves along the market demand curve towards lower prices (income effects). Because of the income effect, the area under the market demand curve (referred to as consumer surplus) does not give the maximum WTP. However, these estimate a revealed preference or effective demand and exclude people who did not have effective demand at the time of the study. But it is often used as an approximation of WTP, which for small changes may be good approximation.

Moreover, WTP involves complete suppression of distributional considerations (Olsen and Smith, 2001). The social value of a programme is measured through a simple summation of all individuals' expressed preferences assessed in terms of WTP (the premise of 'one dollar one vote'). In theory, as long as WTP depends on ability to pay, those with greater ability to pay will, *ceteris paribus*, be able to express greater WTP (Donaldson, 1999). For instance, if one wealthy individual is willing to pay the same amount for health programme A that a large number of poor individuals are willing to pay for health programme B, the two programmes would be perceived to yield the same social welfare, quite independent of any differences in the aggregated 'health' produced. Thus, the determining factor over the provision of health programme A or B would be the relative income of the two groups. In this case using WTP unadjusted for income will skew resource allocation to the preferences expressed by the wealthy. That is, if WTP results are not used with caution, it may lead to the implementation of programmes that favour the wealthy in society, thereby

creating equity concerns. There is therefore the need to differentiate between WTP and ATP.

Besides, WTP for any given commodity is a function of not only utility (u) but also marginal utility of income (du/dy) (Donaldson, 1996). More formally, for an individual ι, WTP = $f(u_ι, du_ι/dy_ι)$. This implies that an individual's WTP for a commodity will depend on his/her level of income. However, for any individual, at any point in time du/dy is constant. Hence, WTP is useful as an ordinal measure of utility gain for an individual. If WTP is greater for one commodity rather than for another, it can be assumed that utility from the commodity with higher WTP is greater.

6.2.2 Estimating Willingness to Pay

The economic aim of decision making about resource allocation in health care (as it is in any other sector) is to get as close as possible to maximisation of the value of health care benefits to the community, subject to some equity constraints. Therefore, in setting health care priorities, it is important to place monetary values on the benefits (and disbenefits) of changes (increments and/or decrements) in the allocation of resources to different types of health care. Once this is done, the values of such increments and decrements can be compared with their respective resource costs. As costs are almost always expressed in monetary terms, such comparisons become relatively straightforward. Consequently, in the context of priority setting, a monetary measure of benefit like WTP becomes useful, assuming distributional considerations are not important. Also, WTP, and for that matter willingness to contribute into health insurance schemes, can aid the search for sustainable means of financing health care, which was the context for which it was used in this study.

Generically, WTP can be estimated in two ways, namely by using revealed preference as observed in actual choices or expressed (stated) preference as observed in hypothetical choices in surveys. That is, how much people are willing and able to pay for a health care good or service can be assessed in two ways: (a) by observing and modelling past health care utilisation, expenditure and responsiveness to prices

(Gertler and Van der Gaag 1990, Lavy and Quigley 1993); or (b) by asking people directly how much they would be willing to pay for the specified health care service or product. These can be broken down further depending on whether individuals are expected to gain and/or lose from the proposed policy change. The revealed preference method of estimating WTP works well in situations where the commodity concerned is bought and sold on the free market so that data on prices and quantity can be observed and collected for analysis. However, because in most cases health care services are not sold on the free market, data on prices and quantity are hard to come by. Hence, in most health care situations, expressed preference data are used to estimate the WTP. Thus, "despite a predisposition in favour of revealed preference, economists have in recent years shown an increasing willingness to explore the stated preference approach...there is a recognition that the special nature of health and health care results in there being many fewer opportunities to obtain valuations from observed behaviour" (Cairns, 2002).

Mishan (1988) proposed four basic measures of WTP. The first two can be defined as measures of the amount of money required to restore the individual to his/her initial level of utility, given an economic change; that is, measures of compensating variation. If the amount of a commodity (e.g. health care) available to the person falls, it may be necessary to make some minimum compensatory payment to restore that person to his/her initial level of utility. However, if the amount of the commodity available rises, utility is restored to its initial level by taking from the person his/her maximum WTP for the rise.

The other two measures attempt to estimate the value of an equivalent change in a person's utility in the absence of the proposed change, which is the equivalent variation. If the amount of health care available to an individual were to increase or improve, then, in the absence of this proposed change, it must be possible to pay the person a sum of money that would bring an exactly equivalent change in his/her utility. Similarly, in the absence of an unfavourable event, it must be possible to extract from the individual a sum of money which would render his/her level of utility equivalent to what it would have been had the unfavourable event occurred.

As noted by Mitchell and Carson (1986) "the perspective of health care policy, in most cases, is from the current level of utility". This therefore requires estimates of compensating variation, i.e. WTP for improvements or willingness to accept compensation for a worse state of affairs (Donaldson 1993).

Further, Mitchell and Carson (1989) have proposed a property rights approach to measuring WTP. They argue that WTP would be the measure of value for an increase from the *status quo* in the provision of a particular type of health care. However, for a decrease, WTP would also be the measure. The reason for this is that health care is a collective good and individuals cannot trade their right of access to it. The non-transferable nature of the commodity renders willingness to accept compensation irrelevant because people could not sell their access rights in a free market. The only alternative is to ask people about their WTP to maintain and/or improve upon their current level of access. This is a measure of equivalent variation but not compensating variation.

It can be seen that since health care is rarely bought directly on a market, it is difficult to use the revealed preference approach to obtain a direct estimate of the value of health care programmes (Johannesson, 1996). The main disadvantage of such an approach, apart from the estimation problems in revealed preference studies, is that the population that receives the health care programme may differ from the population studied in the revealed preference study (Johannesson, 1986). Therefore, expressed preference techniques (surveys) are identified as a better alternative way of estimating the WTP for health care programmes. The advantage of expressed preference approach is its flexibility, since it can be designed for the specific issue at stake. However, it is not based on actual decisions by individuals and traditionally economists have been very suspicious about using data based on what individuals say that they will do rather than what they actually do. The method of measuring WTP in surveys is usually called the contingent valuation method. The method is called contingent valuation because the respondents are being asked to consider the contingency of a market existing for the commodity being valued.

Before reviewing the contingent valuation method, attention is turned to review other methods that could also be used to estimate WTP such as travel cost and hedonic pricing methods, explaining why they were not used for this study.

6.2.3 The Travel Cost Method

The travel cost method is one of the revealed preference-based methods that can be used to estimate people's willingness to pay (WTP) from their expenditure of money or time to obtain the benefits or avoid the losses of non-marketed commodities. The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a health facility represent the price of access to the facility and as such individual's willingness to pay to use the facility can be estimated based on the number of visits they make at different travel costs (Clawson, 1959; Davis 1963). This is analogous to estimating willingness to pay for a marketed good based on the quantity demanded at different prices. That is, the travel cost method uses the information on the amount of money and time that people spend to visit the location of a particular health facility, e.g. Kwahu Government Hospital, Atibie in the Eastern Region of Ghana. If a consumer wants to use a health facility, they must visit it. The travel cost (in terms of both money and time) to reach the facility is therefore considered as the implicit/surrogate price of the visit. It is believed that changes in total cost should cause the number of visit to the facility to vary. The travel cost method is widely used to estimate the value of recreational sites including public parks and wildlife reserves in developed countries. It is a well-tried technique which is generally accepted and yields plausible results for site-specific resources. However, despite its potential, there is no evidence of the method being used to value health care.

Advantages of Travel Cost Method

The main advantages of the travel cost method are (King and Mazzotta, undated[1])

i. it is analogous to the more conventional empirical techniques used by economists to estimate economic values based on market prices.

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[1] King, DM and Mazzotta, M., *Dollar-based ecosystem valuation methods*. Department of Enviromental and Natural Resource Economics, University of Rhode Island (www.ecosystemvaluation.org)

ii. it is based on actual behaviour rather that stated willingness to pay i.e. it is based on what people actually do but not what they say they would do in a hypothetical situation.
iii. It is relatively inexpensive to apply because on-site surveys provide opportunities for large samples who tend to be interested in participating
iv. Results from travel cost method are relatively easy to interpret and explain.

Limitations of the Travel Cost Method

i. The method assumes that people perceive and respond to changes in travel costs in the same way that they would respond to changes in admission price, and that they would not have incurred travel expenses if the commodity were priced.
ii. The method assumes that individuals take a trip for a single purpose. However, some trips may be multi-purposed. It can be difficult to apportion the travel costs among the various purposes and this may cause the value of the facility to be overestimated.
iii. Defining and measuring the opportunity cost of time, or the value of time spent travelling, can be problematic. Because the time spent in travelling could have been used in other ways, it has opportunity cost, which should be added to the travel cost otherwise the value of the facility would be underestimated. There is however, no consensus on the appropriate measure of the value of time – for instance, should the wage rate or a fraction of the wage rate be used; the value chosen can have a large effect on the benefit estimates (Stiglitz, 1986; Gold *et al.*, 1996; Koopmanschapp *et al.*, 1996; Posnett *et al.*, 1996). Further, if people enjoy the travel itself, then the travel time becomes a benefit, rather than a cost, and the value of the site may thus be overestimated.
iv. Availability of substitute facilities will affect the estimated values. E.g. if two people travel the same distance, they are assumed to have the same value. However, if one person has several substitutes available but travels to a particular facility because it is preferred, this person's value is actually higher and this should be recognised.
v. People who value certain facilities may choose to live nearby. If this is the case, they will have low travel costs, but high values for the facility that are not captured by the travel cost method.

vi. Standard travel cost method provides information about current conditions but not about gains or losses from anticipated changes in the conditions of the facility.

vii. In order to estimate the demand function, there is the need for enough difference between distances travelled to affect travel costs and for differences in travel costs to affect the number of trips made to the facility. Thus, the travel cost method is not suited for facilities near major population centres where many visitations may be from "origin zones" that are quite close to one another.

viii. The travel cost method is limited in its scope of application because it requires user participation. It measures only the benefits to current users, not to society as a whole. It does not account for option or existence values – benefits associated with non-use.

ix. It sometimes ignores users who travel on foot or bicycle.

x. Interviewing visitors on the facility can introduce sampling biases to the analysis.

The travel cost method could not be used for the empirical portion of this study because the objective was to find out whether the respondents were willing to contribute into a national health insurance scheme and also whether they were willing to pay to use any private or public health facility for treatment, not a specific health facility at a given location. The method could have been appropriate if the objective was to find out how the respondents valued a specific health facility like the Kwahu Government Hospital at Atibie in the Eastern Region.

6.2.4 The Hedonic Pricing Method (HPM)

The HPM is a revealed preference method that is used to estimate economic values for the attributes/characteristics of a commodity that affect its market prices. It is most commonly applied to variations in housing prices that reflect the value of local environmental attributes. It is based on the assumption that changes in one or several types of attributes can affect the amount people will be willing to pay for the commodity. That is, people value the characteristics of a commodity or the services it provides, rather than the commodity itself. In terms of health care, HPM could be used to determine the values of certain characteristics of a particular health facility e.g. availability of laboratory equipment, drugs, courteous health personnel etc. and how these affect the prices that can be charged at the facility. The basic premise of the HPM is that the price of a marketed commodity is related to its characteristics, or the

services it provides. Therefore, we can value the individual characteristics of a commodity by looking at how the price people are willing to pay for it changes when the characteristics change. To apply the HPM, information must be collected on a measure or an index of the attribute of interest for the commodity and also a cross-section and/or time series data value of the facility and household characteristics for a well-defined area, for analysis.

Advantages of Hedonic Pricing Method

i. The method's main strength is that it uses observed data based on actual choices not hypothetical choices. This makes it relatively straightforward and uncontroversial to apply.
ii. Data (in the property market) are usually readily available through many sources and can be related to other secondary data sources to obtain descriptive variables for analysis. This makes the method relatively inexpensive to apply.
iii. The method is versatile, and can be adapted to consider several possible interactions between market goods and environmental quality
iv. Estimated values obtained from one study can be used in other policy areas if the facilities have similar demand and supply characteristics.

Limitations of the Hedonic Pricing Method

i. The scope of the benefits from the facility that can be measured is limited to things that are related to the market prices of the facility.
ii. The method captures people's willingness to pay for perceived differences in the commodity's attributes and their direct consequences. Thus, if people are not aware of the linkages between the attributes and benefits to them, then the value will not be reflected in the market prices.
iii. The method assumes that people have the opportunity to select the combination of features they prefer, given their income, which is rarely the case in real life especially in health care where onset of illnesses is uncertain and physicians have to act on behave of patients due to information asymmetry.
iv. Full hedonic studies require a considerable amount of data, which may be difficult and expensive to collect. Also, the studies tend to be time-consuming.

It is clear from this section that despite its potential applications, the HPM would be inappropriate for the empirical portion of this study because the objective was not about estimating the values of the characteristics/attributes of any health facility and how these influence the market prices of health care; and also the data required for using this method are not available.

More importantly, it must be noted that market data for health care can hardly be obtained in Ghana, hence any method that rely heavily on revealed preferences would be difficult to use in estimating willingness to pay in this situation. Thus, relying on the health care expenditure stated in the Ghana Living Standards Survey to estimate willingness to pay (although the data may be relatively more reliable) will be inappropriate because the result will mean that those who did not incur any health care expenditure during the time of the survey were not willing to pay for their health care, which may not be the case because the study did not present health care as a commodity to them and ask them whether they were willing to pay. It only asked if they spent anything on health care during the month preceding the survey. Hence, those who were healthy at the time may be misconstrued as being unwilling to pay for health care. The data from the Living Standards Survey can rather be used to estimate the demand for health care in a revealed preference study. Therefore, this study employs the stated preference method, specifically, the contingent valuation method, through surrogate market to estimate Ghanaians' willingness to pay for their health care and their willingness to contribute into a national health insurance scheme.

6.3 The Contingent Valuation Method (CVM)

The CVM is an example of the hypothetical or direct approach of benefit measurement. The challenge for contingent valuation is to elicit a monetary value for the benefits of a non-marketed programme as if a market for such programme benefits did exist; in essence, to replace the missing market. The contingent valuation method uses survey questions to elicit people's preferences for public goods by finding out what they would be willing to pay for specified improvements in the provision of such public non-marketed goods and services. A typical contingent valuation study attempts to find the maximum amount a commodity is worth to a respondent before he/she would prefer to go without it.

The National Oceanic and Atmospheric Administration (NOAA, 1993) of the United States argued in a report that a "critically important contribution could come from experiments in which state-of-the-art contingent valuation studies are employed in contexts where they can in fact be compared with 'real' behavioural WTP for goods that can actually be bought and sold." Mitchell and Carson (1989) argue that "...contingent valuation represents the most promising approach yet developed for determining the public's WTP for public goods" and "appears as accurate as other available methods; requires the researcher to make fewer assumptions; and is capable of measuring types of benefits that other methods can measure only with difficulty, if at all".

The contingent valuation technique draws upon economic theory and survey research to elicit directly from consumers the values they place upon commodities. It is consistent with the consumer sovereignty assumption of positive economics[2] and is unique among measurement techniques to obtain detailed distributional information. The method "permits the researcher to obtain direct estimates of the correct ex ante measure of welfare changes - option value[3] - and allows great flexibility in the range of benefits and types of goods it can be used to value" (Mitchell and Carson, 1989).

It is assumed in contingent valuation studies that respondents will give considered answers to the questions being asked; that they will not behave strategically; and will not be unduly influenced by irrelevant features of the survey instrument or the process of being interviewed. Thus, the contingent valuation method rests on the assumption that people will behave in the way they said they would if the hypothetical situation they were placed in were to become real. This fact that the contingent valuation method is based on what people say they would do, as opposed to what they are observed to do, is the source of its greatest strengths and weaknesses (Diener *et al.*, 1998; Hanley *et al.*, 2003).

The major challenge in contingent valuation studies is in constructing hypothetical markets that are meaningful to respondents, yet free of bias. For health care

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[2] This is the principle that the consumer is a better judge of what gives him/her utility than anyone else.
[3] "Option value is the premium consumers are willing to pay in order to avoid the risk of supply uncertainties" (Mitchell and Carson, 1989).

contingent valuation studies, a major factor for realism is that the choice task should make sense in the context of the health care system and method of funding with which the respondent is familiar. An unrealistic hypothetical scenario might be a threat to the validity of a contingent valuation study.

Also, in a contingent valuation study, the survey must simultaneously meet the methodological imperatives of survey research and the requirements of economic theory (Mitchell and Carson, 1989). To meet the methodological imperatives requires that the scenario be understandable, meaningful to the respondents, and free from incentives that might bias the results. That is, the description of the commodity being valued has to be understandable - so that the respondents can grasp what they are valuing - and policy relevant – so that the result can be useful to policy makers. To meet the requirements of economic theory, a survey must obtain the correct benefit measures for the commodity in the context of an appropriate hypothetical market setting.

'There is no standard approach to the design of a contingent valuation survey' (Portney1994). The particular form a contingent valuation study takes varies according to the nature of the good being valued, the methodological and theoretical constraints imposed by contingent valuation practice, the population being surveyed, and the researcher's imagination and ingenuity (O'Brien and Gafni, 1996). However, nearly every application of the contingent valuation technique consists of several well-defined elements of which include

(i) first, the researcher must develop a scenario or description of the (hypothetical or real) programme that is being valued.

(ii) second, the survey must contain some mechanism for eliciting value from the respondents.

(iii) thirdly, questions must be asked about the respondents' socio-economic characteristics (for example, age, gender, income, education etc.), their preferences relevant to the commodity being valued, and their use of the commodity. This information, some of which is usually elicited preceding and some following reading of the scenario, is used in regression equations to estimate a valuation function for the good. Successful estimation using

variables which theory identifies as predictive of people's WTP is "partial evidence for reliability and validity" (Mitchell and Carson, 1989).

6.3.1 *Steps involved when using the contingent valuation method*

Applying the contingent valuation method is generally a complicated, lengthy, and expensive process. In order to collect useful data and provide meaningful results, the contingent valuation survey must be properly designed and implemented. The results of contingent valuation surveys are often highly sensitive to what people believe they are being asked to value, as well as the context that is described in the survey. Hence, it is essential for the researcher to clearly define the commodity and the context in which it is being valued, and demonstrate that respondents are actually stating their values for the commodity when they answer the valuation questions. The following are the steps involved in undertaking a contingent valuation study (Mitchell and Carson, 1989; Hanemann, 1994; Portney, 1994; Carson, 2000).

Step 1: The first step is to define the valuation problem. This includes determining exactly what is being valued, and who the relevant population is. In the case of the empirical part of this study, what were being valued were health care delivered in either government or private hospital, and a national health insurance scheme. Because it is aimed at helping to find sustainable means of financing health care delivery in Ghana, the relevant population was all the residents of Ghana during the time of the survey.

Step 2: The second step is to make preliminary decisions about the survey itself including whether it will be conducted by mail, phone or in person, how large the sample size will be, who will be surveyed and other related questions. The answers to these questions usually depend, among other things, on the importance of the valuation issue, the complexity of the question being asked, and the size of the budget. In-person interviews were used for this study due to the fact that the telecommunication and postal networks in Ghana are not well developed and as such any reliance on their use for a study of this nature will pose more problems than the theoretical advantages that either method may have over personal interviews. As for those who were surveyed and the sample size, they are explained in chapter 8.

Step 3: The next step is the actual survey design. This is the most important and difficult part of the process and takes a long time to complete. Here, relevant people are interviewed to obtain ideas of how to provide background information, describe hypothetical scenario and ask the valuation question. As stated in section 8.4, before the survey instrument for the empirical study was constructed, the medical officers in charge of a government and a private hospital were interviewed to find out how much it costs to treat an episode of malaria in their respective hospitals. This informed the researcher as to the range of values that were used for the bidding.

Step 4: The next step is the actual survey implementation. This involves selection of the survey sample. Ideally, the sample should be a randomly selected sample of the relevant population, which gives every subjects/respondent an equal chance of being selected, using standard statistical sampling techniques. This helps to ensure the validity of any inferences made from the results of the study and its generalisability. The sampling technique used for the current study is explained in chapter 8.

Step 5: The final step in a contingent valuation study is to compile, analyse and report the results. The data must be entered and analysed using statistical techniques appropriate for the type of question. How the survey data was analysed for the current study is explained in section 8.5.

6.3.2 *Advantages of the Contingent Valuation Model*

Based on literature on CVM, the main advantages of the technique are (Mitchell and Carson, 1989; Hanemann, 1994; Portney, 1994; Diener *et al.*, 1998; Carson, 2000)

1. The CVM is very flexible in that it can be used to estimate the economic value of virtually anything. However, it is best able to estimate values for commodities that are easily identified and understood by users and that are consumed in discrete units, even if there is no observable behaviour available to deduce values through other means.
2. CVM is the most widely accepted method for estimating total economic value, including non-use values. CVM can estimate use as well as existence values, option values and bequest values.
3. The nature of CVM studies and their results are not difficult to analyse and describe, even though the method requires competent survey analysts to

achieve defensible estimates. The monetary value obtained can be presented as mean or median value per capita or per household or as an aggregate value for the population of the study

4. CVM circumvents the absence of markets for non-marketed commodities like health care by presenting consumers with hypothetical markets in which they have the opportunity to pay for the commodity in question. The hypothetical market may be modelled after either a private goods market or a political market.

Despite the above advantages, the validity and reliability of estimates obtained from CVM studies are questionable due to inherent measurement biases. The next section reviews the biases that may adversely affect the results of a CVM study if care is not taken to either eliminate or minimise them.

6.3.3 Biases in the Contingent Valuation Method

Certain biases may arise in contingent valuation studies. This section presents some of the biases of the contingent valuation method as identified by Foster *et al.*, (1997); Whittington *et al.*, (1990); and Mitchell and Carson (1989). These include strategic bias, compliance bias, starting point bias, range bias, relational bias, importance bias, theoretical misspecification bias, amenity misspecification bias, and context misspecification bias.

Strategic Bias

Strategic bias refers to the situation where individuals may be tempted to understate their true WTP for public commodities, hoping that they may "free ride"[4] while others pay for the provision of the commodity. Alternatively, if the price to be charged for the public good is not tied to an individual's WTP response but the provision of the public good is, the respondent may overstate his/her WTP in order to ensure the provision of the good. In both cases, the bid would be systematically different from the respondent's true WTP. Thus, strategic bias occurs when a respondent gives a WTP amount that differs from his/her true WTP amount in an attempt to influence the provision of the commodity and/or the respondent's level of payment for the

[4] A situation whereby someone receives the benefit of a commodity but avoids paying for it.

commodity. However, the motivation for strategic behaviour will be weak for most contingent valuation respondents because (Mitchell and Carson, 1989):

i. the informational requirements for strategic behaviour are great.
ii. contingent valuation surveys normally convey to respondents the impression that a large number of people are being interviewed. The perceived likelihood that over-pledging by a credible amount will affect the outcome significantly, when it is averaged over a large number of people, is low.
iii. most of the payment vehicles customarily used in contingent valuation studies, such as taxes, higher prices, or higher bills, appear to evoke strong budget constraints and other negative reactions. People do not lightly pledge to increase these kinds of payments, even in hypothetical situations.
iv. under-pledging carries the risk that the public good will not be provided, as contingent valuation surveys normally present as a choice a situation in which provision of the commodity could be uncertain.

Each of these factors is consistent with the rational utility-maximising economic consumer postulated by standard economic theory. The roles of other, extra rational, motivational factors also argue in favour of contingent valuation's ability to hold strategic behaviour to an acceptable level.

Compliance Bias

When the cultural practices of respondents cause them to feel it is inappropriate to respond to questions in some particular way, their WTP may be quite different from their "true" WTP. This is referred to as compliance bias and can cause substantial differences between reported and true WTP values. Compliance bias can be caused by the respondents being influenced by their knowledge of the sponsor of the survey or the interviewer. Sponsor bias occurs when a respondent gives a WTP amount that differs from his/her true WTP amount in an attempt to comply with the presumed expectations of the sponsor. Interviewer bias occurs when a respondent gives a WTP value that differs from his/her true WTP value in an attempt to please or gain status in the eyes of a particular interviewer.

Hypothetical Bias

Another bias that can occur in contingent valuation studies is hypothetical bias. This occurs when a respondent is confronted by a contrived, instead of actual, set of

choices. Since he or she will not have to pay the estimated value, the respondent may treat the survey casually and provide ill-considered answers. If a contingent valuation study is not well designed, it is easy for the interviewer to ask a question that he or she thinks is clear but the respondent may interpret it differently than was intended. In some cases, respondents may interpret the hypothetical offer of a specific commodity to be indicative of an offer for a broader set of similar commodities. For instance, if a respondent was asked for his or her WTP for quality malaria treatment from a specific health care provider (say a government hospital) he or she might misinterpret this to mean WTP to pay for health care generally. In this case, his or her answer to the WTP questions would not reveal the value sought by the researcher. This situation is referred to as "embedding problem" because the value of the commodity the researcher is seeking is embedded in the value of the more encompassing set of commodities valued by the respondent (OECD, 1994).

Starting Point Bias

Starting point bias occurs when the method for eliciting WTP values and/or the payment vehicle directly or indirectly introduce a potential WTP amount that influences the WTP amount given by a respondent. Thus, it occurs if respondents are influenced by the amount used to start the bidding and think that the amount represents the value of the commodity being valued so that the final WTP amounts given by respondents cluster around the starting bid.

Range Bias

Range bias occurs when the method used to elicit the WTP values (e.g. payment scales, bidding, etc.) presents a range of potential WTP amounts that influence a respondent's stated WTP value (Whynes *et al.*, 2004).

Relational Bias

Relational bias occurs when the description of the commodity presents information about its relationship to other commodities that influences a respondent's WTP value. For instance when respondents are asked about the amount they would be willing to contribute as their monthly health insurance premium after they had responded to a

willingness to pay to use hospital facilities in the same survey, they are likely to relate the two questions being responding to the insurance premium. This could cause their stated WTP to differ from their true WTP value.

Importance Bias

Importance bias occurs when the act of being interviewed or some feature of the survey instrument suggests to the respondent that some levels of the commodity have value.

Specification Biases

There are different types of this type of bias among which are

i. theoretical mis-specification bias, which occurs when the scenario given in the survey instrument is incorrect in terms of economic theory or the major policy elements.
ii. amenity mis-specification bias, which occurs when the perceived good being valued by the respondent differs from the one intended by the survey. This can be symbolic, part-whole (geographic, benefit or policy package), metric or probability of provision. Symbolic misspecification bias occurs when a respondent values a symbolic entity instead of what was intended by the researcher. Part-whole mis-specification bias occurs when a respondent values a larger or smaller entity than what was intended by the researcher. Geographic part-whole bias occurs when a respondent values a commodity whose spatial attributes are larger or smaller that the spatial attributes intended by the researcher. Benefit part-whole bias occurs when a respondent includes a broader or narrower range of benefits in valuing the commodity than what was intended by the researcher. Policy package part-whole bias occurs when a respondent values a broader or narrower policy package than what was intended by the researcher.
iii. metric bias occurs when a respondent values a commodity on a different metric scale than what was intended by the researcher. Probability of provision bias occurs when a respondent values a commodity whose probability of provision differs from that intended by the survey instrument.
iv. context misspecification bias occurs when the perceived context of the market for the commodity concerned is different from that intended by the researcher.

This may be due to misconception of the payment vehicle, property right, method of provision, budget constraint, poor elicitation question or the order of questions.

Despite the biases and limitations associated with it, the CVM is a widely applicable and a widely applied monetary evaluation method. It is a promising alternative to methods like the opportunity cost method and proxy good method (van den Berg *et al.*, 2004). It has potential application to a wider range of non-marketed commodities than any other monetary valuation techniques. It is suited for measuring the benefits of both quasi-private and pure public goods (Portney, 1994).

Marketing researchers use methods similar to contingent valuation to trace out demand curves for private goods – particularly new goods for which market data are not available. "The contingent valuation method has a strong theoretical basis with unique advantages in that it provides the only way of directly measuring both WTP and WTA" (Mitchell and Carson, 1989; Hanemann, 1994; van den Berg *et al.*, 2004). Also, it estimates income-compensating welfare measure. Again, the contingent valuation technique can easily be modified to take care of option and existence values, thus providing a wider measure of total value (Portney, 1994).

When surveys are properly planned and executed, most of the problems associated with the contingent valuation method can be eliminated[5]. The contingent valuation technique, when properly executed, offers the best means to estimate the benefits (value) of non-marketed goods.

Having considered the main issues involved in using the contingent valuation method to estimate WTP, attention is now turned to reviewing how the method has been used empirically to determine the WTP for non-marketed commodities concentrating mostly on the empirical literature that is related to health and health care commodities. This aims to justify the use of CVM for the empirical study.

6.3.4 Empirical Literature on the Contingent Valuation Method (CVM)

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[5] For instance, the sampling technique must conform to statistical norms.

Much of the conceptual and empirical development of contingent valuation methods has been done in the areas of transport economics, with a predominant focus on the value of life, and lately in environmental economics, with application to valuation of environmental and health goods such as improved air quality (Mitchell and Carson, 1989; Jones-Lee, 1976; Hanley, *et al.*, 2003). Portney (1994) provides a historical account of how the contingent valuation method developed and its historical applications. This section however, presents the main features of some empirical studies that have used the CVM, stating, if available, the sample sizes used, statistical methods adopted, and the main findings of the studies, all of which are aimed to justify the decision to use malaria as a case study disease for the empirical study, the sample size and the statistical methods used for analyses.

Davis (1963), the originator of the contingent valuation model (Mitchell and Carson, 1989), personally interviewed a sample of 121 hunters and recreationists in a study conducted in the Maine woods that sought to measure the benefits of a particular recreational area. In order to test the "rational structure" of the responses, Davis estimated an equation which explained a large percentage ($R^2 = .59$) of the variance in the WTP amounts as a function of income, length of stay in the area in days, and acquaintance with the locale in years.

After being influenced by Davis, Ridker (1967) used the contingent valuation method in several studies of air pollution benefits. Although the primary thrust of his work was to value household soiling and material damages using the hedonic pricing approach, Ridker recognised that people might value air pollution because of its "psychic costs" and as such he included a couple of WTP questions in two different surveys he conducted in Philadelphia and Syracuse in 1965. In reflecting on his experience with the survey questions, including the WTP questions, Ridker observed that:

"*it now seems evident that a much narrower, deeper, and psychologically sophisticated questionnaire is required to measure and untangle the various determinants of cleaning costs. Such a questionnaire would require a substantially more time and expenditure – perhaps three to four times greater – than went into this essentially exploratory study. Even then the probability of success may not be very*

high, for such a project would raise problems in survey design that have not yet been solved" (Ridker, 1967).

Darling *et al.*, (1993) used the contingent valuation method to evaluate the economic feasibility of the construction of a public sewerage system in a Caribbean country. The study was detailed to develop complementary information on the value of preventing the beaches from becoming unswimmable. People were directly asked what they would be willing to pay for specific improvements provided by the project. The values that people gave were contingent upon the description of the good, its provision and the way it would be paid for.

Griffin *et al.*, (1995) used the technique to assess WTP for improved water services under three water environments – abundant, scarce and saline water – in the southern Indian state of Kerala. The researchers deliberately selected both connected and unconnected households (i.e. households that have water supply at home and those who did not have water supply at home) from each water environment so as to capture any variation in WTP responses between groups. They found that some household features such as use of electricity, number of rooms in a dwelling and ethnic groups of the respondents, significantly explained some of the WTP differentials among families. Also, education was found to be strong enough to affect the probability that a household would choose to connect to a new system through a yard tap.

Whittington *et al.*, (1992) used the contingent valuation method to assess the willingness of households in Kumasi (Ghana) to pay for alternative modes of water supply and sanitary services where the finding indicated a strong preference for ventilated pit latrines. Koomson (1999) used the CVM to investigate how much households in the Cape Coast Municipality of Ghana were willing to pay for improve waste management.

That is, the CVM has been used in environmental economics to estimate the values of recreational facilities (Davis, 1963), air pollution (Ridker, 1967), water supply improvement (Whittington *et al.*, 1992; Griffin *et al.*, 1995), and waste management (Darling *et al.*, 1993; Koomson, 1999).

Health Care WTP studies using CVM

There are some problems with using WTP and the contingent valuation method in the context of health care because patients (or potential patients) may have never, in the past, been able to value health care directly. Also, one of the difficulties in implementing contingent valuation studies in health care has been the diverse nature of outcomes to be valued, with investigators often needing to focus on improvements in health-related quality of life rather than the value of avoided mortality (O'Brien and Gafni, 1996). However, contingent valuation studies are becoming more widespread in health care and have been undertaken in a variety of areas but mostly in the context of cost-benefit analysis (CBA) (Diener *et al.*, 1998).

Thompson (1986) used the technique to determine the willingness-to-pay and accept risks to cure chronic disease, using arthritis management as a case study. 247 subjects with rheumatoid arthritis were asked in an interview the percentage of their family's income they would be willing to pay on a regular basis for a complete cure for arthritis.

Berwick and Weinstein (1985) used the contingent valuation technique to find out the willingness to pay for ultrasound in normal pregnancy. In this study, 62 women receiving prenatal care for normal pregnancies were asked:

i. their WTP for each of seven items of information from ultrasound under four scenarios (namely, doctors gets information and can make decisions based on it; doctors get information and cannot make decisions; patient gets information and can make decisions; and patient gets information and cannot make decisions).
ii. their total WTP for all seven items under each scenario.
iii. their WTP for all seven items when both patient and doctor receive the information and can both act on it.

Also, Donaldson (1990) used the method to determine the willingness to pay for publicly provided care for the elderly. In this study, 119 relatives of elderly people in long-term care were interviewed about how much they thought the UK government should be willing to pay for National Health Service care for the elderly in hospital

and nursing homes; and if they were willing to accept the tax consequences of their answer. The bidding process was used for this study.

Johannesson *et al.*, (1991) used the CVM to determine the willingness to pay for antihypertensive therapy in a pilot study in Sweden. In this study 481 hypertensives attending a health centre were sent questionnaires. One sub-sample was asked to state their WTP for their current treatment. The other sub-sample were asked to accept or reject a bid to increase the user fee for their current treatment with bids varying between 100 Swedish Kroner (SEK) and SEK10,000 in 15 sub-samples (each respondent received just one bid). The response rate was 67 per cent.

Easthaugh (1991) used contingent valuation to elicit the willingness to pay for haemoglobin as a means of valuing the benefits of risk-free blood. Easthaugh asked 20 regional blood bank managers and 50 health service administration students their willingness to pay for haemoglobin solutions to reduce risk of using units of blood in five scenarios, based on a probability of 1/1000 of the respondents being the patient described in each scenario.

Neuman and Johannesson (1994) used the technique in a pilot study to find the willingness to pay for in-vitro fertilisation and Ryan (1997) used it to estimate the WTP for in vitro fertilisation in Scotland. Berger *et al.*, (1987) asked 131 respondents how much their households would be willing to pay for additional symptom-free days for seven common symptoms (e.g. coughing spells) individually and in combination.

Acton (1976) asked 93 people:

i. their willingness to pay for a programme that reduces heart attack mortality and saves a certain number of lives in their community
ii. what they would advise a friend to pay for such a programme
iii. what their own WTP would be, given particular probabilities of heart attack and death.

Appel *et al.*, (1990) asked 100 outpatients, during interview, how much they would be willing to pay to reduce the risk of four minor and four major side effects resulting from the injection of low osmolality contrast media instead of high osmolality

contrast media (contrast media being part of a radiographic diagnostic procedure). Respondents were bid up from zero to $50, $100 and $200. They were asked the questions for an agent reducing each side effect separately, for one reducing all four minor side effects and for one reducing all eight side effects.

Culbertson *et al.*, (1988) asked 317 patients attending six different pharmacy practices their WTP for a fee for drug information provided through a consultation at which leaflets are given. The response rate was 57 per cent. On a pre-test questionnaire, Einarson *et al.*, (1988) asked 27 patients at a community pharmacy their WTP for a serum cholesterol test. The patients actually paid US$10 each for the test later on.

Energy and Resource Consultants (1985) asked 82 asthmatics how much they would be willing to pay in additional taxes each year to reduce their bad asthma days by one half. Payment cards, where respondents are given cards with increasing amounts of money written on them, were used for the study.

Gafni and Feder (1987) interviewed 13 women out of 20 who were living in a kibbutz and were unhappy with the public clinic for contraception and demanded to go to a private clinic, which was more costly. The women were asked their WTP for the private service. To avoid the answers given by respondents being influenced by ability to pay, three women who opted for private service were excluded from the study because they had private sources of income that could affect their ability to pay.

Garbacz and Thayer (1983) interviewed 60 out of 625 elderly people receiving services from a programme offering companionship to elderly people to determine the value of 25 and 75 per cent reductions in the service. The respondents were asked either their WTP to avoid such reductions or their compensation demanded (CD) for the reductions. WTP and CD were represented by reductions from and additions to respondents' present social security benefits. The measure of value was taken to be the midpoint of the WTP-CD range for each service reduction.

Grimes (1988) asked 100 women, who had a negative cervical smear result, their monetary valuation of the smear. Choices of 50p, £1, £2, £5, £10 and £20 were given. The response rate was 84 per cent. In another study, Johannesson (1992) sent

questionnaires to 142 people with high lipid levels attending a health centre asking them about their WTP to have their lipid level reduced to normal. The question consisted of six bids (50, 100, 250, 500, 750 and 1,000 Swedish Krono per month). Respondents were asked to answer yes or no to each bid. The response rate was 66 per cent.

Johannesson *et al.*, (1992) asked 327 patients, who were participating in a study of non-pharmacological treatment of hypertension after four years, their WTP to participate in another such programme if the charge, in excess of their actual payment, was free, 200 Swedish Krono (SEK), SEK400, SEK600 or SEK800. A second question was asked using amounts in SEK100 intervals up to SEK1,000 with a final category of more than SEK1,000. Response rates on the questions were 99 and 97 per cent respectively.

Loehman *et al.*, (1979) and Loehman and De (1982) asked a random sample of 1,800 people their WTP to avoid symptoms of conditions (such as asthma and bronchitis) caused by reduced air quality. Symptoms were described in terms of severity and duration but not in terms of risk of contracting the symptom. Only 404 people responded. In another study, Thompson *et al.*, (1982, 1984) asked 184 subjects with osteoarthritis or rheumatoid arthritis in an interview how much they would be willing to pay to get rid of arthritis and the problems it brings and the percentage of their family's income this would come to. The response rate to the question was only 27 per cent.

Onwujekwe (2001) used the contingent valuation method – binary with follow-up and bidding game techniques – to estimate the WTP for insecticide-treated nets (ITNs) in two rural communities (Orba and Mbano) in Enugu state, Nigeria. A pre-tested interviewer-administered questionnaire was administered to household heads or representatives of households. WTP was elicited in each after presenting the scenario and showing a sample of the ITNs to the respondents. Then, within an interval of 1-2 months, the nets were sold to the respondents to compare the hypothetical and actual WTP values. The WTP technique was able to predict WTP responses correctly in 75% and 85% of cases in Orba and Mbano respectively. Onwujekwe concluded that "...the thrust should be the development of a willingness to pay elicitation method

that best mimics the bargaining process in normal market situations... Such an indigenous technique will help improve the predictive validity of the contingent valuation method".

In a recent study, Onwujekwe and Uzochukwu (2004) used the CVM to determine altruistic WTP to procure insecticide-treated nets (ITNs) for the poor in Nigeria. They used both the binary with follow-up (BWFU) and open-ended (OPED) question formats in order to find out which would yield better estimates of altruistic WTP. They found that the OPED question format elicited better valid estimates of altruistic WTP than BWFU. They concluded that "...malaria control programmes should explore altruistic contributions as a means to increase net coverage".

Donaldson *et al.*, (1995) used the CVM to elicit women's WTP for cystic fibrosis test by one or other method of service delivery (disclosure or non-disclosure) in Aberdeen Maternity Hospital. Their results indicated that use of prompted versus unprompted WTP questions does not influence response rates in contingent valuation study. Whether this result would hold when undertaking surveys of WTP using self-completion forms among the general population is open to question. Donaldson *et al.*, concluded that respondents' degree of knowledge (education) is positively associated with WTP values. This suggests that the more one knows about cystic fibrosis, the more one is willing to pay for screening.

Liu *et al.*, (2000) used the CVM to estimate mothers' WTP to protect themselves and their children from suffering a minor illness – a cold – in Taiwan. WTP was specified as a hedonic function of the duration and severity of the cold and of respondents' socio-economic characteristics. The average mother was willing to pay more to protect her child than herself from suffering a cold. That is, the mothers valued their children's health more than their own.

Viscusi *et al.*, (1987) used the CVM to estimate WTP to prevent the risk of injury associated with household pesticides. They found that WTP to reduce risks to one's children exceeds WTP to reduce risks to one's self, but could not distinguish the effects of parental altruism and injury severity.

Jan *et al.*, (2004) use the CVM to estimate Taiwanese smokers' WTP for low-lung-cancer-risk cigarettes. They used telephone interviews to collect data on WTP using the bidding game method of eliciting WTP values. They used a sample of 328 smokers. The mean WTP for low-lung-cancer-risk cigarettes was estimated using random utility model.

Zethraeus (1998) used the CVM to analyse how much symptomatic women are willing to pay for hormone replacement therapy (HRT) to alleviate menopausal symptoms. The mean WTP for the HRT was estimated using both parametric and non-parametric methods. A questionnaire was administered to 104 women recruited from the Gynaecology department at Sodertalje Hospital in Sweden. The women were asked if they would continue their current HRT if they had to pay specific amounts per month out of their own money. The price was randomly varied between SEK100 and SEK 10,000 in eight different sub-samples, and each individual only received one of these prices. Data was also collected about socio-economic variables like pre-tax household income, education level, age, and household size. The mean WTP per month for HRT was estimated using logistic regression analysis, with the estimated equations being in accordance with economic theory. Price was seen to have a negative relationship with quantity of HRT demanded. Also, the education variable was significant and showed that a higher education level implied an increased WTP for HRT.

Dalmau-Matarrodona (2001) used contingent valuation to investigate how individuals value the costs of shifting from inpatient to day case surgery based on home care services. The study was based on face-to-face interviews with a random sample of 240 patients from the Day Case Surgery Unit of Viladecans Hospital in the region of Catalonia (Spain) – the non-response rate was 5 per cent. The survey instrument combined several types of questions to examine the welfare implications of day case surgery. Maximum likelihood recursion and Co-optimal sequential procedure were used for analysing the data. The study concludes that the WTP technique is potentially useful in evaluating health care programmes, although it is important to note that the criteria used to find an optimal design may be restrictive from an economic point of view.

Dong *et al.*, (2003) have used the contingent valuation method to determine household's willingness to pay for community-based health insurance in Burkina Faso. They used 1178 men and 1236 women from 800 households for the study. The bidding game approach was used to elicit the WTP. Also, Asfaw *et al.*, 2004 use the contingent valuation method to investigate the prospect of community health insurance schemes in mitigating the health shock effects of economic reforms and deregulations on the poor rural households of Ethiopia. They used dichotomous choice with follow-up and bidding game method to obtain data from a sample of 438 households for their analyses.

Van den Berg *et al.*, (2004) used CVM to determine the monetary value of informal care. They used postal surveys to obtain data from 153 informal caregivers and 149 care recipients with rheumatoid arthritis. They used dichotomous choice format of bids (which ranged from 10 to 30 Dutch guilders) with open-ended follow-up question to elicit the willingness to pay/accept. Respondents had the opportunity to fill in a higher or lower bid if their bids were either too low or too high.

Greenberg *et al.*, (2004) have used the contingent valuation method to examine patients' WTP for treatments that may reduce the risk of restenosis and repeat revascularisation after percutaneous coronary intervention (PCI). They used closed-ended questions to ask 1642 patients to indicate their out-of-pocket WTP for improved treatment.

The relevance of the review of the empirical application of the CVM in the health care sector is that it shows that it was appropriate to use malaria as a case study disease (Thompson, 1986; Berwick *et al.*, 1985); to compare how much people were willing to pay to use government and private hospitals for malaria treatment (Gafni *et al.*, 1987); to use interviewer-administered questionnaire for the data collection (Onwujekwe, 2001; Dalmau-Matarrodona, 2001; Portney, 1994; NOAA, 1993); to use a sample size of 487 (van den *Berg et al.*, 2004; Jan *et al.*, 2004); and to use parametric and non-parametric statistical techniques (Zethraeus, 1998; Onwujekwe *et al.*, 2004) for analysing data, in the empirical study reported in this dissertation.

To supplement the WTP results obtained from simple statistical analysis, almost all the studies conduct an accompanying multivariable analysis of the bid values obtained. Although slightly varying econometric models are used, results of the multivariable models employed in these empirical studies are largely consistent with what theory would predict under similar circumstances. Several socio-economic characteristics of households are found capable of explaining variations in WTP values. To analyse the effect of such variables on households' WTP, a proper use of simple statistical techniques as well as behavioural models can help generate accurate predictions.

6.4 Summary

This chapter discussed the welfare economics underpinnings of willingness to pay (WTP), the travel cost method, hedonic pricing method and the contingent valuation method (CVM) of estimating it, with the aim of putting the methodology used for the empirical part of this dissertation into perspective. It touched on the welfare economics underpinnings of WTP and the CVM, the meaning of WTP, its major properties, methods of estimating WTP, (TCM, HPM and CVM), the advantages of each of the methods and their biases/limitations, and the empirical literature on the use of CVM to estimate WTP.

With the above illustrations on the use of contingent valuation method to value non-marketed goods, this dissertation adopted and adapted the literature to use the contingent valuation method to measure the willingness of Ghanaians to pay for health care using malaria as a case study; and also the willingness of Ghanaians to contribute into a National Health Insurance Scheme. That is, the empirical part of this research uses the contingent valuation method to determine people's WTP for government and private hospitals; and WTC into a National Health Insurance Scheme in Ghana. The next chapter gives some background information on the health care sector in Ghana and some basic information about Ghana's economy that show the significance of finding a sustainable method of financing health care delivery in Ghana which could make health care at least affordable, if not free, at the point of use.

CHAPTER SEVEN

BACKGROUND INFORMATION ON GHANA

7.0 Introduction

Since the main aim of this dissertation was to find sustainable means of financing health care delivery in Ghana, and that of the empirical study was to find out whether Ghanaians are willing to pay for their health care and if so, how much, and in what form, this chapter gives some background information about Ghana's economy and its health care system so as to highlight the significance of having an efficient and sustainable method of financing health care in Ghana.

7.1 Ghana: Geography, History and Politics

Ghana is a Sub-Saharan African country centrally located in the West African sub-region with a total land area of about 238,533 square kilometres. It is about 750 km north of the equator on the Gulf of Guinea and between latitudes 4° and 11° 5′ north. Ghana shares borders with the Republic of Burkina Faso to the north, Togo to the east, Cote d'Ivoire on the west and the Atlantic Ocean to the south. Ghana's land area stretches for 672 km north - south and 536 km east - west. The land is relatively flat and the altitude is generally below 500m, with more than half of Ghana being below 200m. Ghana has a tropical climate, characterised most of the year, by moderate temperatures - 21° to 32°C (70° to 90°F) -, constant breeze and sunshine. There are two rainy seasons, from March to July and from September to October, separated by short cool dry season in August and a relatively long dry season from mid October to March. Annual rainfall averages 2030mm but varies greatly throughout the country, with the heaviest rainfall in the western region and lowest in the north.

Until 1957, Ghana was called the Gold Coast, a name given to it by the early Europeans because of the abundant gold traded on the coast of the country. Because of the belief of ties between the people of this country and the ancient empire of Ghana, which was situated in the Sahelian region of Senegal, Mauritania and Mali, after independence from the British on 6th March 1957, the country was given the name Ghana. It became a republic in the British Commonwealth of Nations on 1st July 1960.

Currently, Ghana operates a parliamentary democratic system of government based on multi-parties; and has an elected president as the head of the executive arm of government. The country has a three-tier local government. There are ten administrative regions, representing the first level of administration, which are divided into 110 districts. In line with the country's decentralisation policy, the district represents the basic unit of planning and political administration with each district being presided over by an elected district assembly headed by an appointed District Chief Executive.

7.2 Economy

The primary sector is the dominant sector in Ghana's economy in terms of its contribution to output, employment, revenue and foreign exchange earnings. Agriculture is the main economic activity in Ghana. It accounted for about 50 percent of Ghana's GDP in 1993 (www.ghanaweb.com) and was the main source of income for about 60 percent of the population that year (Ghana, 1994 cited by GSS and MI 1999). In the year 2000, agriculture continued to dominate the economy accounting for 36 percent of total real GDP (Ministry of Finance, 2001). However, tourism is fast becoming a very important foreign exchange earner.

Ghana's economy recorded its worst performance during the decade prior to 1984, but made a dramatic recovery with the institution of the Economic Recovery Programme in 1983. In order to reverse the economic decline in which the country found herself, the government of Ghana, assisted by the World Bank (WB) and International Monetary Fund (IMF), initiated the Economic Recovery Programme (ERP) and Structural Adjustment Programme (SAP) in April 1983. The period after 1983 has seen some growth in the real GDP even though there has not been any significant change in the structure of the economy. Since 1984, the real national income grew at an average annual rate of 5.3 percent compared to a decline of 1.3 percent during the period 1976 to 1983 (Ghana 1994, cited by GSS and MI, 1999). According to the government budget statement for the year 2001, Ghana's GDP for the year 2000 grew at the rate of 3.7 percent which was 0.7 percent lower than the growth performance achieved in 1999. The consequence of the fact that the primary sector, mainly agriculture, is the dominant sector in Ghana, coupled with the fact that agriculture in Ghana is mainly rain-fed, is that income levels of majority of the citizens are likely to

be low and seasonal, which will affect their ability to pay for their health care at the point of needs given the uncertain nature of health care needs. Some people may be forced to sell off their assets or farming equipments or borrow from friends and relatives in times of illness, which may have adverse effects on their productive capacities, plunging them deeper into the poverty net with its concomitant problems.

Poverty in Ghana

Ghana is essentially a poor country with more than one third of the population living below the poverty line. According to the Ghana Statistical Service, there are two distinct poverty lines in Ghana, namely, 'upper' and 'extreme'. Those in the upper poverty line live below US$100 per year and those on extreme poverty line survive on less than US$75 per annum[1]. Per capita income of Ghana in the year 2000 was about US$390.

As at the end of the year 2000, Ghana's total external debt amounted to about US$6,038 million. The present value of the debt to Ghana's total exports was about 175 percent in the year 2000. In liquidity terms, the country's debt service burden was equivalent to 22.3 percent of its export earnings. In fiscal terms, it accounted for almost 90 percent of the total government revenue without divestiture receipts and grants as at the end of 2000 (Bank of Ghana official website www.bog.gov.gh; Appiah-Kubi, 2001). The table 7.1 shows Ghana's Debt Indicators for 1981-2000.

These indicators put Ghana, according to World Bank criteria, into the group of severely indebted low-income countries (SILIC) whose debt burden, if the present value consistently exceeds some critical limits, could be expected to prove unsustainable. In the midst of the rising debt of Ghana and its deteriorating external viability are also a number of socio-economic factors that threaten the manageability of Ghana's debt (Appiah-Kubi, 2001). These factors include the existence of macroeconomic distortions of the economic incentive system that continue to depress gross domestic savings and investments to levels less conducive to rapid and sustainable development.

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[1] That is they earn less than ¢700000 per annum (GSS, 1999)

Table 7.1 Ghana's Debt Indicators

Indicator	1981	1984	1986	1988	1990	1992	1994	1997	1999	2000
Total External Debt ($m)	1714.7	1814.4	2440.3	2862.28	3486.54	3968.37	4922.17	5651.4	5974.2	6038.09
Debt Service/Export Receipts(%)	-	49.4	48.1	68.4	38.5	28	29	36	25.2	22.3
Total Debt/ Export Receipts (%)	-	320.62	332.8	316	380.1	374.4	386.4	337.8	257	246.99
Total Debt/ GDP (%)	-	-	48.8	60.2	65.7	60.65	97.06	82.1	99.5	111
Interest/Export	-	-	13.5	13.2	10.6	9.6	8.08	8.65	5.36	4.35

Source: Adapted from Appiah-Kubi, 2001.

In view of the debt trap in which Ghana finds herself, the government, in the 2001 budget statement, decided that Ghana should take advantage of the World Bank and IMF's debt relief initiative termed Highly Indebted Poor Countries (HIPC) Initiative. The principal objective of the debt initiative for the HIPCs is to bring the country's debt burden to sustainable levels, subject to satisfactory policy performance, so as to ensure that economic adjustment and reform efforts are not put at risk by continued high debt and service burdens. The resources gained from the HIPC debt relief are to be spent in the social sectors such as health, education and poverty alleviation. It is common knowledge that poor people are those who need health care most and in market-based systems of health care delivery, which ration access to care on the basis of people's ability to pay, or at least to acquire health insurance, this group of people are unable to access health care. The effect of poverty on access to health care is even aggravated by the seasonal income variation in rural areas (where majority of Ghanaians live) since the striking of illness does not necessarily coincide with the availability of cash income (Creese and Bennett, 1997).

7.3 Demography

Ghana's population was barely 6 million at the time she gained independence from Britain in March 1957. The first post-independence population census conducted in 1960 recorded the number of people in the country at 6.7 million, showing an inter-censal growth rate of 4.2 percent between 1948 and 1960 (GSS and MI, 1999). By 1970, the population of Ghana had increased to 8.6 million with an annual rate of increase of 2.4 percent. The 1984 population census put the country's population at 12.3 million showing an inter-censal growth rate of 2.6 percent. The 2000 population and household census recorded Ghana's population at 18.9 million thus indicating a more than tripling of the population between 1957 and 2000 or more than doubling of the 1970 population in just about 30 years (GSS, 2000). The increases in population of the country will inevitably put pressure on health care delivery and as such there is the need for improvement in the health care delivery system, which requires investment. Hence, there is the need to have efficient and sustainable means of revenue generation to finance health care delivery.

Ghana's population is relatively young because a substantial proportion of the population is below fifteen years of age. The 1984 population census showed that 45 percent of the population was under the age of 15 with 51 percent aged 15-64. The 2000 population and household census showed a slight drop in the proportion of the population under 15 years to about 42 percent, while those aged 65 and over have increased to about 5 percent (GSS, 2000). This high dependency ratio will adversely affect the government's efforts to raise revenue through taxation and at the same time increase her expenditure in the education and social benefit (pension) sectors and other social infrastructural facilities, thereby reducing the proportion of the government's budget that could be spent on health care. Also, it shows that the few people who are working will have more mouths to feed and this will affect their ability to save towards unforeseen circumstances such as illness. Hence, there may be the need to find alternative means of financing health care that will entail gradual pooling of resources, such as national health insurance scheme based on local mutual health organisations.

Ghana's fertility rate has been declining, even though the current level is still a source of worry to policy makers and planners. Ministry of Health records show that the total fertility rate was 6.4 in 1988, 5.5 in 1993 and 4.6 in 1998.

Ghana's population is predominantly rural. In 1960 only 23 percent of the population lived in urban areas, increasing to 29 percent in 1970, 32 percent in 1984 and 37 percent in 1998 (GSS, 1999). This shows that 63 percent of Ghana's population live in rural communities and are mainly employed in primary (agricultural) production (GSS and MI, 1999). Hence, the income levels of majority of Ghanaians are likely to be low and seasonal, which will affect their ability to pay for their health care at the point of use.

According to the United Nations' Global Human Development Report 2000, Ghana is ranked 129th on the Human Development Index ladder, having moved up five points from 133rd in 1998. The objective of the human development concept is to promote the notion that sustainable human development should, in the final analysis, extend the health, knowledge and incomes of people by expanding their choices and opportunities. With this definition, human development in the Ghanaian context is assessed in terms of the health, education and livelihoods of people. The state of human development showed a considerable drop in the poverty level from 52 percent in 1992 to 40 percent in 1999 but worsened in some areas, notably the savannah belt of Ghana.[2] Still, poverty level of 40% is high and likely to affect people's financial access to health care if health care delivery is based on the user charge system.

7.4 Health Statistics

Evidence from the Ghana Statistical Service (GSS) and Ministry of Health (MoH) indicates that the death rate in Ghana has been steadily declining over the years as a result of a combination of several factors such as improvements in public health, sanitation, and medical facilities, increasing education and modernisation in general. The infant mortality rate (IMR) has dropped from 133 per 1000 in 1957 (MoH, 1996 cited by GSS and MI 1999) to 74 per 1000 in 1988 (MoH, 1998), 66 per 1000 in 1993 and finally to 57 per 1000 in 1998 (GSS, 1998; Centre for Health Information

[2] www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=15607

Management (CHIM)). Life expectancy at birth has also increased from about 45 years in 1960 to 61 years for female and 57 years for male in 1998 (CHIM - MoH).

The pattern of morbidity in Ghana has remained almost unchanged over the years. The general populace have been afflicted largely with the same diseases such as malaria, upper respiratory infections and water borne diseases. Table 7.2 shows the top ten causes of outpatient department morbidity in 1999.

Table 7.2 Top Ten Causes of Outpatient Morbidity in Ghana in 1999.

Disease Type	*Number*	*Percentage of OPD Cases*
Malaria	2,259,027	41.89
Upper Respiratory Infections	431,562	8.00
Diarrhoeal Diseases	266,491	4.94
Skin Diseases	250,728	4.65
Accidents Including Fractures and Burns	205,286	3.81
Pregnancy and Related Complications	193,307	3.58
Acute Eye Infections	131,372	2.44
Intestinal Worms	127,335	2.36
Hypertension	119,666	2.22
Gynaecological Disorders	116,595	2.16

Source: MoH (1999 unpublished)

As can be seen from Table 7.2, the major health problems as seen at the outpatient departments of health institutions in Ghana are all communicable diseases but diseases that can be controlled. Environmental factors, poor nutrition, poverty, inadequate housing and lack of access to potable water in many communities are responsible for most of these diseases. An emerging danger that may have devastating effect on the health of Ghana's population, if not checked, is HIV/AIDS. There are contradicting views as to the prevalence rate of HIV/AIDS in Ghana but the figure is about 3.6%, which is quite high. According to the current Minister of health, Dr Kweku Afriyie, the cost involved in caring for HIV/AIDS patients in Ghana is quite prohibitive and could cause the financial collapse of health facilities in the country. "In some health facilities, HIV/AIDS patients occupy about 20% or more of hospital

beds and the numbers are growing" (Kwaku Afriyie, Minister of Health).[3] This requires additional financial resources, which is sustainable in order to cope with the financial pressure from this emerging threat. It is common knowledge that HIV/AIDS patients cannot work effectively to raise productivity. Hence, an increase in the people infected with the virus will have a devastating effect on the country's production capacity and as such reduce the government revenue, especially through taxes. Also, because HIV/AIDS patients are unable to work to earn any income, they cannot afford to pay for their health care and as such, if health care delivery is based on the current user fee system, these people who are mostly from the labour force, will have to die. Hence, there is the need for the government to find alternative means of financing health care, which is sustainable and spreads the risk of financial burden.

7.5 Ghana's Health Care Sector

A health service represents the provision of curative, palliative and preventive medical treatment as a social service financed mainly from public funds. In 1996, the government of Ghana established the Ghana Health Service (GHS) (through an Act of parliament) which is an executive agency under the control of the Ministry of Health (MoH). The MoH in Ghana is the central government agency on health matters. Its role is to define and monitor health needs, ensure equitable access to health services, set service standards for and regulate all service providers, and to ensure the efficient and effective use of public resources in the health sector (MoH, 1994).

7.6 Health Goals and Objectives

The health goals as expressed in the Ghana government's Vision 2020 development programme (1996) are to:

1. maximise the total amount of healthy lives of Ghanaians and all persons resident in Ghana regardless of age, sex, origin, ethnic group, religion, political beliefs or socio-economic standing;
2. achieve universal access to promotive, preventive and basic curative services to all residents of Ghana;
3. reduce the disparities in health status among rural, peri-urban and urban communities.

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[3] http://www.myjoyonline.com/frontarts.asp?p=3&a=6225

These undoubtedly, require huge investment of financial and other resources and as such the government needs to find efficient and sustainable means of financing health care in the country.

Based on the above goals, the specific health status objectives up to the year 2001[4] were to

- increase life expectancy to 60 years
- reduce the infant mortality rate (IMR) to 50 per thousand live births
- reduce the under five mortality rate from 132 to 100 per thousand live births
- reduce the maternal mortality rate from 214 to 100 per hundred thousand life births
- reduce severe malnutrition in children under five from 8 to 4 percent
- reduce adult mortality by 30 percent from current levels, and
- reduce by 20 percent the proportion of persons aged 60 years and above who have difficulty in performing two or more personal care activities.

To achieve the above objectives, the country needs a well-structured, effective, and efficient health care delivery system in place, which is well financed on sustainable basis.

The main challenges facing the health system in Ghana in pursuit of the above objectives have been identified as: limited access to health care (geographical, financial and physical); inadequate service quality; inadequate funding of health services; inefficient allocation of resources; poor community, intersectoral and private sector linkages (MoH and DFID, 1997), and recently, brain drain of the few health professionals to seek green pastures abroad due to low levels of remuneration (Martineau *et al.*, 2004).

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[4] The researcher is not aware of any documented assessment of the health sector after 2001 to find out the extent to which these objectives were achieved.

7.7 Health Care Delivery in Ghana

The health care delivery system refers to all arrangements (e.g. hospitals, health centres, clinics, all other medical facilities) that exist for the provision of health care. According to the World Bank, only about 65 percent of the Ghanaian population had physical access to modern health care delivery systems in the late 1980s (92 percent in the urban and 45 percent in the rural areas (World Bank, 1990). There are four main groups of health care providers in Ghana namely, the public sector (government); missions/non-governmental organisations (NGOs); private practitioners; and traditional practitioners. Table 7.3 shows the types and ownership of health facilities in Ghana in 1999.

Table 7.3 Health Facilities by Ownership and Type in 1999

Type of Facility	*Government*	*Quasi-Government*	*Mission*	*Private*	*Total*
Teaching Hospital	2	0	0	0	**2**
Regional Hospital	9	0	0	0	**9**
District Hospital	63	0	28	0	**91**
Other Hospitals	10	25	23	117	**175**
Health Centres/Post	491	1	43	12	**547**
Clinics	315	46	85	494	**940**
Maternity Homes	7	0	1	335	**343**
TOTAL	**897**	**72**	**180**	**958**	**2107**

Source: Centre for Health Information Management(CHIM), MoH. (1999, unpublished)

NB: *Hospitals are facilities that provide outpatient and inpatient services; health centres are facilities providing mainly outpatient and preventive services; clinics provide only one or two types of services; quasi-government facilities include the hospitals of the security agencies and universities; and private hospitals in this list include industrial hospitals (MoH, 1994).*

Table 7.4 shows the number of hospital beds in health facilities in Ghana as at the end of the year 2000.

Table 7.4 Number of Beds and Ownership in 2000

Facility Ownership	*Number of Beds*	*Percentage by Ownership*
Government	11,162	60.01
Quasi-Government	1,579	8.49
Mission	5,267	28.31
Private	593	3.19
TOTAL	**18,602**	**100.00**

Source: Centre for Health Information Management (CHIM), MoH. (1999, Unpublished)

Public Sector

The MoH is the largest provider of health care services through a network of hospitals, clinics, health centres and health posts nationally. The MoH endorses decentralisation and recognises the district as the focus for planning and implementing community-based health services for which the District Health Management Team (DHMT) is responsible.

There are four levels of health care systems in the public (government) sector. "Level A" comprises health systems at the community level (including Traditional Birth Attendants (TBAs), Community Health Workers (CHW) and clinics); "Level B" refers to health posts and health centres at the sub-district level; "Level C" refers to hospitals functioning as district referral units, and finally "Level D" consists of the regional and teaching hospitals.

In the government-controlled or the public sector, there are 2 teaching hospitals, namely Korle-Bu in Accra and Okomfo Anokye in Kumasi. There are 9 regional hospitals, 63 district hospitals and 10 other specialised hospitals. There are 491 health centres and health posts; and at the lowest level, there are 315 community clinics and 7 maternity homes.

Non-Governmental Organisations Sector

These are not-for-profit organisations involved in health care delivery. There are about 50 NGOs and religious organisations (missions) involved in health work in Ghana. The Christian Health Association of Ghana (CHAG) and the Catholic Health

Secretariat co-ordinate the activities of a number of mission-run health programmes in the country. The mission sector comprises 51 district and other hospitals; 43 health centres and health posts; one maternity home; and 85 clinics all over the country focusing mostly on the remote areas. There is close collaboration between the government and the mission health services. The government contributes to the budget of the mission health facilities by paying their personnel costs. NGO health providers usually charge user fees to cover their full cost of operation and because most of them operate in the remote rural areas, they have strong ties with the communities so some are able to offer flexible methods of payments whereby patients are treated and payments deferred until later date unlike the 'cash and carry' in public hospitals.

Private Sector

The private orthodox practitioners, who include doctors, midwives and nurses, usually operate their clinics in the urban areas. Their practices are oriented towards curative and obstetric care. Charges cover both profit and full-cost recovery hence users pay for all services they receive at these facilities. Apart from entry into this sector which is restricted through licensing, the market operates freely and user charges vary from facility to facility, depending on such factors as the location, the clientele, the amenities available, goodwill and reputation of the practitioner. Since there is no regulation of charges, user fees at private medical facilities tend to go beyond the means of most ordinary Ghanaians. According to a private medical practitioner based in Accra, at the time of the field survey, it was costing on the average, ¢50,000 to treat an episode of malaria whilst it cost at most ¢7,500 for new patients to be treated for malaria in government health facilities (£1 = ¢10,000). There is no evidence to suggest that the difference in charges between the private and public hospitals is due to better quality services at the private hospital. Even the empirical survey reported in this study shows some evidence that private practitioners refer their serious cases to the government hospitals, which suggests that the government hospitals are of higher quality (see chapter 10).

In recent years, the private health sector in Ghana has grown considerably. Private not-for-profit health care providers, for instance, are estimated to account for 35 percent of health care nationally (MoH, 1997). According to the MoH, although the

ministry pays the salaries of some of the staff of private not-for-profit health providers, linkages between the private and public sectors are weak, leading to duplication and wastage. As can be seen from table 7.3, private sector health facilities in Ghana comprises 117 hospitals, 12 health centres and health posts, 494 clinics and 335 maternity homes.

Traditional Health Care

Traditional health care (THC) is defined by the MoH to refer to "the health practice of the people based on the traditional knowledge-foundation used in the diagnosis, elimination and prevention of physical, mental, social and spiritual imbalances that occur in society" (MoH, 1999). The THC system has been in place and has been relied upon for protection and healing of human life from time immemorial. Many people still believe in it and use it. A conservative estimate by WHO indicates that between 60-80% of the population in developing countries uses this type of health care. In Ghana, the ratio of THC practitioners to population compared to that of orthodox medical practitioners is estimated at 1:400 and 1:12,000 respectively (MoH Memorandum, January 1999; Traditional Medicine Practice Bill cited by MoH 1999).

In Ghana, THC providers include practitioners who use herbs or fetishes or both to cure diseases. They play a major role in the provision of health care in Ghana especially in rural areas. Apart from the unavailability of orthodox facilities in many rural areas, one of the factors, which lead people to use traditional practitioners in Ghana, is the belief that some diseases are caused supernaturally and can only be cured by mystical powers thought to be possessed by the traditional practitioner (Asenso-Okyere, 1995).

Herbal practice is the most common and verifiable THC practice in Ghana though there are several practices available. Herbal practice depends on medicinal plants. Although medicinal plants are available, a few are under threat of extinction in Ghana. However, attempts are being made to cultivate, protect and commercialise some of the medicinal plants. Despite the influence of foreign culture and religion, the cultural base of the traditional medical knowledge system in Ghana still persists and is accepted. This places THC in a strong position for its development, as it constitutes an integral part of the socio-cultural foundations of Ghanaians.

In Ghana, successive governments have recognised the importance of traditional medicine. The evidence of this lies in the formation of the Ghana Psychic and Traditional Healing Association in 1961 and the establishment of the Centre for Scientific Research into Plant Medicine in 1975. The Directorate of Herbal Medicine was also instituted in the MoH in 1991. In 1997, the Food and Drug Board was set up under the Food and Drugs Law (PNDC Law 305b) of 1992 to regulate and control the commercialisation of food and drug products, including traditional medicinal products (MoH, 1999).

The thrust of Ghana government's policy on THC can partly be captured in the Ghana National Drug Policy (GNDP, March 1998). The aim of the policy is to promote research and development, and rational use of herbal medicines that are widely believed to be efficacious, safe and of good quality. The Directorate of Traditional Medicine is to promote herbal medicine and monitor the activities of practitioners to ensure that they conform to the aims of the National Drugs Programme (NDP). The policy specifies that the government through the Centre for Scientific Research into Plant Medicine and other research institutions will encourage and support research work into medicinal plants so that they can be formulated into standardised products of reliable quality. The government is trying to promote and control the exchange of such research findings with the international community and support the participation of local drug research institutions in international drug activities.

Providing efficient health care delivery in Ghana requires adequate funding to make the system more reliable, efficient and effective in combating diseases in order to produce healthy population. We therefore turn attention to Ghana's experience in financing of health care delivery.

7.8 Health Care Financing Experience in Ghana

The way that different countries finance their health care delivery systems reflects political decision-making at the highest levels and involves trade-offs among fiscal, political and social objectives. Policy makers are continually confronted with the question of how much revenue can be raised for the health sector, and how these resources can be raised in a manner that is most equitable, efficient and sustainable.

This is not different in the case of Ghana. This section presents a brief history of Ghana's health financing experience.

Brief History and Background of Health Care Financing in Ghana:

Health care financing in Ghana has gone from free health care with total costs borne by government to the present era of a cost recovery system in which there is a partial cost sharing for medical care and full cost recovery for drugs.

During the colonial era, curative services in Ghana were on a fee-paying basis. This policy, which dated back to the 1880s, was however abolished after independence (1957) on ideological grounds when the government of Dr. Kwame Nkrumah chose the socialist path for the country's development strategy (Asamoah-Baah, 1991) and made health care free. To fulfil the ambitions for free and accessible health care, the government expanded the existing hospitals, constructed more health posts and trained more medical personnel.

Medical services remained fee-free until 1971 when fees were introduced by the Hospital Fees Act of 1971 (Act 387). Though the rationale for instituting this policy was to recover cost, the fees charged were so low that it was regarded, to a large extent, as token, and its effects on cost recovery became insignificant as compared to the actual cost of delivering health care (MoH, 1971). In the mid-1970s, Ghana's economy began to decline, reaching its lowest point by 1983. A generally depressed economic situation in Ghana as a result of strong inflationary pressures, large budget deficits, an unstable foreign exchange situation, and economic mismanagement, had by the early 1980s led to serious revenue shortfalls and an increase in government recurrent expenditures in all sectors of the economy. In an attempt to reverse this situation, an Economic Recovery Programme was initiated in 1983 with the support of the World Bank and International Monetary Fund. This was associated with removal of subsidies and intensification of fee collection for health services and enforcement of the Hospital Fees Act.

In 1983, the hospital fees regulation (L.I. 1277) was introduced and this policy was basically geared towards increasing health service charges from the 1971 levels. The rationale for this policy was to cut down on unnecessary or what is sometimes termed

frivolous demand, so as to make health services available to those who actually needed them. The government of Ghana in complying with the conditions attached to World Bank loans granted to the education and health sectors, cut down on its expenditure in these sectors in 1985. Table 7.5 shows government's expenditure on health care in relation to total government expenditure and GDP in billion cedis.

Table 7.5 GDP, Government Expenditure on Health and Total Government Expenditure

Year	Govern-ment Expendi-ture (¢bn)	GDP (¢bn)	Governm-ent Exp. on Health (¢bn)	Government Exp. on Health as Percentage of total Government Exp.	Health Exp. as a percentage of GDP
1978	3.1648	20.986	0.3105	0.015698	1.479558
1979	4.2957	28.222	0.4025	0.020339	1.426192
1980	4.668	42.853	0.3723	0.018803	0.868784
1981	7.7193	72.526	0.5675	0.028647	0.782478
1982	9.53	86.451	0.5976	0.030151	0.691259
1983	14.7553	184.038	0.7072	0.035663	0.384268
1985	45.763	343.048	3.9986	0.201441	1.165609
1986	70.7	511	5.8543	0.294778	1.145656
1987	102.1	746	9.5015	0.478183	1.27366
1988	143.9	1051	12.8795	0.647862	1.225452
1989	196.5	1417	19.853	0.99814	1.401059
1990	254.5	2032	25.7056	1.291739	1.265039
1991	340.3	2428	28.6543	1.439191	1.180161
1992	498.8	2803	38.8925	1.952435	1.387531
1993	813.5	3675	59.6743	2.994195	1.62379

Sources: MoH; International Financial Statistics, Year Book, 1999.

As can be seen from table 7.5, the proportion of government expenditure as well as the percentage of GDP directed to health care was well below 2 percent of GDP and

total government expenditure throughout the late 1970s and the early 1980s (reaching the lowest in 1983), even though in absolute terms government expenditure on health care delivery was increasing. Also, it is evident from the table that total government expenditure was increasing in nominal terms over the years. Meanwhile, the government was responsible for policy making and strategic planning for health care delivery and at the same time the major actor in financing health care delivery expenditure in the country because almost the entire medical bill in the country was borne by the government, which was a great burden on the government budget. It was therefore expedient for the government to get sufficient revenue to support its expenditure so as to ensure a balance in the budget.

In the light of this, the hospital fees regulation of 1985 (L.I. 1313) was instituted. Fees for government-provided health care in Ghana were raised substantially. The Ministry of Health set as its goal, a cost recovery policy that was to generate at least 15% of the Ministry's total recurrent expenditures in 1986, 1987 and 1988 (Vogel, 1987).

The 1985 policy stipulated that:

(i) patients pay fully for drugs, except in the case of specified communicable diseases such as tuberculosis, leprosy, meningitis, chicken pox, cholera, measles etc;

(ii) charges be varied according to the level of health facilities used;

(iii) there should be differential charges for adults and children, Ghanaian and non-Ghanaians (L.I.1313).

Following the policy came rules in July 1986, which indicated revenue retention for part of the fees collected based on the level of health care facility. Health centres and clinics were to retain 25% of fees collected; District Hospitals 50%; Regional Hospitals 50% and Psychiatric Hospitals and Leprosaria 100%. However since the beginning of 1990, all institutions retained their full revenue. The new charges, however, reflected the full cost of drugs without charges for the services of the medical personnel as well as the use of equipment and facilities. According to Ministry of Health sources, the charges for boarding and lodging in government facilities were at most 60% of the actual cost, and also surgical operations were at

most 25% of the costs of items used to perform them. There is little doubt that national decisions on health care financing in Ghana were influenced more by humanitarian conditions than by economic rationale since the costs incurred were much higher than the revenue from fees charged (Waddington and Enyimayew, 1990).

The increased fees, introduced by hospital fees regulation of 1985 (L.I. 1313), were to be used to revamp a health sector that had reached a very low point by 1983. Over the 1978 to 1983 period, the medical supply situation had deteriorated so much that basic drugs and logistics like cotton wool, bandages, and needles were all in short supply (Ewusi, undated). Attendance at hospitals and health clinics had dropped by a third, and in the Cape Coast Central Hospital for example, the annual outpatient attendance dropped from 84,000 in 1979 to 28,000 in 1983 reflecting the general situation in the health sector then (Waddington and Enyinayew, 1989, 1990). There were some improvement in equipment and drug supply after the introduction of fees (Vogel, 1988, 1990) but the government still needed a lot more financial resources in order to absorb the excess health bills since the fees were small in relation to cost.

In 1992, the "Cash and Carry" system, whereby money for purchase of essential drugs and other medical items has to be provided before any treatment, was introduced in government health facilities. In spite of the fact that the fees are nominal in relation to the cost of providing health services, they are considered high in relation to income levels of majority of the Ghanaian citizenry. With average per capita income of only US$390 and a daily minimum wage of less than a dollar as at the time of the field survey, a large percentage of the population of Ghana do not have the financial ability to pay for medical treatment at the point of use as required by the cash and carry system because medical services, diagnostic or curative, demand financial commitments that many people in Ghana cannot meet from their own resources.

The health care financing dilemma of the Ghana government

The introduction of user charges ("cash and carry") in government hospitals has generated a lot of debate that is mostly centred on whether user charges are warranted and acceptable. A section of the Ghanaian public is of the view that user charges are detrimental to the health care needs of the citizens because people who may not be

able to pay for health care services would die. These people therefore advocate the withdrawal of the user charges from the health care delivery system in Ghana. Consequently, this current system of health care financing has not received the support of the general public who continue to oppose it, making the financing of health care a topical issue in the country. The "cash and carry" system was a campaign issue in the year 2000 general elections. The present New Patriotic Party (NPP) government[5] in their manifesto referred to the system as "iniquitous" and have stated their intention to abolish it as soon as a viable and sustainable alternative method of financing health care has been established. The defence minister, Dr Kwame Addo-Kufour, for instance, is quoted as saying that "the cash and carry system is cruel to human life and that government would do everything it could to abolish it before the end of its tenure of office"[6]. However, because the system has been entrenched for a long time its total abolition would have to be done with care.

On the other hand, supporters of user charges argue that fees are very useful because they help to improve the efficiency of health care delivery in government hospitals by eliminating frivolous demand, and encouraging judicious use of personnel time. User charges help to activate private sector involvement in health care delivery, help generate revenues from individuals who are willing and able to pay for health care services (and these revenues help government in financing health care expenses), and above all, user charges compel people to follow the referral system in health care delivery in the country. According to the deputy director-general of the Ghana Health Service, Dr. Samuel Adjei, 70 billion cedis accrued from the cash and carry system in the year 2000 and the figure was expected to rise to 120 billion cedis in 2001. He states further that 'though revenue from the cash and carry system formed only about 20 to 30 per cent of the total cost of health care delivery, it was readily available for sustaining running costs and served as a revolving fund to buy drugs and for the maintenance of equipment'.[7] The question one would therefore like to ask is: ***Are Ghanaians willing to pay for health care delivery and if so, how?***

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[5] The NPP government is the new administration (led by Mr. John Agyekum Kuffour) that took over power after the December 2000 election. Their administration started from 7th January, 2001.

[6] http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=20804

[7] www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=20374

Meanwhile, as noted in sections 7.4 and 7.6, the spread of HIV/AIDS and mass exodus of health professionals from Ghana to seek greener pastures in advanced countries that pay better, are two most severe problems facing the country. The State of the Ghanaian Economy report for 2002 (ISSER, 2003) notes that 68.2% of medical doctors trained in Ghana between 1993 and 2000 have left the country. The situation is no different with other health workers such as nurses, pharmacists and laboratory technicians. The exodus of health professionals has put more pressure on the remaining personnel to provide adequate health care services, which is threatening health care delivery in the country. There are situations where newly built hospitals with modern facilities do not have the health personnel to run them. Examples are the Brong Ahafo, Volta and Central Regional hospitals, which are reported to lack health professionals to run them, and as such turning out to be white elephants.[8] Sometimes retired physicians are called upon to run some of these facilities.

The main reasons for the exodus of health professionals away from Ghana have been identified as professional advancement and poor conditions of service, which do not allow adequate savings and future security when they (health personnel) retire. The basic salary of a medical doctor is about two million cedis (¢2,000,000.00), per month, which is equivalent to about US$230 per month. A nurse's basic salary is about eight hundred thousand cedis (¢800,000.00), equivalent to US$92. Meanwhile, some health professionals work up to about 300 hours in a month, instead of the normal 160 hours. Also, retired medical doctors in Ghana are paid, at best, four hundred thousand cedis (¢400,000.00), equivalent to US$46 per month. These are considered to be grossly inadequate and as such a disincentive to health personnel because they could earn more than 20 times these amounts if they moved to work in advanced countries. Hence, the decision by most health professionals to leave the country. To stem the exodus of health professionals a National Postgraduate Health College has been established which was inaugurated on 8th December 2003.[9] Also, since December 1999, the government has been paying the doctors and other health personnel additional duty hour allowances for hours worked in excess of the normal 160 hours a month. These allowances could sometimes triple the take-home pay of the

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[8] www.irinnews.org/S_report.asp?ReportID=36970&SelectRegion=West_Africa
[9] www.irinnews.org/S_report.asp?ReportID=36970&SelectRegion=West_Africa

health personnel, which the Ghana Medical Association (GMA) says have helped to retain many health professionals who would otherwise have gone abroad.

Unfortunately, the paying of the additional duty hour allowances to doctors and nurses has caused serious over-spending in the government budget, which has led to a problem between the government and the International Monetary Fund (IMF), the World Bank and other donors on whom Ghana's aid-driven economy depends. These donors are calling for the withdrawal of these allowances, instead of granting more resources to enable the government to pay the health professionals well so as to retain them in the country. The Ministry of Finance state that due to the overshot in government spending as a result of paying higher wages and allowances to health personnel and other workers, the government was unable to meet its set budgetary targets for the year 2002. Hence, the World Bank, IMF and other donors refused to disburse loans worth US$147 million in the last quarter of 2002.

The government of Ghana therefore needs to find more efficient and sustainable methods of funding health care services, other than the out-of-pocket payment at the point of use, and health insurance has been identified as one way out. The NPP government's health policy as contained in its manifesto states that "workers and their employers, local communities, religious bodies, etc will be encouraged to establish their own health insurance schemes. The public health facilities will be improved to give quality service at affordable cost even to those not covered by any insurance scheme". It states further that a special institution, to be managed independently of the government, will be created to supervise health insurance in the country. That is, the government sees health insurance as a way to raise sufficient resources to finance health care.

With the changing demographic profile of Ghana (see section 7.3) – high dependency ratio, an ageing population and its concomitant increases in more communicable diseases, chronic and non-communicable diseases – challenges of health financing go beyond the simple cases of inability to pay. Availability of health care is becoming limited in the country and as such there is the need for new ways of funding other than government budgetary allocation, user fees, and donor contributions. The Minister of Health has argued that looking at the benefits of various health schemes

vis-à-vis the economic conditions of Ghanaians, community health insurance is one of the effective means of reducing the "regressive burden of the current user-fees for health by establishing and expanding prepayment schemes, which spread financial risk and reduce health care expenditure" (Armah, 2001a).

According to the Minister of Health, the Ghana Health Service is to draw a comprehensive plan for the promotion of Community Health Insurance Schemes at the community, district and regional levels. This was made known when the minister launched a manual and informational material for the promotion of Mutual Health Organisations (MHOs) and Community Health Insurance in Ghana.[10] It is therefore important to find out if Ghanaians would be willing to contribute into such schemes.

Hence, it is hoped that this study will help in the search for efficient, effective and sustainable alternative means of financing health care in Ghana.

7.9 Summary

This chapter presented some basic information about the economy of Ghana, its health care system, health care financing experience and the health care financing dilemma facing the government. The low levels of income of the majority of Ghanaians with per capita income of only US$390[11] and a daily minimum income of less than a dollar give an indication that most people may have difficulty to pay for their health care at the point of use. Meanwhile, due to the introduction of user fees ('cash and carry system'), people have to provide money for the purchase of essential drugs and other items before any treatment was administered. This may compel most people to either sell their assets such as farming equipment (which will reduce their production capacity) or borrow from friends and relatives in order to be able to pay for their health care. There is thus an issue of whether Ghanaians are willing to pay for their health care, and given their economic conditions, will they be willing to contribute into a national health insurance scheme. The next chapter therefore sets the agenda for the empirical study to determine whether Ghanaians are willing to pay for their health care and if so, how much, and in what form they would be willing to pay.

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[10] Mutual Health Organisations refer to a group of people coming together to contribute towards meeting the cost of their health care needs. Types of services paid for include cost of drugs, admissions, OPD services and consultations.

[11] US$1 was equivalent to ¢7000 at the time of the survey.

CHAPTER EIGHT

8.0 Introduction

This chapter seeks to set the tone for the empirical research component of the study by stating the empirical research problem, the specific objectives of the empirical study, the hypotheses to be tested, research methodology, and the *a priori* expectations of the relationship between the dependent variables and the independent variables.

8.1 Empirical Research Agenda

After reviewing the literature on health care financing in Ghana, it was realised that in the past, and even after the introduction of user charges, Ghana's national decisions on health care financing were influenced more by humanitarian conditions than by economic reasons because the costs of health care delivery were much higher than the revenue from fees charged (Waddington and Enyimayew, 1989, 1990). It was also found that the introduction of user charges in health care delivery led to reduction in hospital attendance and welfare losses (denied access to some patients, less utilisation by others), increased self-medication, and delays in seeking health care (Asenso-Okyere *et al.*, 1998), but improved the availability of drugs and other medical supplies for health care delivery in hospitals (Agyepong, 1999), thereby improving the operational efficiency of the hospitals. Besides, user charges help to recover part of the government's recurrent expenditure on the health sector, thereby reducing the burden on government budget.

Apart from Lavy *et al.*, (1993, 1994) who estimated the willingness of Ghanaians to pay for medical care by using secondary data from Ghana Living Standards Surveys, the researcher could not find evidence of any work done to ask individuals in Ghana directly how much they are prepared to pay for their health care needs. It must be noted that even the work by Lavy and his colleagues was based on information given by households during the World Bank sponsored living standards surveys which asked about how much the household spent on health care in the month preceding the survey, and as such did not present health care as a commodity to the various households interviewed and elicit their willingness to pay. Using that data to estimate the people's willingness to pay will imply that those who did not incur any expenditure in the period considered (that is those who were healthy, most likely high

income groups) were not willing to pay for their health care. On the other hand, the data can be used to estimate the demand for health care using revealed preference techniques as done by Lavy *et al.*

The empirical part of this study therefore used a contingent valuation study to estimate how much Ghanaians are willing to pay to use government and private hospitals for malaria treatment; and also to find out whether Ghanaians are willing to contribute into a national health insurance scheme, and if so, how much they are willing to contribute.

8.2 Objectives of the Empirical Study

The broad aim of the empirical research is to find out whether Ghanaians are willing to pay for health care services in both the government and private hospitals and if so how much they are willing to pay and in what form. The specific objectives include to:

1. find out how Ghanaians rank health improvement as a national goal amongst other goals;
2. find out how much Ghanaians are willing to pay to use government hospitals for treatment;
3. find out how much Ghanaians are willing to pay to use private hospitals for treatment;
4. find out whether Ghanaians are willing to contribute into a National Health Insurance Scheme;
5. find out how much Ghanaians are willing to pay as their monthly premium for national health insurance; and
6. analyse how the major socio-demographic variables (e.g. gender, age, income, education) influence the decision whether to pay for health care, how much to pay, and how much to contribute into a national health insurance scheme.

8.3 Hypotheses

Based on the above objectives, the following hypotheses will be evaluated:

1. **H_0:** Ghanaians are not willing to pay for their health care, either delivered in government or private health facilities.

H_1: Ghanaians are willing to pay for their health care, either delivered in government or private health facilities.

2. **H_0:** Ghanaians are not willing to contribute into a National Health Insurance Scheme.

   H_1: Ghanaians are willing to contribute into a National Health Insurance Scheme.

In addition to testing the above hypotheses, a series of sub-hypotheses will be evaluated to test the relationships between each of the four dependent variables, namely willingness to pay to use government hospitals to treat an episode of malaria (WTPg), willingness to pay to use private hospitals to treat an episode of malaria (WTPp), willingness to contribute into a national health insurance scheme (WTC into NHIS) and monthly health insurance premium (MPremium), and each of the seven independent variables, namely, gender, age, income levels, distance to the nearest hospital, marital status, educational level, and ranking of health improvement as a national goal.

8.4 Research Methodology

The contingent valuation method (CVM) of measuring WTP was adopted for this study. Chapter 6 contains a theoretical and empirical review of the contingent valuation method, and why it was chosen for the empirical study instead of other methods that could be used to estimate WTP. Thus, this study uses the CVM in a different manner than most of the other published studies, that is, as a method of determining Ghanaians' willingness to pay to finance health care (see section 6.7 for review of studies that use CVM in the usual context of cost-benefit analysis). The use of the contingent valuation technique in this context has been referred to as *WTP-finance studies* (Mataria *et al.*, 2004). This section describes the methods used in the collection and analysis of data for the empirical study.

Data Collection: Case Study

The targeted population of this study was all the people living in Ghana who would in one way or the other make use of the health care delivery system in Ghana for out-patient services. The main purpose of this empirical study was to find out whether Ghanaians are willing to pay for health care delivered in both government and private

hospitals in Ghana and if so, how much. However, in order to make the aim of the study understandable to the respondents by avoiding ambiguous scenarios, malaria was chosen for the case study. This was in line with the steps involved in conducting contingent valuation study discussed in section 6.5. Conditions indicative of malaria require medication but are not difficult to diagnose (Dzator and Asafu-Adjaye, 2004). Also, malaria has been accounting for over 40% of the causes of outpatient morbidity in Ghana (MoH, 1999) and it is a very common disease that is known by almost everybody in Ghana (Dzator and Asafu-Adjaye, 2004). Hence, using malaria as case study will reduce ambiguity and as such it is believed that respondents would understand exactly what they were being asked to evaluate, thereby avoiding specification biases associated with the contingent valuation method (Mitchell and Carson, 1989). Again, since it has been accounting for the majority of outpatient visits (over 40%), the results can be generalised to be representative of the respondents' willingness to pay for outpatient services, which was the original objective.

As noted in chapter seven, the current method of health care financing in Ghana whereby people have to pay at the point of use (popularly called "cash and carry") is seen to be detrimental to the health care needs of the people because the poorest segment of the population who find it difficult to pay for health care are those who need health care most. Hence, there has been talk about national health insurance, so part of the empirical study was intended to determine whether Ghanaians are willing to contribute into such a scheme, and if so, how much, and how frequently.

Data Collection: Sample

Because the entire population of Ghana could not be used for a study of this nature, two districts in the Eastern Region (New Juaben and Kwahu South) were purposively chosen for the study. Within each of the districts, households in the district capital and its immediate environs were targeted for the study. In each of the towns where the survey was conducted, a random sample of heads of households was interviewed, with each head of household having the same chance of being interviewed. Equal numbers of respondents (250 each making a total of 500) were targeted in the two districts.

Structured interviewer-administered questionnaires (Onwujekwe 2001; Onwujekwe *et al.*, 2004a & b) were administered to 487 heads of households to obtain the relevant cross-sectional primary data for analysis. These heads of households were seen as potential users of health care who also generally make decisions about the use of household income and influence health care seeking behaviour of the households and as such their WTP bids would help determine both use and existence/option values of malaria treatments in government and private hospitals. The main arguments in favour of the use of personal interviews to collect data rather than postal questionnaire or telephone interview are that interviews would improve response rates and provide opportunities to check the subjects' understanding of the questions (Cairns, 1994).

The target sample size was 500 but 13 questionnaires were not returned by two of the interviewers who helped with the interviews. Two graduates and one post-secondary trained teacher were trained as research assistants to help with the conduct of the interviews. They were selected based on their understanding of the local dialects so that they could translate the questionnaire into the local dialects to the illiterate and semi-literate respondents who could not read and/or comprehend the English version of the questionnaire. Using local people to conduct the interviews was to avoid compliance bias since the respondents would not know the sponsor of the study and also respondents are likely to be more at ease and feel free to talk to people they can easily communicate with instead of strangers. Two days of training was organised by the researcher for the interviewers. The first day of training explained the objectives of the study and the survey instrument to them and offered them the chance to attempt translations into the local dialect so as to find out if they could translate to elicit the required response. They were also taught how to establish conducive rapport with the respondents so as to make them feel free to give genuine responses. After the first day of training, each interviewer was given a copy of the survey instrument to take home for further study so as to raise any questions or concerns they might have in the second day of training. They were not told what was going to happen in the second day in order not to prejudice their minds. The second day of training was divided into short sessions where each interviewer interviewed the other two in turns before finally interviewing the researcher. The researcher tried as much as possible to play the devil's advocate by trying to be as difficult an interviewee as possible. This was to offer the researcher the opportunity to observe how they (the interviewers) would

conduct the interviews on the field. Finally, the interviewers were asked to write a report of how they conducted the interviews with emphasis on any problems that they encountered. This was to offer the researcher the opportunity to know about the problems they might have faced on the field. The data were collected between January and April 2001.

Data Collection: Survey Instrument

The survey instrument, questionnaire, was designed so that it could be used to collect both qualitative and quantitative data from the respondents for analysis. The qualitative data were to be used to aid interpretation of the quantitative estimates that would be obtained from the statistical analyses. The questionnaire used for the data collection contained:

- A series of questions seeking information on the socio-economic and demographic characteristics of respondents such as income, sex, age, religion, education level, occupation, marital status, and how they ranked health improvement as a national goal. These data were to be used to relate the answers given by respondents (to the WTP questions) to the other characteristics of the respondent in order to test the internal validity of the study.
- A description of the commodities for which the respondents were being requested to state how much they were willing to pay, namely quality malaria treatment and national health insurance. Also, the respondents were asked to rank health improvement as a national goal among six other national goals.
- Questions that determine how much the respondents were willing to pay for quality treatment for malaria in government and private hospitals; and questions finding out whether respondents were willing to contribute into a National Health Insurance Scheme and how much they would be willing to pay as their monthly premium.

A copy of the survey instrument is attached as an appendix A. It must be pointed out, at this stage, that the survey instrument requested for some more data that have not been analysed in this dissertation but might be used in the future. Before the instrument was constructed, the medical officers-in-charge of a government hospital

and a private hospital were interviewed to find out how much it was costing, at the time, to treat an episode of malaria. These people were believed to have professional and specialist knowledge of treating malaria and how much it cost. This was done because, when developing the bidding game for a non-marketed commodity in a contingent valuation study, de Faria *et al.*, (Undated) suggest the creation of random values around the value of available reference, which would avoid the costs of a pilot open-ended survey. They give evidence that a specialist panel can substitute a preliminary survey with success in creating reference values. It was learnt from the government hospital that it was costing ¢600 to treat an episode of malaria using tablets and ¢2,500 using injections. However, the officer failed to add the registration and consultation fees for first time patients, which was between ¢3,000 and ¢5,000. So these were taken into consideration when the range of bid values was being determined for treatment in government hospitals. On the other hand, it was learnt that the average cost of treating an episode of malaria in a private hospital was ¢50,000, which was also taken into consideration when the WTP bids were selected.

Data Collection: WTP Elicitation

The method used to elicit WTP for the treatments and willingness to contribute (WTC) into the National Health Insurance Scheme was to ask the respondents a yes/no question as to whether they would go for the treatment at a specified amount: for the government hospitals, these started from ¢1,000 to > ¢10,000; and the bids for private hospitals started from ≤ ¢5,000 to > ¢50,000. The interviewers were instructed to start from the lower bid and bargain with the respondents. If the respondents were willing to pay the bid, then the interviewer was to move up into a higher bid until he/she obtained a negative response. If a respondent was willing to pay the highest bid, then the interviewers were under instruction to elicit the highest amount they were willing to pay. If a negative response was received for a given bid, the interviewers were instructed to ask the respondents to give their highest WTP. This method of eliciting WTP could be seen as a form of bargaining which mimics how transactions are conducted in Ghanaian markets and shops where sellers and buyers bargained vigorously to arrive at an agreed price. This followed a suggestion by Onwujekwe (2001) that elicitation methods should "mimic the bargaining process in normal market situations because such indigenous technique will improve the

predictive validity of the study". This is because "a CVM question format that more closely resembled local patterns of bargaining for goods would more closely simulate actual purchasing thought processes and thereby reduce divergence between stated and actual WTP" (Onwujekwe *et al.*, 2004). One could argue that the take-it-or-leave-it method of eliciting WTP values should have been used but this method of pricing commodities, which is very common in supermarkets and other shops in developed countries, is not common in Ghana. It must be admitted however, that because bidding range was given to the respondents, starting point bias is likely to occur. It must be noted that even though prompts, in the form of the bidding values, may lead to biased responses, fully open-ended questions in situations like this where the commodity involved is seldom sold on the open market can be difficult to answer. It has been argued that so long as individuals are given a wide enough choice the problem of bias is reduced, with the exception being where individuals uniformly use the end points (Cairns, 1994). In addition, an open-ended question was asked to elicit the maximum that respondents were willing to contribute as their monthly premium for the National Health Insurance.

Data Analysis

After data collection was completed, each questionnaire was given a unique identification (ID) number that identified each case. This was clearly written on the front cover so that if any errors were found later in the data set it would be easier to check back and find where the error occurred. The data obtained from the interviews were coded[1], keyed into the personal computer, screened to check for any errors and then analysed using the Statistical Package for Social Sciences (SPSS) software. The basic aim of conducting the statistical analyses (both univariable and multivariable) was to test the theoretical validity of the empirical study to see the extent to which results were consistent with *a priori* expectations.

It is common knowledge that choosing the correct statistical technique to analyse data can be quite difficult and daunting. A variety of different types of statistics, both parametric and non-parametric, were used to analyse the data obtained from the field survey, based on the questions one needed to address. Hence, one needs to understand

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[1] Coding refers to the process of preparing a summary of instructions that will be used to convert the information obtained from each respondent into a format that SPSS can understand (Pallant, 2001).

the basic assumptions and requirements of the different statistical techniques that were used to analyse the data obtained. The techniques that were used for the univariable analyses are Pearson product moment correlation, Spearman's rho correlation, independent samples t-test, one-way analysis of variance and chi-square analysis. For the multivariable analyses, ordinary least square linear and logistic regressions were used. The type of technique used for each variable depended on the nature of the data collected and whether or not they satisfied the basic assumptions required by the techniques. The use of both univariable and multivariable techniques would give a judicious mix of results that will help to fully address the empirical research questions (Tabachnick and Fidell, 2001). Tabachnick and Fidell (2001: chapters 5 through 16) discuss the assumptions associated with each technique, methods for checking the assumptions for a given data set, and the theoretical and practical limitations of each technique. A brief review of the various statistical techniques that were used for the univariable and the multivariable analyses of the field data are presented below.

Pearson correlation

Pearson correlation is used to explore the strength of relationship between two (usually) continuous variables. According to Pallant (2001), Pearson correlation can still be used when one of the variables is dichotomous. The statistic obtained is called Pearson's product-moment correlation (r). It gives an indication of both the direction (either positive or negative) and the strength of association (|0 to 1|). A positive correlation indicates that as one variable increases, so does the other and a negative correlation indicates that as one variable increases, the other decreases. This is shown by the sign of the correlation coefficient. Pearson correlation coefficient can range from –1 to +1. The size of the absolute value of the coefficient tells about the strength of the relationship. A correlation coefficient of 1 or –1 indicates a perfect correlation, which indicates that the value of a variable can be determined exactly by knowing the value on the other variable. On the other hand, a correlation coefficient of 0 implies no relationship between the two variables. In order to provide an accurate and reliable indicator of the strength of the relationship between two variables there should be as wide a range of scores on each variable as possible. It must be noted that correlation does not indicate that one variable causes the other.

Spearman's rho correlation

Spearman's rank order correlation (rho) is the non-parametric alternative to Pearson's product-moment correlation.[2] It is used to calculate the strength of the relationship between two continuous variables.

Independent samples t-test

Independent samples t-test is used to compare the average scores of two different (independent) groups (e.g. males and females). It is used for analysing data with one continuous dependent variable (e.g. WTP values) and one categorical variable with two levels (e.g. gender – males and females). That is, the independent samples t-test is used to compare the mean score on some continuous variable for two different groups of subjects. For example, it can be used to compare the mean WTP values expressed by the male respondents and those expressed by the female respondents. In this case, the researcher needs to ensure that data is collected only on one occasion but from two different sets of people. In statistical terms, the independent samples t-test technique tests the probability that the two sets of scores (e.g. WTP for males and females) came from the same population. A non-parametric alternative for this technique would have been the Mann-Whitney test.

One-way analysis of variance (ANOVA)

One-way analysis of variance (ANOVA) is used when there are three or more groups in a categorical variable and the researcher wish to compare their mean scores on a continuous variable to see if there are any reliable differences among them. For example, ANOVA could be used to find out if there were differences in the mean WTP expressed by respondents in the various marital status groups (married, single, divorced and widowed). The technique is called one-way because it is used to look at the impact of only one (categorical) independent variable on the dependent variable. The technique is called analysis of variance because it compares the variability in scores (variance) between the different groups (believed to be due to the independent variable), with the variability within each of the groups (believed to be due to chance)

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[2] Non-parametric techniques are used when data is measured on nominal (categorical) and ordinal (ranked) scales. They are also used when the data does not meet the stringent assumptions of parametric techniques. However, before using non-parametric techniques for analyses, two assumptions must be met by the data. The data must come from a random sample and must also be independently observed (Pallant, 2001).

(Pallant, 2001; Tabachnick and Fidell, 2001). When ANOVA is conducted, an F ratio is calculated which represents the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable), than there is within each group (referred to as the error term). A significant F test indicates that we can reject a null hypothesis, which states that the population means are equal. A one-way ANOVA allows the researcher to determine if the groups in a categorical variable differ, but the technique does not tell him/her where the significant difference is. To find out where the significant difference is, the researcher would have to snoop through the data after the ANOVA results are known, by conducting post-hoc (also known as *posteriori*) comparisons. Post-hoc comparison protects against type 1 error, which is rejecting a null hypothesis when it is actually true. Non-parametric alternative to ANOVA is the Kruskal-Wallis test.

Chi-Square Analysis

There are two different types of chi-square tests that are used to analyse categorical data, namely chi-square for goodness of fit[3] and chi-square test for independence. The chi-square (χ^2) test of independence is used to examine the relationship between two discrete (categorical) variables. Each of the variables can have two or more categories. It compares the frequency of cases found in the various categories of one variable across different categories of another variable. For example, χ^2 is the appropriate analysis to use to examine the potential relationship between choice of hospital for malaria treatment (either private or government) and marital status (married, single, divorced or widowed). In a χ^2 analysis, the null hypothesis generates expected frequencies against which observed frequencies are tested. If the observed frequencies are similar to the expected frequencies, then the value of χ^2 is small and the null hypothesis is retained meaning that the two variables are independent. However, if they are sufficiently different, then the value of χ^2 is large and the null hypothesis is rejected, which means that the two variables are related.

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[3] Chi-square for goodness of fit is a one-sample chi-square test that explores the proportion of cases that fall into the various categories of a single variable and compares them with hypothesised values. This was not used for any of the analyses done in this dissertation hence, no need to discuss it into details.

Multiple Regression Analysis

Regression analysis is used to predict a score on one variable from a score on other variable(s). It can be applied to a data set in which the independent variables are correlated with one another and with the dependent variable to varying degrees. Because regression techniques can be used when the independent variables are correlated, they are helpful in analysing survey research when nature has manipulated correlated variables (Tabachnick and Fidell, 2001). Regression analysis is all too often used to find "the best prediction equation for some phenomenon regardless of the meaning of the variables in the equation" (Tabachnick and Fidell, 2001). It must be noted that regression analyses can be used with either continuous or dichotomous independent variables. Multiple regression is seen to be ideal for investigating more complex real-life research questions (Pallant, 2001). Multiple regression emphasizes the prediction of the dependent variable from the independent variables. The independent variables may or may not be correlated with each other. It can tell the researcher how well a set of variables is able to predict a particular outcome. Thus, multiple regression provides information about the model[4] as a whole and the relative contribution of each of the variables that make up the model. It allows assessment of the relative contribution of each of the independent variables toward predicting the dependent variable. Additionally, multiple regression allows the researcher to test whether adding an additional variable contributes to the predictive ability of the model, over and above those variables already included in the model. It can also be used to statistically control for an additional variable (or variables) when exploring the predictive ability of the model.

Basically, there are three main types of multiple regression analyses that can be used to analyse data, depending on the research question(s). These are standard (or simultaneous) multiple regression, sequential (or hierarchical) regression, and statistical (or stepwise) regression (Tabachnick and Fidell, 2001). Among these, the standard multiple regression is the most commonly used especially in studies that aim to simply assess relationships among variables and answer basic question of multiple correlation. It is *atheoretical* (Tabachnick and Fidell, 2001). The standard multiple regression was used to analyse the data reported in this dissertation, hence it is the

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[4] A model is a simplified framework for organising the way we think about a problem.

only one that is very briefly reviewed. For a detailed review of all the three types of multiple regression, readers are referred to chapter 5 of Tabachnick and Fidell (2001). A researcher uses a standard multiple regression if he/she wants to know how much variance in a dependent variable (e.g. WTP) that a set of independent variables are able to explain as a group and also how much unique variance in the dependent variable that each of the independent variables explains. In the standard multiple regression analysis, all independent variables enter into the regression equation at once, with each assessed as if it had entered the regression after all other independent variables had entered. Each independent variable is evaluated in terms of what it adds to prediction of the dependent variable that is different from the predictability afforded by all the other independent variables.

Ordinary least squares (OLS) linear regressions were used for the dependent variables which are continuous, namely willingness to pay to use government hospital (WTPg), willingness to pay to use private hospital (WTPp), and monthly health insurance premium (Mpremium); whereas logistic regression was used to analyse the dependent variables that are dichotomous, namely, ranking of health improvement as a national goal, choice of hospital for treatment, and willingness to contribute into a national health insurance scheme.

Actual Process of analysis

The data obtained from the interview were analysed by:

- Examining the frequency distribution of responses given to the WTP and other questions.
- Constructing cross-tabulations between ranking of health improvement as a national goal, choice of hospital, WTP, monthly health insurance premium, and WTC into a National Health Insurance Scheme, (as dependent variables); and the socio-economic characteristic of the respondents (as explanatory variables) for the univariable analysis.
- Conducting multivariable analysis using linear and logistic regressions.

The purpose of all these analyses was to determine whether respondents' answers were consistent with theory and common sense (*a priori* expectations) so as to

increase one's confidence in the accuracy and reliability of the information gathered and to establish statistical relationships or models that can be used to aggregate responses to the overall population under study (OECD, 1994; Koomson 1999).

Thus to quantify the behavioural effects of the determinants of willingness to pay and the amount respondents were willing to pay as monthly health insurance premia at the household level, linear regressions were estimated using ordinary least squares. Specifically, WTP for government and private hospitals, and monthly health insurance premia were each regressed on household characteristics and other relevant independent variables obtained from the survey data. To identify the overriding factors in people's choice of health facility for treatment and their willingness to contribute into a National Health Insurance Scheme, conditional likelihoods of choosing a particular hospital or of agreeing to contribute into a National Health Insurance Scheme were estimated using numerical methods (Greene, 2000).

Underlying the empirical equations that were estimated is a structural model of household behaviour, the full exposition of which can be found in Deaton and Muellbauer, (1980a & b). A structural relationship underlying the reported preference for health facility, willingness to pay fees, or contribute into a National Health Insurance Scheme is sketched below. Following the literature on discrete choice econometrics (Greene, 2000) let the benefit expected from acceptance or non-acceptance to pay fees or contribute into a National Health Insurance scheme be denoted as

$$U_{ij} = Z_{ij}\beta + E_{ij} \qquad (8.1)$$

where U_{ij} is the net benefit that household i expects from making a binary decision j ($j = 1, 2$); Z_{ij} is a vector of attributes that characterise the head of household i and his/her decision options j; β is a vector of parameters to be estimated and E_{ij} is a random disturbance of the net benefit that the head of household i expects to get from the decision option j. In the above decision situation (e.g. choosing private or government hospital for treatment) the head of household is assumed to decide in favour of an option that has a higher net benefit. A head of household's acceptance or non-acceptance to contribute into a National Health Insurance Scheme is analysed in exactly the same way as in equation (8.1).

The empirical problem in equation (8.1) is to determine values of β given data on Z from the household survey. If the values of β are known, equation (8.1) provides the formula for determining the benefits that households expect to get from the particular choices they make. This formula facilitates prediction of household choices given the decision rule (i.e. choose the most beneficial option) and given the sample data on Z. However, since the benefits (Uij's) from the decision options are not observable or measurable, it is not possible to estimate the values of the vector β from equation (8.1). The parameter vector, β, can however be estimated by maximising the likelihood of observing sample data, Z. In logarithmic form, the likelihood function for observing the sample data can be written as

$$L = \Sigma_i \Sigma_j Q_{ij} \log P_{ij} \qquad (8.2)$$

with

$$P_{ij} = exp(U_{ij}) / [exp(U_{ij}) + exp(U_{ik})] \qquad (8.3)$$

L is logarithm of the likelihood function (see Greene 2000); Q_{ij} is equal to 1 if the head of household i decided in favour of decision option j (for j not equal to k) and equal to zero otherwise. And as before, $U_{ij} = Z_{ij}\beta + E_{ij}$. It should be noted that the estimated values for β show how household characteristics affect the benefits from decision option j, and in turn, after a simple transformation, how the probability of a decision in favour of option j is affected. Thus, estimation of β enables policy makers to assess the ex-ante reaction of the public to user fees, insurance premium, and to other policy intentions.

Table 8.1 provides a description of variables that appear in the estimated equations.

8.5 A Priori *Expectations*

It was assumed that the individual respondent is rational and as such his/her WTP shows the level of utility he/she expects to derive from using the health care facilities to treat an episode of malaria. Hence, all other things being equal, the individuals would continue to increase their WTP (if conditions require) as long as the marginal productivity of the health care services (in this case malaria treatment in government and private hospitals) is over and above the marginal cost of their WTP; and also increase their willingness to contribute into a NHIS as long as the marginal

productivity of the benefits derived from the scheme is over and above the premia they pay. This implies that any factor that raises individuals' WTP for the health care services can reasonably be expected to positively affect the demand for health care services such as malaria treatment. Table 8.2 shows the *a priori* expectations of the variables used for this study thereby presenting a summary of how the various socio-demographic variables (independent variables) were expected to influence each of the dependent variables. The results will be discussed in relation to these *a priori* expectations.

Table 8.1 Variables Used in the Study

A. Dependent Variables	***Description***
WTPg	Willingness to pay to use government hospital
WTPp	Willingness to pay to use private hospital
WTC into NHIS	Willingness to contribute into a National Health Insurance Scheme
CHospital	Choice of hospital for treatment
RHIANG	Ranking of health improvement as a national goal among six others including Education improvement, Old-Age assistance, Sanitation, Recreational facilities, Roads construction, and provision of housing
MPremium	Monthly health insurance premium respondents were willing to pay
B. Independent (Explanatory) Variables	
Gender	The gender of respondents. This takes the value of 1 if respondent is a male and 0 if female
Age	The age of respondents
Distance	Distance in kilometres from respondents' homes to the nearest hospital
Income	Average monthly income of respondent
Education	Education level of respondents. It takes the value of 1 if respondent has had formal education and 0 otherwise in the multivariable analyses.
MStatus	Marital status of respondents. It takes the value of 1 if respondent is married and 0 otherwise in the multivariable analysis
HouSize	Household size
NILLM	Number of household members who fell ill over the last month
NILLY	Number of household members who fell ill over the last year

Table 8.2 *A Priori* Expectations of Variables

Variable	*WTPg*	*WTPp*	*MPremium*
Distance	-	+	?
Age	-	-	?
Gender	+	+	+
Household Size	-	-	+
NOILLY	-	-	+
ChHospital	+	-	?
WTC into NHIS	-	-	+
Mpremium	+	+	
MStatus	+	+	+
Education	+	+	+
RHIANG	+	+	+
Income Level	+	+	+

KEY: + means positive relationship, - means negative relationship, and ? means unpredictable

8.6 Summary

This chapter has presented the empirical research agenda (problem), the specific objectives of the empirical study, research hypotheses to be tested, research methodology and *a priori* expectations about the relationship between the independent and dependent variables used in the empirical study. The next chapter presents the data obtained from the field survey followed by the results of the statistical analyses performed, in subsequent chapters.

CHAPTER NINE

DATA PRESENTATION AND ANALYSIS

9.0 Introduction

This chapter presents an analysis of the data from the field study. The chapter shows the analyses of the survey responses for willingness to pay (WTP) expressed by respondents for quality malaria treatment in government (public) and private hospitals; and the respondents' willingness to contribute (WTC) into a national health insurance scheme. Potential consumers were presented with carefully structured scenarios depicting the services being offered for sale (malaria treatment from government and private hospitals) and the method of payments for accepting the service (out-of-pocket payments). These were followed by a set of questions asking whether the respondents were willing to pay some stated prices for the malaria treatment using government or private hospitals. In the case of national health insurance, after respondents were asked whether they were willing to contribute into a national health insurance scheme or not, an open-ended question was asked as to how much respondents would be willing to contribute into a national health insurance scheme every month if asked by the government to do so. (A copy of the survey instrument is attached as an appendix). The basic results are presented below by examining the frequencies, mean values and the main characteristics of the socio-demographic variables, respondents' perception of health improvement as a national goal among other goals, before moving on to examine the WTP and WTC in subsequent chapters.

9.1. Socio-Demographic Data

Some economists argue that the influence of socio-demographic factors such as age, gender, marital status, social class and other psychological reasons on demand behaviour cannot be ruled out in the theory of demand (see Kennedy 1992; Lipsey and Harbury 1992). The following sections present the socio-demographic data obtained from the field survey after which they are used to determine how they influence ranking of health improvement as a national goal, choice of hospital for treatment, willingness to pay, willingness to contribute into a national health insurance scheme, and the monthly health insurance premium.

Gender Variable

The heads of 487 households were interviewed for the study. Out of this number, 331 were male (68 percent) and 156 (32 percent) were female. The gender structure of this sample was thus unrepresentative of the general population in Ghana neither was it representative of the population in the Eastern region. This is because, according to the 2000 Population and Housing Census (GSS, 2000), 51% of Ghana's population (and that of the Eastern region) are females and 49% are males. However, for a variety of reasons including cultural beliefs, the head of households in Ghana usually tends to be a man (Ghana Statistical Service *et al.*, 1999). Hence, since the survey was focussed on heads of households and heads of households in Ghana tend to be males, the sample could be representative of heads of households in Ghana. However, we were unable to check this due to lack of data. This explains why the sample is skewed in favour of males. This feature should be considered when interpreting any results of this study that uses gender as explanatory variable.

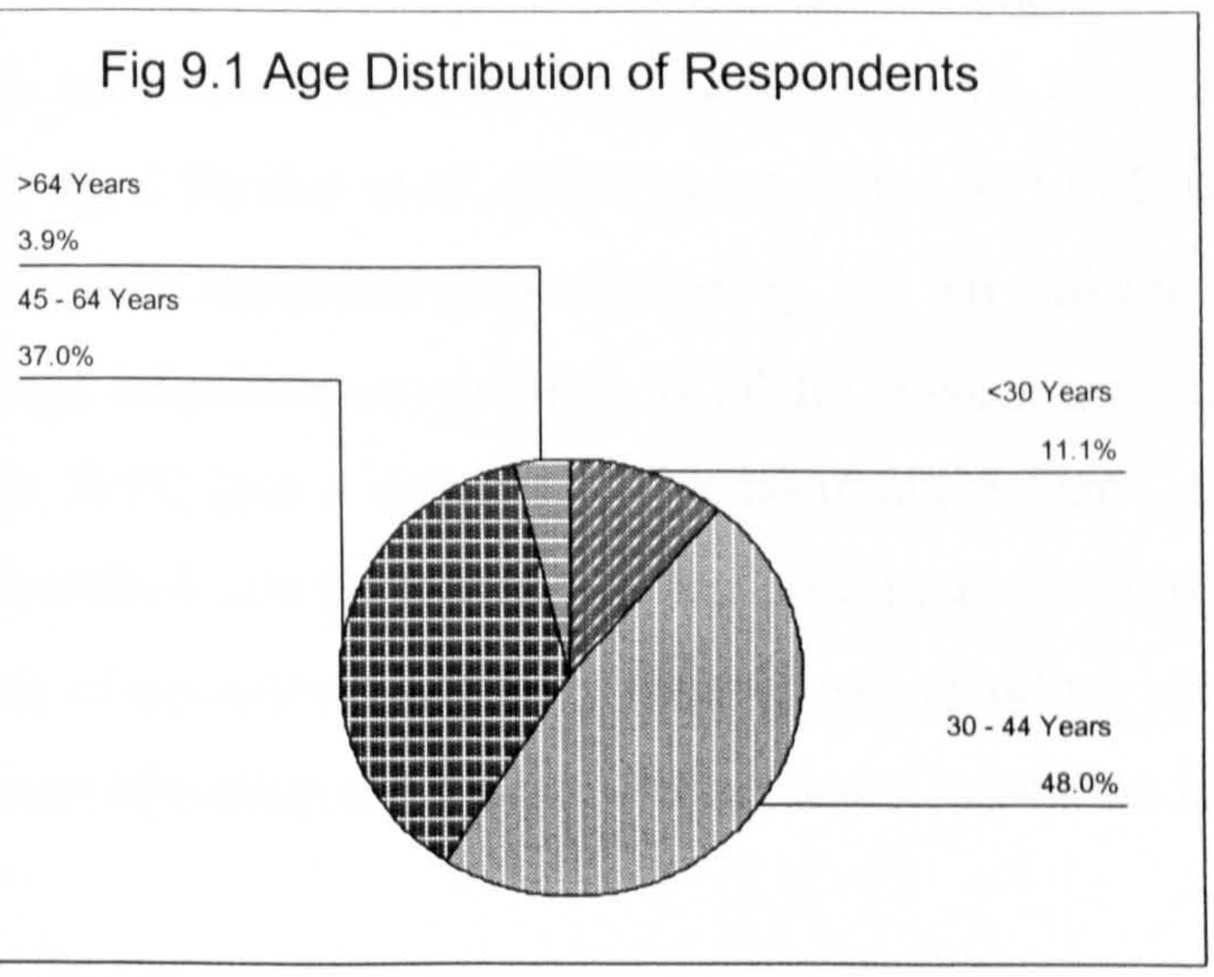
Gender influences health, access to health care, quality of care, risks of getting tropical infectious diseases, violence and injuries (Sims, 1994). Also, in traditional African societies, women take care of household activities, subsistence farming to produce food crops, reproduction and mothering. On the other hand, men tend to grow cash crops (such as cocoa, coffee and cashew nuts in Ghana) that bring in large sums of income and also men have greater access to better-paid off-farm employments because they tend to be highly educated. Being the breadwinner gives men much control over family income and major decisions such as who gets which health care and when (David, 1993 and Gysels *et al.*, 2002). With 68 percent of respondents being males, it confirms the normal expectation that most households in Ghana are male-headed. Gender was used as a variable to assess how it influenced the respondents' willingness to pay and willingness to contribute into a National Health Insurance Scheme. The effect of the respondents' gender as a factor influencing WTP was to be captured by introducing a dummy variable such that 0 represents a female respondent and 1 represents a male respondent in the multivariable analyses.

Age Variable

The age variable is very important on the basic assumption that the ageing process moves along with other social and financial responsibilities. In the area of health care,

ageing is known to make people more vulnerable to diseases. Statistics show that children and the aged are more vulnerable to malaria in Ghana (MOH, undated). Hence, when respondents expressed their WTP, they were likely to have in mind their other social commitments, which increase with age. The average age of the respondents used for the study was 42 years, with the highest age being 94 years and the lowest being 23 years. The age variable was recoded into four groups and the distribution and the percentages in the various groups are shown in fig. 9.1. As can be seen from figure 9.1, 48 per cent of the respondents were between the 30 - 44 years age group, 37 per cent between 45 – 64 years age group, 11.1 per cent in the <30 years age group and only 3.9 per cent were older than 64 years. This was relatively unrepresentative of the age distribution of the Ghanaian population as shown by the 2000 Population and Housing census. Lavy and Germain (1994) found that age influences choice of treatment. Statistical analyses would be used to determine if the responses given by the respondents in the various age groups differed from each other's. These aim to find out if age influences individuals' WTP for their health care.

Fig 9.1 Age Distribution of Respondents



Educational Background Variable

Table 9.1 shows the educational background of the respondents.

Table 9.1 Educational background of respondents

	Frequency	*Percent*	*Valid* percent
No Formal Education	28	5.7	5.7
Primary Education	31	6.4	6.4
Middle/Junior Secondary	165	33.9	33.9
Secondary/Vocational/Technical/Commercial	121	24.8	24.8
Post Secondary/Teacher Training	64	13.1	13.1
Tertiary	78	16.0	16.0
Total	**487**	**100.0**	**100.0**

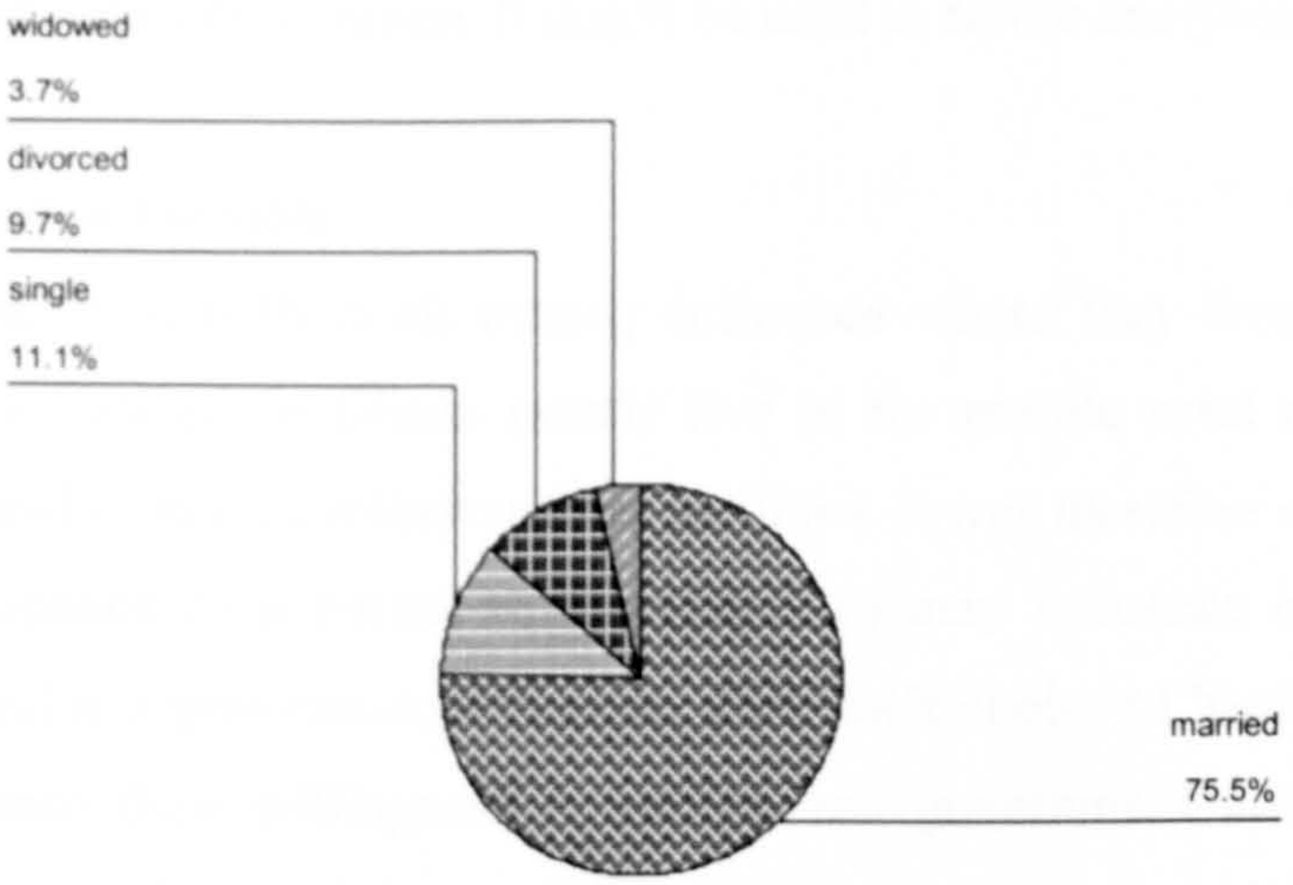
Source: *Field Survey, 2001*

The table shows that 28 (5.7 percent) of the respondents had no formal education and 94.3 per cent had had some form of formal education, (at least primary education). This was highly unrepresentative distribution of educational level attained in Ghana neither was is representative of the Eastern region. It highly under represents those with no formal education and over represents those with formal education. Ghana Statistical Service *et al.*, (1999) have found that in Ghana, "one in three females and one in five males has no education" (p.11). To make it convenient to find the effect of formal education on people's WTP for government and private hospitals, and also their WTC into a national health insurance scheme, the education variable was re-categorised into those who had had no formal education and those who had had some form of education. A dummy variable was therefore introduced with 0 representing no formal education and 1 representing formal education in the multivariable analyses.

Marital Status Variable

Out of the 487 respondents, 2 did not state their marital status. Of the 485 who stated their marital status, 366 representing 75.5 percent were married; 54 (11.1 percent) were single; 47 (9.7 percent) were divorced and 18 (3.7 percent) were widowed. This is as shown in fig. 9.2.

Fig 9.2 Marital Status of Respondents



With the number of respondents who were single, divorced or widowed being small, the marital status variable was relabelled into "married" and "not married" where "not married" comprised of those who were single, divorced and widowed – all of which added up to 119 representing 24.5 percent of the valid respondents. Marital status was represented by a dummy variable such that 0 represents "not married" and 1 represents married. Statistical analyses were conducted to determine if the marital status of respondents influenced how they ranked health improvement as a national goal, their choice of hospital to treat malaria, willingness to pay to use government and private hospitals, and their willingness to contribute into a national health insurance scheme.

Religion Variable

There have been situations where parents have refused treatments for their children because of their religious beliefs. It was therefore anticipated (before data collection) that religion might influence how individuals rank health improvement as a national goal, their choice of health facility for treatment, and will eventually influence their willingness to pay. Hence, the survey collected information about the respondents' religious affiliation. One respondent refused to state her religion. 20 respondents (4.1 percent) did not have any religion at all, 19 (3.9 percent) stated that they were Moslems, 15 (3.1 percent) Traditionalists, 138 (28.3 percent) Pentecostals, 18 (3.7

percent) Jehovah witnesses, 38 (7.8 percent) syncretics, 164 (33.7 percent) orthodox Protestants and 74 (15.2 percent) Catholics. However, after data entry and initial data screening, a purposive decision was made not to use this data for any of the analyses reported in this dissertation. It might be used in future analyses.

Occupation Variable

Occupation of individuals usually influence where they live within a country. For instance, farmers in Ghana mostly live in the remote rural areas, which lack most social and economic infrastructural facilities. It was therefore anticipated that the type of occupation respondents were engaged in may influence how they (respondents) rank health improvement as national goal, their choice of health facility for treatment and hence their willingness to pay to use government and private hospitals for treatment, and their willingness to contribute into a national health insurance scheme. It was also thought that occupation could be used to act as a proxy for income in case the data on income was not forthcoming or unreliable. Hence, the survey asked about the respondents' occupation in order to use for further analyses. The occupational distribution of the respondents is shown in table 9.2. Those engaged in primary occupations were mainly farmers, fishermen and hunters. Those in the secondary sector were people engaged in construction (e.g. carpentry, masonry); craftsmanship (e.g. basketry, goldsmith,); and dressmaking. Tertiary or service sector workers included teachers, traders, hairdressers, fitters/mechanics, bankers, clerical workers, herbalists, accountants and executive officers.

Table 9.2 Occupational Distribution of Respondents

	Frequency	*Percent*	*Valid Percent*
Primary	58	11.9	11.9
Secondary	71	14.6	14.6
Tertiary	354	72.7	72.7
Unemployed	4	0.8	0.8
Total	**487**	**100.0**	**100.0**

Source: Field Survey, 2001

As shown in table 9.2, 58 (11.9 percent) of the respondents were in primary occupation; 71 (14.6 percent) in secondary occupation; 354 (72.7 percent) in tertiary occupation and 4 (0.8 percent) were unemployed.

Income Variable

There is a large body of evidence that 'needs' for health care differ between income groups (Olsen and Smith, 2001). Inequalities in incomes, whether at individual, national, or international level, lead to inequalities in the ability to satisfy basic health care needs – quality food, water and, of course, medical care (IFPMA, 2000)[1]. As a general rule, we would expect that, as income increases, consumption of health-improving goods and services also increases. It has been firmly established that income is strongly correlated with health care spending and higher incomes strongly correlated with higher demand for health insurance. Also, many studies have shown a positive correlation between income and health status. Higher income individuals are able to afford higher quality-higher-priced health care because they have the ability to pay (Gertler *et al.*, 1990; Jan *et al.*, 2004). Thus, evidence from literature shows that income positively influences people's WTP for health care as well as their WTC into health insurance. It was therefore expected that people with higher incomes would be prepared to pay higher amounts for health care and into a national health insurance scheme, than people with relatively lower incomes in Ghana.

It is known that economists prefer the use of money metric of utility – income or consumption expenditures – as indicator of poverty and living standards (Samuelson, 1974). Income is generally the measure of choice in developed countries and the preferred metric in developing countries is an aggregate of household's expenditures. The choice of expenditures over income is dictated by a variety of difficulties involved in measuring income in developing countries, among which is the seasonal variability in such earnings and the fact that a large proportion of income in developing countries come from self-employment both in and outside agriculture. It has been argued however that, the expenditure approach potentially defines the poor group too narrowly (Sahn and Stifel, 2001). This has led some authors to suggest the use of assets index as proxy for measuring economic status. However, the reliance on asset index to measure socio-economic status is unconventional in research about economic disparities, which tends to define economic status in terms of income and to some extent consumption (Sahn and Stifel, 2001). Asset index is usually used in studies that do not provide data on income and consumption (for example, the World

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[1] International Federation of Pharmaceutical Manufacturers Associations (2000).

Bank sponsored Demographic and Health Surveys – DHS and Living Standards Surveys - LSS), and as such an asset index approach presents the only way to examine, from economic perspective, the distributional aspects of the data. Whilst acknowledging that there could be some difficulties in measuring income levels in developing countries such as Ghana leading to suggestion that assets index or expenditure approach be used instead, it must be noted that, either of these has its own problems in terms of data required and how these are measured and valued. Also, it is difficult to understand how the expenditure approach or assets index explain individual's ability to pay for their health care.

Income in this study is defined as the average monthly income of the head of household (i.e. the respondent). Since individuals usually do not like disclosing their actual incomes, income ranges were given for respondents to indicate the range into which their monthly incomes fell. One respondent refused to indicate his income. Table 9.3 shows the monthly incomes of the respondents.

Table 9.3 Monthly Income Level of Respondents

	Frequency	*Percent*	*Valid Percent*
Over ¢500,000	108	22.2	22.2
¢401,000 - ¢500,000	68	14.0	14.0
¢301,000 - ¢400,000	87	17.9	17.9
¢201,000 - ¢300,000	98	20.1	20.2
¢101,000 - ¢200,000	72	14.8	14.8
¢1,000 - ¢100,000	53	10.9	10.9
Valid Total	486	99.8	100.0
Missing System	1	0.2	
Total	**487**	**100.0**	

Source: Field Survey2001. *US$1 = ¢7000 at the time of survey*

The income ranges presented to the respondents to choose from in the survey compared very favourably (almost identical) to that used by Buor (2004) in his study of utilisation of health services in the Ashanti region of Ghana. Ghana's per capita income was reported to be US$390[2] in 2000, which was equivalent to ¢2,730,000 using the exchange rate at the time of the survey of US$1 = ¢7000. This translates to a monthly income level of ¢227,500. The average income of the respondents was

[2] See section 7.2. The per capita income fell to US$290 in the year 2002 (Source: http://www.ghanaweb.com/GhanaHomePage/economy/statistics.php)

¢325926. By and large, the researcher had no reason to doubt the income data obtained from the field survey because even though some respondents were helped by the interviewers to recall their productive activities in order to estimate their income levels, they reflected well with the general income levels in the country at the time of the survey. Hence, even though the survey instrument asked respondents about their ownership of some assets, a decision was made to rely on the income data to measure economic disparities in the analyses reported in this dissertation instead of using the assets index approach. This is because the data collected on the ownership of assets were not clear because some interviewers stressed on the households' ownership of the assets whereas others stressed on the respondents' ownership of the assets, which led to disparities in the responses[3] and a lot of missing values.

In the univariable analyses, responses were examined to see if they differed between the income levels. Five dummy variables were used to represent income levels in the multivariable analyses to capture the impact of income levels on the dependent variables, where income1 represents income levels over ¢500,000.00; income2 represents income levels between ¢401,000.00 and ¢500,000.00; income3 represents income levels between ¢301,000.00 and ¢400,000.00; income4 represents income levels between ¢201,000.00 and ¢300,000.00; and income5 represents income levels between ¢101,000.00 and ¢200,000.00. This method of capturing the effect of income improved the model as compared to when income was used as a continuous variable.

Size of Household Variable

A household is defined as the number of people who depend on the same budget or the number of people who eat from the same pot. There is evidence that larger households are more likely to join social/national health insurance schemes (Arhin, 1994) and as such it is worth empirically exploring if the size of Ghanaian households influences the willingness to pay for health care and also contribute into a National Health Insurance scheme. In the year 2000, the average household size in Ghana was 5.1[4]. The total number of people in the households surveyed ranged from 1 to 18. The average household had 6 members.

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[3] Post data collection interaction with interviewers revealed this problem, which lead to a lot of missing data

[4] http://www.ghanaweb.com/GhanaHomePage/general/ and GSS, 2000

Respondents were asked to state the number of their household members who fell ill over the previous month and also over the previous year. It was anticipated that the larger the number of household members who required medical attention frequently, the lower the amount that the head of household would be willing to pay for health care. However, it was anticipated that the larger the number of household members who required medical attention frequently, the more willingly would the head of household be prepared to contribute into a national health insurance scheme. From the field survey, the minimum number of household members who fell ill over the previous month was zero and the maximum was 9 with the mean being 1. Also, the minimum number of household members who fell ill over the previous year was zero and the maximum was 11 with the mean being 3.

Distance to the Nearest Hospital Variable

The distance to the nearest hospital variable is seen to be an important variable because it reflects people's consideration of how far away they are from health facilities when they are contemplating how much they would be prepared to pay for health care. The distance variable will reflect the cost of transport and time spent by patients in travelling from their homes to health facilities to seek treatment. Distance to the nearest hospital thus shows the convenience of accessing health care. Distance has been found to have a negative relationship with demand for outpatient care (Heller, 1982). Also, time spent travelling to a health facility has been found to influence individuals' choice of health facility for treatment (Lavy and Quigley, 1993). It was therefore anticipated that people who lived far away from health facilities would be prepared to pay less for health care as compared to people who lived closer to health facilities. This is because the further away one is from a health facility, the greater the cost of transport in terms of both the fares paid and time spent in travelling to the health facility. The minimum distance travelled by respondents to the nearest hospital was 1 km and the maximum distance was 30 km, with a mean distance travelled being 5.1 km. Table 9.4 shows the distance away from the nearest hospitals of the respondents used for this study after the data on distance had been recoded into a categorical data. This was to see if the responses given for ranking of health improvement as a national goal, choice of hospital and willingness to pay were confounded by distance. From the table, 343 of the respondents (representing 70.4

percent) lived within 1-5 kilometres (km) of a hospital; 40 (8.2 percent) lived within 6-10 km of a hospital; 101 (20.7 percent) lived within 11-15 km of a hospital; 2 (0.4 percent) lived within 16-20 km; and 1 (0.2 percent) lived within 26-30 km of a hospital.

Table 9.4 Distance to the nearest hospital (in km)

Distance	*Frequency*	*Percent*	*Valid Percent*
1 – 5	343	70.4	70.4
6 – 10	40	8.2	8.2
11 – 15	101	20.7	20.7
16 – 20	2	0.4	0.4
26 – 30	1	0.2	0.2
Total	**487**	**100.0**	**100.0**

Source: Field Survey, 2001

9.2 Ranking of Health Improvement as a National Goal

It is believed that how individuals rank health improvement as a national goal will influence their choice of hospital and also their willingness to pay for health care either at the point of use or through health insurance. Hence, to find out how the respondents value their health care, they were asked to rank health improvement as a national goal among six others namely, education; old-age assistance; sanitation; recreational facilities; road construction; and provision of housing. The list of national goals was adapted from the work of Koomson (1999), which sought to estimate people's willingness to pay for solid waste management in the Cape Coast Municipality. This material was used for further analysis to determine how ranking of health improvement as a national goal influences the choice of hospital for treatment, willingness to pay to use either a government or a private hospital to treat an episode of malaria, willingness to contribute into a national health insurance scheme, and the amount individuals will be willing to pay as their monthly health insurance premia if government asks them to do so. Thus it is believed that respondents' ranking of health improvement would help them to reflect on how much they were willing to pay for health care and also whether or not they would contribute into a national health insurance scheme, and if so, how much they would contribute per month. This section reports the univariable statistical analyses of responses to the ranking of health improvement and its relationship with the socio-demographic data in order to

determine the reliability, validity and usefulness of the data and to establish if there are any significant relationships between ranking of health improvement as a national goal and socio-demographic characteristics of respondents. Chi-square analysis and Pearson product moment correlation were the main statistical techniques used to determine the relationship between each of the socio-demographic variables and ranking of health improvement as a national goal. The type of technique used for each variable depended on the nature of the data obtained for the variable and whether or not they satisfied the basic assumptions required by the techniques (see section 8.4).

Table 9.5 Ranking of health improvement as a national goal

	Frequency	*Percent*	*Valid Percent*
Ranked first	277	56.9	57.3
Ranked second	127	26.1	26.3
Ranked third	51	10.5	10.6
Ranked fourth	16	3.3	3.3
Ranked fifth	7	1.4	1.4
Ranked sixth	4	0.8	0.8
Ranked seventh	1	0.2	0.2
Valid Total	**483**	**99.2**	**100.0**
Missing system	4	0.8	
Total	**487**	**100.0**	

Source: Field Survey, 2001

Table 9.5 shows the distribution of the responses given by the respondents on their ranking of health improvement as a national goal. Four respondents refused to respond to this question. Of those who responded, 277 (57.3 percent) ranked health improvement first; 127 (26.3 percent) ranked it second; 51 (10.6 percent) ranked it third; 16 (3.3 percent) ranked it fourth; 7 (1.4 percent) ranked it fifth; 4 (0.8 percent) ranked it sixth and only 1 respondent ranked it seventh. That is, 83.6 per cent of the respondents ranked health improvement either first or second as a national goal and only 16.4 per cent ranked it below second.

To help find out how respondents' ranking of health improvement influence their willingness to pay for government and private hospitals, and also their willingness to contribute into a national health insurance scheme, the ranking of health improvement variable was re-categorised into those who ranked it high and those who ranked it low [Tabachnick *et al.*, (2001)]. Here, "ranked high" refers to those who initially ranked

health improvement as either first or second;[1] and "ranked low" refers to those who initially ranked health improvement lower than second as a national goal. Table 9.6 shows the frequency distribution of the new ranking of health improvement as a national goal variable. A dummy variable was therefore introduced in all the analyses for this variable with 0 representing "ranked low" and 1 representing "ranked high".

Table 9.6 Ranking of health improvement as a national goal

	Frequency	*Percent*	*Valid Percent*
Ranked low	83	17.0	17.0
Ranked high	404	83.0	83.0
Total	**487**	**100.0**	**100.0**

Source: Field Survey, 2001

Table 9.7 gives a summary of the univariable analyses conducted using ranking of health improvement as a national goal as the dependent variable and the socio-demographic characteristics as explanatory variables.

Table 9.7 Summary of analysis on ranking of health improvement

VARIABLE	**TEST CONDUCTED**	
	Chi-Square	***Pearson Product-Moment Correlation***
Gender	Insignificant	-
Income	Negative; Significant	Negative, Significant
Age	Insignificant	-
Education	Insignificant	-
Occupation	Significant	-
Marital Status	Insignificant	-
Choice of hospital	Insignificant	-
Willingness to contribute into NHIS	Insignificant	-
Distance to nearest hospital	Positive, Significant	Positive; Significant

It can be seen from the results in Table 9.7 that, statistically, how the respondents ranked health improvement as a national goal was influenced negatively by income levels and positively by distance to the nearest hospital. This implies that high income respondents ranked health improvement lowly than low income respondents, as a national goal. Generally, high income earners have better health compared to poor

[1]. 83.6 percent of the respondents ranked health improvement as first or second national goal and only 16.4 per cent ranked it below second.

people so it could be that the respondents who earned higher incomes had good health and as such saw the need for national goals other than health improvements to be of higher priority than health improvement. The relationships between ranking of health improvement as a national goal and all the other socio-demographic variables were statistically insignificant.

Ranking of Health Improvement by Income levels

The average monthly income of the respondents who ranked health improvement highly as a national goal was ¢312283 and that of those who ranked it lowly was ¢392169. The difference in mean monthly income was statistically significant [mean difference in monthly income was ¢79,886; $p < 001$]. It was observed from the statistical analyses that relatively greater percentages of the respondents in the various income groups ranked health improvement high as a national goal. Chi-Square tests showed that there was a statistically significant difference in the proportion of respondents in the various income groups who ranked health improvement high and those who ranked it low [Pearson Chi-Square = 16.892; and Likelihood Ratio = 16.892 at $p = 0.005$]. In all, relatively higher percentages of respondents in the lower income groups ranked health improvement higher as a national goal than those who are in the higher income groups. That is, there is a small negative relationship between income and ranking of health improvement as a national goal [both Pearson's and Spearman's R =-0.181 at $p<0.005$]. This implies that the respondents in the lower income groups saw health improvement to be a more important national goal than those in the higher income groups. It is well established that people in lower income groups tend to have poorer health than rich people. Hence, it could be that the health conditions of the respondents in the lower income groups were poor and as such they wanted improvement in their health care, thereby ranking health improvement high as a national goal. These groups of people would therefore be expected to support any financing mechanisms that aim to raise adequate and sustainable financial resources to improve health care delivery and make it free (or at least affordable) at the point of use.

Ranking of Health Improvement by distance to nearest hospital

The average distance to the nearest hospitals from the homes of respondents who ranked health improvement highly as a national goal was 5.48 km and that for those who ranked it lowly was 3.35 km. The difference in mean distance was statistically significant [mean difference in distance was 2.13km; $p < 0.001$]. A Chi-Square test indicated that there was a statistically significant association between the two variables [Pearson Chi-Square = 22.317 at $p<0.001$; and Likelihood Ratio = 30.052 at $p<0.001$]. Pearson's rank correlation analysis indicated that there was a low positive relationship between distance to the nearest hospital and the respondents' ranking of health improvement as a national goal, which was significant at the 1 % level. This implies that people who lived far away from health facilities ranked health improvement as a higher national goal than those who lived nearer to health facilities. In Ghana most people who tend to live far from health facilities are those who live in rural areas such as farmers. These people usually tend to be lower income earners and have greater need for health care. This could be the reason for the positive relationship between distance to the nearest hospital and ranking of health improvement as a national goal, which implies that respondents who live far from health facilities ranked health improvement high as a national goal than those who live nearer to health facilities. This could be because those who lived far from health facilities thought that improvements in health care delivery would mean that health facilities would be built closer to them in order to reduce their travel time and cost when accessing health care. Hence, these people are likely to support any financing mechanisms that aim to raise adequate and sustainable amount of resources to finance improved health care delivery.

Surprisingly, how respondents ranked health improvement as a national goal had no significant statistical relationship with their choice of hospital for malaria treatment.

We now turn our attention to consider the choice of hospital for treatment as the dependent variable and how it was influenced by the socio-demographic variables of the respondents.

CHAPTER TEN
CHOICE OF HOSPITAL FOR TREATMENT AS DEPENDENT VARIABLE

10.0 Introduction

Individuals who experience accidents or illnesses (poor health) are faced with a choice of obtaining treatment from one of several available providers, who can broadly be classified as either private or public health care providers. In market-oriented health systems, each alternative provider offers an expected improvement in health for a price that reduces the income that is available for the consumption of non-medical goods. In theory, the rational individual would choose the provider whose combination of quality of health care and price offers the highest utility, where utility is derived from health care and the consumption of all goods and services other than medical care. The extent of health care benefit (utility) obtained from treatment is found to be affected by both the ability of the health care providers and their motivation to deliver (Leonard, 1998). Research has shown that the choice of health care provider is influenced by patients' perception of the motivational factors that health workers face (Leonard, 1998). Heller (1992) and Akin *et al.*, (1984, 1986 a & b) found evidence that show that people usually prefer public health facilities due to the perceived quality of care provided by the public health facilities. Mwabu (1986) states that patients' first visits across health care providers are influenced by the personal socio-economic characteristics of patients and attributes of health care providers. However, Lavy and Germain (1994) found that the choice of treatment was not influenced by gender and the education levels of individuals but was affected by the age of individuals and accessibility of health facilities. Also, Lavy and Quigley (1993) found evidence that time spent travelling to a health facility influence the choice of health facility for treatment. Additionally, Litvack and Bodart (1993) found evidence that show that there is a positive relationship between income and the probability that individuals would use public health facilities. Thus the factors that have been identified to influence people's choice of health care treatment include motivational factors, quality of services, gender, education, travelling time and income levels.

It was believed that the sensitivity of households' choice of hospital for treatment and the possibility for substituting alternative sources of treatment would influence the

efficiency and revenue-raising potential of the methods of financing health care such as user charges and national health insurance schemes.

As indicated in section 8.4(a), in Ghana private hospital treatment costs more than that of government hospitals. For instance, on the average, it costs ¢50,000 to treat an episode of malaria in private hospitals whereas it costs not more than ¢7000 in government hospitals (personal communications with one medical officer in-charge of private hospital and one in-charge of government hospital). It was therefore thought that the respondents' preferences for health care facilities would influence their willingness to pay (WTP) to use either government or private hospitals, and also their willingness to contribute into a national health insurance scheme, and their monthly health insurance premia. This chapter presents the results of the univariable statistical analyses conducted using the respondents' choice of hospital for treatment (as the dependent variable) and its relationship with the socio-demographic characteristics of the respondents.

When respondents were asked to indicate whether they preferred to use a government or a private hospital to treat an episode of malaria, 91 (18.7 percent) said they preferred using a private hospital; 394 (80.9 percent) preferred using a government hospital; and 2 refused to indicate their preferences (Table 10.1). This conforms to the findings of Heller (1982) and Akin *et al.*, (1984, 1986) that people usually prefer public health facilities for their treatments.

Table 10.1 Choice of hospital

	Frequency	*Percent*	*Valid Percent*
Private	91	18.7	18.8
Government	394	80.9	81.2
Total	485	99.6	100.0
Missing System	2	0.4	
Total	**487**	**100.0**	

Source: Field Survey, 2001

Qualitative techniques were used to explore the reasons behind the choices that respondents made as to which health facilities they preferred to use for treatment. These are presented below.

Reasons for choosing private hospitals

47.3 percent of the respondents who preferred using a private hospital cited the quality of service received as the main reason and 35.2 percent cited the saving of time due to less waiting time as the main reason for choosing a private hospital. Thus, 82.5 percent of those who preferred to use private hospitals cited quality and time savings as their main reasons for choosing private hospitals.

Among the reasons given by those who preferred to use a private hospital were:

i. less waiting time because faster (prompt) and effective services are rendered leading to no delays;
ii. more time and proper attention are accorded patients;
iii. quality services are rendered to patients;
iv. no waste of time i.e. efficient use of time due to less bureaucracy;
v. hard working, courteous and friendly staff;
vi. availability of drugs and quality modern medical facilities;
vii. private doctors do not charge consultation fees in addition to the charges they charge for prescription and other services;
viii. proximity to respondents;
ix. the arrogance of staff at government hospitals and the inefficiency of government hospitals;
x. "to avoid the ungodly cash and carry system being practised at government hospitals" – considerate terms of payment can be arranged with the private health care providers so that payment could be deferred until after the patient has received treatment unlike the situation in government hospitals where cash and carry policy is being operated;
xi. most government hospitals have outmoded and non-rehabilitated facilities;
xii. specialist services.

Reasons for choosing government hospitals

50.8 percent of the respondents who preferred to use a government hospital for treatment cited the relative cheapness of government hospitals as the main reason for their choice; 32 percent cited the quality of service they receive as their reason; and 7.9 percent cited the refund of bills as the main reason for choosing government hospitals.

The reasons given by those who preferred to use government hospitals were:

i. refund of part of or full bill by employers – usually the government;
ii. relatively cheaper and affordable (subsidised) cost of treatment –
iii. availability of adequate and better facilities;
iv. availability of qualified and well-trained doctors and other supporting staff;
v. proximity to respondents;
vi. availability of specialist;
vii. institutional policy for employees to use government hospitals;
viii. government hospitals are likely to have equipment, drugs and expertise to fight diseases;
ix. "because we are part of government, we must patronise government hospitals to help government generate revenue";
x. to get valid excuse duty;
xi. it is the responsibility of government to render good health care to the citizens;
xii. private hospitals refer serious cases to the government hospitals so there is no need to go to private hospitals;
xiii. government hospitals are well-managed;
xiv. to avoid being cheated;
xv. government will be responsible for any complications caused during treatment.

Table 10.2 presents a summary of all the univariable statistical analyses and tests conducted using choice of hospital as the dependent variable in order to determine if there are any relationships between the choice of hospital variable and the socio-demographic characteristics of respondents. The options were government hospital (1) and private hospital (0).

Table 10.2 Summary of analyses on choice of hospital as dependent variable

VARIABLE	TEST CONDUCTED		
	Chi-Square	*Pearson's Correlation*	*Spearman's Correlation*
Gender	Significant	-	-
Income	Significant	-	-
Age	Insignificant	Low positive, significant	-
Education	Insignificant	-	-
Occupation	Insignificant	-	-
Marital Status	Insignificant	-	-
WTC into NHIS	Insignificant	-	-
Distance	-	-	Perfect
Household Size	Insignificant	-	-

From the results in table 10.2, it can be seen that the respondents' gender, their income levels, age and the distance from their homes to the nearest hospital influenced their decision as to which health facility to choose for malaria treatment. The relationship between choice of hospital and the other socio-demographic characteristics of the respondents were statistically insignificant.

Choice of Hospital for treatment by gender

The statistical analyses showed that 86.5 percent of all female respondents preferred to use a government hospital for treating malaria and 78.2 percent of all male respondents preferred to use a government hospital in treating malaria. The chi-square test indicated that significantly, greater percentage of females than males preferred to use government hospitals to treat an episode of malaria [Pearson chi-square = 3.74 at $p = 0.05$], which was counter to the finding by Lavy and Germain (1994) that choice of treatment is not influenced by gender. As stated in section 9.1, most households in Ghana are male-headed, and it is known from section 8.4(a) that private hospitals are more expensive than government hospitals. Also, the average monthly income of the female respondents was ¢275,641 and that of the male respondents was ¢349,697. The difference in average monthly income between males and females was statistically significant [mean difference = ¢74,056, $p < 0.001$]. Hence this result could mean that the females preferred the government hospitals because of its

cheapness in order to save on the cost of treatment so as to improve the real value of the household budget. Thus, the result could be due to differences in ability to pay.

Choice of Hospital by Income levels

Gertler *et al.*, (1990) show that income can influence the choice of health care only if the conditional utility function allows for a non-constant marginal rate of substitution of health care for consumption of other goods and services. Thus, if health care is a normal good, then its demand will increase with increases in income levels. Also, a necessary condition for a commodity to be normal is that as income increases the marginal rate of substituting its consumption for other commodities diminishes, all other things being equal. In a discrete choice situation, normality implies that as income rises individuals are more likely to choose the options that offer higher utility. Thus, if health care is a normal good, then all other things being equal, higher-income individuals will choose the high price-high quality option and vice versa. Stated differently, price difference will prevent low-income individuals from choosing the high price-high quality option but it will not prevent high-income individuals form so doing. In Ghana, private hospitals are generally more expensive than government hospitals. It was therefore expected that more respondents in higher income groups would prefer private hospitals and mainly, respondents in lower income groups would prefer government hospitals, all other things being equal.

The average monthly income of the respondents who preferred to use private hospitals was ¢403,846 and that of those who preferred to use government hospitals was ¢308,270. The difference in mean monthly incomes was statistically significant [mean difference = ¢95,576, $p < 001$]. A Chi-Square test indicated that there was a statistically significant association between income levels and choice of hospital for treatment [Pearson Chi-Square = 27.777 at $p<0.001$; and Likelihood Ratio = 28.136 at $p<0.001$]. Thus, the chi-square analysis showed that greater percentages of respondents in lower income groups were willing to use government hospital to treat an episode of malaria. This could be explained to mean a positive relationship between income levels and the probability that a respondent would use a private hospital to treat an episode of malaria, which was counter to the findings of Litvack and Bodart (1993). Furthermore, following Gertler *et al.*, (1987), this result may be a reflection of the fact that private hospitals in Ghana are of a higher quality than

government hospitals. However, some of the respondents said they preferred government hospitals because the private hospitals do refer their most serious cases to government hospitals, which could be a testimony of the quality of personnel and facilities in government hospitals.

Choice of Hospital and Age

The average age of the respondents who preferred to use private hospital to treat malaria was 41 years and that of those who preferred government hospital was 43 years. The difference in average age between the two groups was not statistically significant. A chi-square analysis indicated that overall, 79.6 percent of the respondents who were less than 30 years old preferred to use government hospitals to treat malaria; 79 percent of those aged between 30–44 years preferred to use government hospitals to treat malaria; 82.7 percent of those aged between 45–64 years preferred to use government hospitals; and all of the respondents aged 65 years and above preferred to use government hospitals to treat malaria. Thus, greater percentages of people in the various age groups preferred to use government hospitals, compared to private hospitals, to treat malaria. Spearman's correlation analysis between the age distribution of respondents and their choice of hospital for treating malaria showed a very low positive relationship [Spearman's R =0.072; p = 0.43] between the two variables. That is, the older respondents preferred to use government hospitals to treat malaria. This conforms to the finding of Lavy and Germain (1994) that age of respondents could influence the choice of treatment. This could be due to the fact that in Ghana as individuals' grow, their social responsibilities increase and as such they prefer to use the cheaper government hospitals to treat malaria so as to save on cost of treatment and use the extra income on other responsibilities.

Choice of Hospital and formal education

Some evidence shows that the better educated and informed people tend to be associated with higher levels of demand for health services. They tend to be less tolerant of the long waiting time and the poor environment of public health care facilities. However, Lavy and Germain (1994) found that whether or not people have formal education did not influence their choice of treatment. Results from the chi-square analysis of the data for this study also showed there was no statistically

significant relationship between having attained formal education and choice of hospital for treatment [Pearson Chi-Square = 2.419 at p = 0.120].

Choice of hospital and distance

Distance from individuals' homes to health facilities determines how much money they spend on transport and also how much time they spend in accessing health care. These no doubt influence the choices they make for health facilities for treatment (Lavy and Quigley, 1993) and as such the data was examined to see how distance away from a hospital influenced respondents' choice of hospital for treatment. Overall, 79.2 percent (270) of the respondents who lived within 1-5 km of a hospital preferred to use government hospital to treat malaria; 77.5 per cent (31) of those who lived within 6-10 km of a hospital preferred to use a government hospital to treat malaria; and 90.1 per cent (91) of those who lived within 11-15 km of a hospital preferred to use a government hospital to treat malaria. All the 2 respondents who lived within 16-20 km of a hospital preferred to use a government hospital whereas the only respondent who lived within 26-30 km of a hospital preferred to use a private hospital to treat malaria. The average distance to the nearest hospitals from the homes of respondents who preferred to use private hospital to treat malaria was 4.16 km and that for those who preferred government hospital was 5.35 km. The difference in mean distance was statistically significant [mean difference in distance to nearest hospital = 1.19 km, $p < 0.036$]. Spearman's rho correlation analysis showed that there was a perfect positive correlation ($p<0.001$) between distance to the nearest hospital and the use of government hospitals to treat malaria. However, there was no correlation between distance and the use of private hospitals to treat malaria. This implies that more respondents who lived far from a hospital preferred to use government hospitals. With government hospitals far exceeding private hospitals in Ghana, it is quite surprising that government hospitals happen to be found farther to the respondents than private hospitals.

Summary

The results of the univariable statistical analyses show that Ghanaian heads of households prefer to use government hospitals and that, their gender, income levels, age and the distance from respondents' homes to the nearest hospital influence their preferences. These results will be complemented by the multivariable analyses

(reported in chapter 15) to draw final conclusion about Ghanaians' preference of health care providers. Having reported the results of the analyses conducted using respondents' choice of hospital for treatment as the dependent variable, and how it was influenced by their socio-demographic characteristics, we turn attention to national health insurance scheme in the next chapter.

CHAPTER ELEVEN
NATIONAL HEALTH INSURANCE SCHEME

11.0 Introduction

With a per capita income of only US$390 and a daily minimum wage of less than a dollar, a large percentage of the population of Ghana is likely not to have the financial ability to pay for medical treatment at the point of use because with the current user fees system, medical services (diagnostic or curative) demand financial commitments that many people cannot meet from their own resources. Some people may tend to sell off their productive assets whilst others may tend to borrow at exorbitant interest rates in order to be able to pay for their health care. These no doubt would affect the future productivity of most households and become major causes of poverty in the country. Consequently, the search for alternative health care financing schemes that call for pooling of resources and spreading of risk has become a very topical issue in Ghana. National Health Insurance Scheme (NHIS) has been identified as a means of financing health care in the country and the government seems to be preparing the grounds to establish a national health insurance scheme in the country.

This part of the study was therefore designed to find out whether Ghanaians were willing to contribute into such a scheme and if so, how frequently they were prepared to pay their premia and how much they were prepared to pay as monthly premia if asked by the government to do so. This chapter presents the results of the univariable statistical analyses, with interpretations, conducted on the data obtained on respondents' willingness to contribute into a national health insurance scheme, the amount they were willing to pay as monthly health insurance premia, and how these were influenced by the socio-demographic characteristics of the respondents.

92 percent (448) of the respondents were willing to contribute into a NHIS and only 8 percent (39) were reluctant to contribute into any form of NHIS (Table 11.1). This is similar to the result of Asfaw *et al.*, (2004) who found that 94.7% of a sample of 415 people was willing to join community health insurance schemes in rural Ethiopia.

Table 11.1 Would you contribute into a national health insurance scheme?

	Frequency	*Percent*	*Valid Percent*
No	39	8.0	8.0
Yes	448	92.0	92.0
Total	**487**	**100.0**	**100.0**

Source: Field Survey, 2001

The only reason given by those who were not willing to contribute into a NHIS was that they (respondents) pay taxes and so it was the duty of the government to provide them with free health care. It would have been good to explore whether these people do pay for their health care under the current system of health financing or they have not been using health care at all.

If the sample for this study is taken to be representative of the Ghanaian population, then it can be concluded that Ghanaians are generally willing to contribute into a national health insurance scheme. However, it is known that willingness to pay (contribute in this case) does not mean ability to pay, which depends mostly on individuals' disposable incomes, and as such results of people's willingness to pay must be used with caution in policy implementation. Also as discussed in chapter 9, the sample is unrepresentative of the population of Ghana.

Table 11.2 shows a summary of the univariable analyses and tests conducted using the Willingness to Contribute (WTC) into a National Health Insurance Scheme (NHIS) as the dependent variable.

Table 11.2 Summary of Analyses on WTC into NHIS

VARIABLE	*TEST CONDUCTED* Chi-Square
Gender	Insignificant
Income	Insignificant
Age	Insignificant
Education	Insignificant
Occupation	Insignificant
Marital Status	Insignificant
Distance	-
Household Size	-

From the above results, it can be seen that there was no statistically significant relationship between the respondents' decisions whether or not to contribute into a national health insurance scheme and any of the socio-demographic characteristics of the respondents. Hence, one can conclude that there is no need for any government contemplating the establishment of a national health insurance scheme in Ghana to worry that any of these socio-demographic variables used in this study would influence people's decisions whether to contribute into such a scheme or not.

11.1 Frequency of Payment of Premium

How frequently individuals would be willing to pay their health insurance premia depends on the flow of their incomes and financial responsibilities. When respondents were asked how frequently they would like to pay their national health insurance premia, 8 (1.8 percent) said they would like to pay on a daily basis; 44 (9.9 percent) would like to pay on a weekly basis; 9 (2.0 percent) would like to pay fortnightly; 348 (78.2 percent) would like to pay on monthly basis; 18 (4.0 percent) would like to pay on quarterly basis; and 18 (4.0 percent) would like to pay on annual basis. Thus, the majority of respondents (78.2 percent) favoured monthly payment of health insurance premia. This may have something to do with how frequently the respondents receive their incomes. However, the researcher failed to explore the qualitative reasons behind this, which would have helped to explain this result.

11.2 Monthly Health Insurance Premium

When respondents were asked to indicate how much they would be willing to pay as national health insurance premium if they were to pay on monthly basis, the amount stated ranged from ¢200 to ¢100,000 with the average monthly premium being ¢9,186. The median and mode were both ¢5,000.

Table 11.3 shows a summary of the univariable statistical analyses and tests conducted using monthly health insurance premia the respondents were willing to pay as the dependent variable in order to determine how it was influenced by the socio-demographic characteristics of the respondents.

Table 11.3 Summary of analyses on Monthly Health Insurance Premium

VARIABLE	TEST CONDUCTED		
	Independent Samples T-Test	***Pearson Product-Moment Correlation***	***ANOVA***
Gender	Significant, (Male>Female)	-	-
Income	-	Positive, Significant	Significant
Age	-	Positive, insignificant	Insignificant
Education	Insignificant	-	Significant
Occupation	-	-	Insignificant
Marital Status	Significant, (Married>Not married)	-	Insignificant
Distance	-	Negative, Insignificant	-
Household Size	-	Positive, Insignificant	Insignificant

From Table 11.3, it can be seen that the male respondents were willing to pay higher monthly health insurance premia than the female respondents. Also, the married respondents were willing to pay higher monthly health insurance premia than the unmarried respondents. There was a positive relationship between the amount the respondents were willing to pay as monthly health insurance premia and the age of respondents and household size, albeit statistically insignificant. Additionally, there was a statistically significant positive relationship between average monthly income levels and the amount the respondents were willing to pay as monthly health insurance premia. These results imply that in determining the monthly premia for a national health insurance scheme in Ghana, one needs to consider gender, marital status and income levels. Specifically, males may be asked to pay higher premia than females; married people may pay higher premia than unmarried people, and higher income earners may pay higher premia than lower income earners.

Monthly Health Insurance Premium and Gender

On the average, the female respondents were willing to pay ¢7,017 per month as national health insurance premium; and the mean monthly premium that the male-respondents were willing to pay was ¢10,224. An independent-samples t-test showed that there was a statistically significant difference in the mean monthly premium expressed by female respondents (M =7017.36, SD=10827.71) and males

[M=10223.59, SD=11187.28; t (443) =-2.858, p=0.004]. This implies that, on the average, male heads of household in Ghana were willing to pay a higher monthly premium into a NHIS than female heads of household. This conforms to the findings of Dong *et al.*, (2003) who found in Burkina Faso that men were willing to pay higher premia into a community-based insurance than women. However, the magnitude of the differences in the means (i.e. the "effect size" or the 'strength of association') was small (eta[1] squared = 0.018) showing that only 1.8 per cent of the variance in monthly health insurance premium was explained by gender. As noted in chapter 9, most households in Ghana are male-headed so this result could mean that males are willing to pay higher premia into the national health insurance because it will help to raise adequate financial resources to improve health care delivery and make it free at the point of use, which will no doubt protect them against catastrophic unexpected health expenditures (Xu *et al.*, 2003). The average monthly income of the male respondents was ¢349697 and that of the female respondents was ¢275641. The difference in mean monthly incomes was statistically significant. Hence, the difference in the monthly health insurance premia reported by males as compared with females may have been caused by the differences in their income levels.

Monthly Health Insurance Premium and Income

Pearson product-moment correlation showed that there was a low positive correlation between income levels and monthly premium into a NHIS [r = 0.246, n= 444, p<0.001] (table 11.4). This implies that low levels of income were associated with lower levels of monthly national health insurance premia and vice versa.

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[1] Eta squared represents the proportion of variance of the dependent variable that is explained by the independent variable. Values for eta squared can range from 0 to 1. To interpret the strength of eta squared values the following guidelines can be used

- .01 = small effect;
- .06 = moderate effect
- .14 = large effect. (see Cohen, 1988).

Table 11.4 Monthly Premium and Monthly Income Levels

		Monthly Premium	Income levels
Monthly Premium	Pearson Correlation	1	.246**
	Sig. (2-tailed)		.000
	N	445	444
Income Levels	Pearson Correlation	.246**	1
	Sig. (2-tailed)	.000	
	N	444	486

** means Correlation is significant at the 0.01 level (2-tailed)

Also, a one-way between-group analysis of variance was conducted to explore the impact of income levels on the amount individuals were willing to pay as their monthly premium for national health insurance. Respondents were divided into six groups according to their level of monthly income [Group 1: over ¢500,000; Group 2: ¢401,000-¢500,000; Group 3: ¢301,000-¢400,000; Group 4: ¢201,000-¢300,000; Group 5: ¢101,000-¢200,000; Group 6: ¢1,000-¢100,000]. There was a statistically significant difference at the $p<0.05$ level in the monthly premium for the six income groups [$F(5, 438) = 6.505$, $p < 0.001$]. The effect size, calculated using *eta* squared, was 0.07, indicating that the actual difference in mean monthly premiums between the groups was moderate (Cohen, 1988). *Post hoc* comparisons using the Tukey HSD (Honestly Significant Different) test indicated that the mean monthly premium for respondents whose monthly incomes were more than ¢500,000 was significantly different from those whose incomes were between ¢201,000 and ¢300,000 or less (that is group 4; group 5; and group 6). The mean monthly health insurance premia expressed by respondents in group 2 and group 3 did not differ significantly from those in groups 1, 4, 5 and 6. The result shows that the respondents with higher incomes were willing to pay more as their monthly health insurance premia compared to those with lower monthly incomes, which confirms the result of the Pearson correlation and also conforms to the *a priori* expectation (see table 8.2). The mean and standard deviation values for the groups are shown in table B.1 in appendix B.

Monthly Health Insurance Premium and Age

As could be seen in table 11.3 Pearson product-moment correlation showed that there was a very low positive correlation between age and monthly premium [$r = .049$, $n=445$, $p<0.150$], which was not statistically significant. This implies that the older

respondents were willing to pay slightly higher monthly health insurance premia than the younger respondents, which was counter to the findings of Dong *et al.*, (2003). This could be because the older people are more susceptible to diseases and as such spend large sums of money on their health care at the moment due to the cash and carry system in operation, which may be putting untold hardship on them and their families. Sometimes they may be compelled to borrow to raise the deposit before they are seen at hospitals. Hence, they believe they would be better off if they contributed regularly into a NHIS. However, a one-way between-group analysis of variance conducted to explore the impact of age on the amount the respondents were willing to pay as their monthly premium for national health insurance showed that there was no statistically significant difference, at the $p<0.05$ level, in the monthly premium expressed by the respondents in the 4 age groups after the data had been recoded into categorical data [$F(3, 441) = 0.676$, $p = 0.567$].[2]

Monthly Health Insurance Premium and Marital Status

A one-way between-groups analysis of variance was conducted to explore the impact of marital status on the amount the respondents were willing to pay as their monthly premia for national health insurance. Respondents were divided into 4 groups in accordance with their marital status [Group 1: Married; Group 2: Single; Group 3: Divorced; and Group 4: Widowed]. There was no statistically significant difference at $p<0.05$ level in the monthly premium for the 4 groups of marital status [$F(3, 439) = 2.280$, $p=0.079$]. The effect size, calculated using eta squared, was 0.015 indicating that the actual difference in mean monthly premiums between the groups was small. The mean and standard deviation values of the monthly health insurance premium expressed by the respondents in the various groups are shown in table B.2 in appendix B.

After the data had been recoded into married and not married with not married comprising those who were single, divorced and widowed, an independent-samples t-test was conducted to compare the monthly national health insurance premium expressed by those who were married and those who were not married. There was a statistically significant difference in the mean premium expressed by those who were not married [$\underline{M} = 6708.65$, $SD = 8144.72$] and those who were married [$\underline{M} = 9941.30$,

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[2] See section 9.1 for details of the age groups.

SD = 11873.03; t (441) = -3.149, p = 0.002]. This shows that married people were willing to pay higher premia (every month) for national health insurance than those who were not married. This could be because couples can afford to pay higher premia because they could pool their resources together which will increase their ability to pay. The mean monthly income of the married respondents was ¢349,452 and that of the unmarried respondents was ¢25,4202. The difference in mean monthly incomes was statistically significant which means that married respondents had higher ability to pay than the unmarried respondents. However, the magnitude of the difference in the mean monthly health insurance premia expressed by married and unmarried respondents (i.e. the effect size) was small (eta squared = 0.015) indicating that only 1.5 percent of the variance in monthly health insurance premium was explained by marital status.

Summary

The results shown in table 11.3 imply that in determining the monthly premia for a national health insurance scheme in Ghana, one needs to consider gender, marital status and income levels. Specifically, males may be asked to pay higher premia than females; married people may pay higher premia than unmarried people, and higher income earners may pay higher premia than lower income earners.

These results will be used together with those from the multivariable analyses to health draw conclusions and make recommendations.

CHAPTER TWELVE

WILLINGNESS TO PAY TO USE GOVERNMENT HOSPITALS

12.0 Introduction

The basic aim of the empirical study was to find out whether Ghanaians were willing to pay for their health care as this thesis seeks to find out information to improve the knowledge on health care financing issues in Ghana as the country tries to find efficient and sustainable means of financing health care. The issue of financing of health care is really important due to lack of basic health care for majority of the people living in Ghana especially those in the rural areas and also due to the seemingly high out-of-pocket payments that individuals have to make at the point of use as a result of the cash and carry system. This chapter presents the results of the univariable statistical analyses of the responses to the willingness to pay to use government hospitals to treat malaria and how these responses were related to the socio-demographic characteristics of the respondents namely, gender, monthly income levels, education, occupation, marital status, household size, age, distance to the nearest hospital, choice of hospital for treatment and ranking of health improvement as a national goal.

Table 12.1

Willingness to pay to use government hospital (WTPg)

Cedis (¢)	*Frequency*	*Percent*	*Valid Percent*
0	2	0.4	0.4
1000	17	3.5	3.5
2000	36	7.4	7.4
4000	54	11.1	11.1
5000	12	2.5	2.5
6000	91	18.7	18.7
8000	108	22.2	22.2
10000	166	34.1	34.2
Total	486	99.8	100.0
Missing System	1	0.2	
Total	**487**	**100.0**	

Source: Field Survey, 2001

When the respondents were asked to indicate their willingness to pay for using a government hospital treatment for malaria, 1 respondent refused to indicate his WTP and 2 stated that they were not prepared to pay anything for using a government hospital because they pay tax and as such it was the duty of the government to provide health care for the citizens. The interviewers however did not ask these respondents

whether they enjoy free health care or not. For the 484 respondents who indicated positive WTP to use a government hospital to treat malaria in case any member of their households became afflicted, 91 (18.7 percent) were prepared to pay ¢6,000; 108 (22.2 percent) were prepared to pay ¢8,000; and 166 (34.1 percent) were willing to pay ¢10, 000 and above (Table 12.1). The mean amount the respondents were willing to pay to use a government hospital for malaria treatment was ¢8,473. The median WTPg was ¢8,000 and the mode was ¢10,000.

Form the above, it can be seen that about 75% of the respondents were prepared to pay ¢6,000 or more to use government hospitals to treat an episode of malaria and around 25% were prepared to pay less than ¢6,000. ¢6,000 was purposively chosen as the reference point because at the time of data collection, the daily minimum wage was approximately ¢6,000. It was therefore decided to see what percentage of the respondents were willing to spend the daily minimum wage or more to treat an episode of malaria. Table 12.2 shows a summary of the univariable statistical analyses and tests conducted using the amount the respondents were willing to pay to use a government hospital to treat an episode of malaria (WTPg) as the dependent variable to determine how it was influenced by the socio-demographic characteristics of the respondents.

Table 12.2 Summary of Descriptive Analyses on WTPg

VARIABLE	**TEST CONDUCTED**		
	Independent Samples T-Test	***Pearson Product-Moment Correlation***	***ANOVA***
Gender	Significant (Male>Female)	-	-
Income	-	Positive, Significant	Significant
Monthly Premium	-	Positive, Significant	-
Ranking of health Improvement	Insignificant	-	-
Choice of Hospital	Significant (Private>Government)	-	-
WTC into NHIS	Significant (Yes>No)	-	-
Marital Status	Significant (Married>Not Married)	-	Significant
Education	Insignificant	-	Significant
Occupation	Insignificant	-	Insignificant
Age	-	Negative, Insignificant	Insignificant
Household Size	-	Positive, Insignificant	-
Distance	-	Negative, Insignificant	-

It can be seen from Table 12.2 that WTPg had negative relationships with age and distance to the nearest hospital (albeit statistically insignificant) but it had positive relationships with average monthly income levels, monthly health insurance premia and household size. Male respondents were willing to pay higher amounts to use government hospitals to treat an episode of malaria than the female respondents. The mean WTPg of the married respondents was higher than that of the unmarried respondents. The respondents who preferred to use private hospitals had higher WTPg than those who preferred government hospitals. Finally, the respondents who were willing to contribute into a National Health Insurance Scheme had higher WTPg than those who were not willing to contribute into such a scheme. These results will be used together with the multivariable statistical analyses in chapter 14 to help draw conclusions from the empirical study that will, in turn, help to inform the recommendations as to the options available for financing health care in Ghana. Meanwhile, details of how some of the variables influenced the respondents' WTPg are presented in the following sections.

WTPg and Gender of Respondents

The results in table 12.2 show that the male respondents were willing to pay higher amounts, than the females, to use a government hospital to treat an episode of malaria. The female respondents had a mean WTPg of ¢6,462 whereas the male respondents had a mean WTPg of ¢7,355. An independent-samples t-test indicated that the difference in the mean WTP figures for males [M= 7354.55, SD = 2740.84] and females [M= 6461.54, SD=2872.30] was statistically significant [t (484) =-3.302, p=0.001]. Hence, it can be concluded that, statistically, there is a difference in the amounts that males are willing to pay to use a government hospital to treat an episode of malaria in Ghana, which in this case implies that males are prepared to pay more than females. The males had higher average monthly incomes than the females, hence this result could be due to the fact that the male respondents had higher ability to pay.

WTPg and Income of Respondents

Malaria affects all kinds of people irrespective of their income levels[1] and failure to treat it earlier could prove to be fatal. Pearson's product-moment correlation analysis conducted to explore the relationship between respondents' WTPg and their income levels showed there was a low positive relationship between income and the amount the individuals were willing to pay to use a government hospital to treat an episode of malaria [r = 0.150 and p = 0.001] (table 12.3). This implies that the respondents with higher monthly incomes were willing to pay slightly higher than those with lower monthly income levels.

Table 12.3 WTP_g and Monthly Income Levels

		WTP_g	Income levels
WTP_g	Pearson Correlation	1	.150**
	Sig. (2-tailed)		.001
	N	486	485
Income Levels	Pearson Correlation	.150**	1
	Sig. (2-tailed)	.001	
	N	485	486

*** means Correlation is significant at the 0.01 level (2-tailed)*

A one-way between-groups analysis of variance was conducted to explore the impact of income levels on the amount individuals were willing to pay to use a government hospital to treat an episode of malaria (WTPg). Respondents were divided into six groups according to the level of their monthly income [Group 1: over ¢500,000; Group 2: ¢401,000 – ¢500,000; Group 3: ¢301,000 – ¢400,000; Group 4: ¢201,000– ¢300,000; Group 5: ¢101,000 – ¢200,000; and Group 6: ¢1,000 – ¢100,000]. There was a statistically significant difference at the $p<0.05$ level in the WTPg for the six income groups [F (5, 479) = 2.994, p=0.011]. The effect size was 0.03 indicating that the actual difference in mean WTPg between the groups was small. *Post-hoc* comparisons using the Tukey HSD test indicated that the mean WTPg expressed by the respondents who earned more than ¢500,000 (that is group 1) was significantly different from those who earned between ¢101,000 and ¢200,000 (that is group 5). Groups 2, 3, 4, and 6 did not differ from Group 1. Also, Groups 2, 3, 4, 5, and 6 did not differ significantly from each other. The mean and standard deviation values for

[1]But mostly it affects the poor because the richer people could take preventive measures like sleeping in treated mosquito-repelling nets and/or buying insecticides to spray their homes.

the amount the respondents in the various income groups were willing to pay to use a government hospital to treat an episode of malaria are shown in table B.3 in appendix B. The above result implies that the respondents who earned more than ¢500,000 a month were willing to pay higher fees to use a government hospital to treat an episode of malaria than those who earned ¢200,000 or less. This could be interpreted to mean a positive relationship between income levels and WTPg, which confirms the Pearson correlation results and conforms to the *a priori* expectation (table 8.2). Thus people who earn higher incomes are willing to pay higher fees (than lower income earners) to use a government hospital because they have higher ability to pay.

WTPg and Choice of Hospital

An independent-samples t-test showed that there was a statistically significant difference in the mean WTPg expressed by those who preferred private hospitals [M=7736.26, SD=2748.07] and those who preferred government hospitals [M=6926.40, SD=2799.88; t (483) = 2.496, p = 0.013]. This indicates that, on the average, those who preferred private hospitals were willing to pay higher to use a government hospital to treat an episode of malaria than those who preferred to use government hospitals. This was expected because in Ghana private hospitals are more expensive than the government hospitals and as such those people who prefer private hospitals to government hospitals may be in the position to be able to easily afford the relatively lower fees charged at the government hospitals. However, the magnitude of the difference in the mean WTPg (i.e. the effect size) was small (*eta* squared = 0.013) indicating that only 1.3 percent of the variance in WTPg was explained by the choice of hospital. The respondents who preferred to use private hospitals had higher monthly incomes than those who preferred to use government hospitals. Hence, this result could be due to differences in ability to pay.

WTPg and Contribution into National Health Insurance

As reported in chapter 11, 92 per cent of the respondents were willing to contribute into a National Health Insurance Scheme (NHIS). Hence, it was decided to compare the average WTPg of those who were willing to contribute into NHIS and those who were reluctant to contribute into such a scheme.

In all, about 62 percent of the respondents who were not willing to contribute into any national health insurance scheme and about 76 percent of all the respondents who were willing to contribute into a national health insurance scheme were willing to pay ¢6,000 or more to use a government hospital to treat an episode of malaria.

On the average, the respondents who were not willing to contribute into a NHIS were prepared to pay ¢6,026 and those who were willing to contribute into a NHIS were prepared to pay ¢7,156 to use a government hospital to treat an episode of malaria. Thus, people who were willing to contribute into a NHIS were willing to pay higher fees than those who were not willing to contribute into a NHIS to use a government hospital to treat an episode of malaria. An independent-samples t-test showed that there was a statistically significant difference between the mean amounts that those who were willing to contribute into a NHIS were willing to pay to use a government hospital to treat malaria [M=7156.25, SD=2779.38]; and the amount that those who were not willing to contribute into a NHIS were willing to pay [M=6026.32, SD=3017.85; t(484)=-2.390, p=0.017]. The magnitude of the difference in the means (i.e. the effect size) was small (eta squared =0.012) showing that only 1.2 per cent of the variance in WTPg was explained by whether or not the individual was willing to contribute into a NHIS. This result could be due to the fact that the respondents who were willing to contribute into a NHIS had a higher ability to pay than those who were reluctant to contribute. The mean monthly income for the respondents who were willing to contribute into a NHIS was ¢329,642 and that of those who were reluctant to contribute into such a scheme was ¢283,333. The difference in mean monthly incomes was however not statistically significant [mean difference = 46,309; p = 0.095]

Also, Pearson's product-moment correlation analysis of the amounts the individuals were willing to pay to use a government hospital to treat an episode of malaria (WTPg) and the amounts they were willing to pay as monthly premium for national health insurance showed that there was a low positive relationship between the two, which was statistically significant [r =0.195, n= 445, p<0.001] table 12.4.

Table 12.4 WTP_g and Monthly Health Insurance Premium

		WTP_g	Monthly Premium
WTP_g	Pearson Correlation	1	.195**
	Sig. (2-tailed)		.000
	N	486	445
Monthly Premium	Pearson Correlation	.195**	1
	Sig. (2-tailed)	.000	
	N	445	445

*** means Correlation is significant at the 0.01 level (2-tailed)*

WTPg and Marital Status

63.8 percent of all the respondents who were not married and 78.4 percent of all the respondents who were married were willing to pay ¢6,000 or more to use a government hospital to treat an episode of malaria.

A one-way between-group analysis of variance was conducted to explore the impact of marital status on WTPg. Respondents were divided into four groups according to their marital status [Group 1: Married; Group 2: Single; Group 3: Divorced; and Group 4: Widowed]. There was a statistically significant difference at the $p<0.05$ level in the WTPg for the four groups [$F(3, 480) = 7.577$, $p=0.000$]. The effect size, calculated using *eta* squared, was 0.045 indicating that the actual differences in mean WTPg between the groups was small. *Post hoc* comparisons using the Tukey HSD test indicated that the mean WTPg for the respondents who were married (that is group 1) was significantly different from that of those who were divorced or widowed (that is groups 3 and 4) but was not significantly different from that of those who were single (that is group 2). Groups 2, 3 and 4 did not differ significantly from each other. The mean and standard deviation values of WTPg expressed by the respondents in the various groups are as shown in table B.4 in appendix B.

On the average, the respondents who were not married were willing to pay ¢6,118 and those who were married were willing to pay ¢7,367 to use a government hospital to treat an episode of malaria, calculated after the data had been recoded to put together single, divorced and widowed as "not married". Thus, married people were prepared to pay higher fees to use a government hospital to treat an episode of malaria than

people who were not married. An independent-samples test analysis showed that the difference between the amounts that the married-respondents were willing to pay [M=7367.12, SD=2764.97] compared to those that the unmarried-respondents were willing to pay [M=6117.65, SD=2765.33] was statistically significant [t (482)=-4.281, p<0.001]. This could be because the married respondents could pool their resources together and as such have higher ability to pay compared to the unmarried respondents. The data showed that the married respondents had higher mean monthly incomes than the unmarried respondents, which could translate into higher ability to pay. However, the magnitude of the difference in mean WTPg between married respondents and the other groups (i.e. the effect size) was small. The *eta* squared was 0.037 indicating that only 3.7 per cent of the variance in WTPg was explained by whether the respondent was married or not.

WTPg and Educational Background

Donaldson *et al.*, (1995); Zethraeus (1998) and Jan *et al.*, (2004) have found evidence that there is a positive association between education and willingness to pay for health care. This section presents the univariable analyses of how education influenced the respondents' WTPg. 64.3 percent of the respondents who had had no formal education; 72.5 percent of the respondents who had had basic education; 71.9 percent of the respondents who had had second cycle education; and 83.1 percent of all the respondents who had had tertiary level education were willing to pay at least ¢6,000 to use a government hospital to treat an episode of malaria.

A one-way between-group analysis of variance was conducted to explore the impact of the level of formal education attained on WTPg. Respondents were divided into four groups according to the highest level of education they had attained [Group 1: No Formal Education; Group 2: Basic Education; Group 3: Second Cycle Education; and Group 4: Tertiary Education]. There was a statistically significant difference at the p<0.05 level in the WTPg for the four groups [F (3, 482) =6.159, p<0.001]. The effect size, calculated using eta squared, was 0.037 indicating that the actual differences in mean WTPg between the groups were small. Post-hoc comparisons using the Tukey HSD test indicated that the WTPg for respondents who had attained tertiary education (that is group 4) was significantly different from that of the respondents without tertiary education (that is groups 1, 2 and 3). However, the mean WTPg for groups 1,

2, and 3 did not differ significantly from one another. This implies that the respondents who had had tertiary level education were willing to pay higher amounts to use a government hospital to treat an episode of malaria than those who had not had tertiary level education. The mean and standard deviation values of the WTPg expressed by respondents in the various educational background groups are as shown in table B.5 in appendix B.

The data was recoded into those with no formal education and those with some form of formal education (i.e. at least basic education) and analysed again to find the impact of formal education on the amount the individuals were willing to pay to use a government hospital to treat an episode of malaria. On the average, the respondents who had had no formal education were willing to pay ¢6,333 and those who had had at least basic education were willing to pay ¢7,111 to use a government hospital to treat an episode of malaria. However, independent-samples t-test for equality of means, showed that the difference in the mean WTPg expressed by those without formal education [M=6333.33, SD=2948.27] and those with some form of formal education [M=7111.11, SD=2801.02] was not statistically significant [t (484)=-1.398, p=0.163]. Hence, there was not enough evidence to suggest that the education level attained by respondents influenced their willingness to pay to use government hospital to treat malaria.

WTPg and Distance To Nearest Hospital

Distance from individuals' homes to health facilities indirectly affect the cost of seeking health care because it affects transport costs in terms of both monetary cost and travel time. It was expected that people who lived far from a hospital would be willing to pay less fees to use the hospital than those who lived closer to the hospital because these people would consider the other costs involved in getting to the hospital such as the transport cost and the opportunity cost of the time spent in travelling.

Overall, 69 percent of the respondents who lived within 1-5 km of a hospital; 75 percent of all the respondents who lived within 6 -10 km of a hospital; and 96 percent of the respondents who lived within 11-15 km of a hospital were willing to pay at least ¢6,000 to use a government hospital to treat an episode of malaria. The only

respondent who lived within 26-30 km of a hospital was willing to pay ¢4,000 to use a government hospital to treat an episode of malaria.

Pearson's product-moment correlation analysis showed that there was a low negative relationship between distance to the nearest hospital and WTPg [r =-0.034, n=486], table 11.4. However, this correlation was not statistically significant at either the 0.01 or 0.05 level of significance, though it conformed to the *a priori* expectation (table 8.2).

Table 11.4 WTP_g and Distance to the nearest hospital

		WTP_g	Distance
WTPg	Pearson Correlation	1	- .034
	Sig. (2-tailed)		.448
	N	486	486
Distance	Pearson Correlation	- .034	1
	Sig. (2-tailed)	.448	
	N	486	487

12.1 Summary

This chapter has presented the results of the univariable statistical analyses conducted using the amount the respondents were willing to pay to use a government hospital to treat malaria (WTPg), as the dependent variable, in order to determine how these were influenced by the socio-demographic characteristics of the respondents. These would be used together with the results of the other univariable and multivariable analyses to aid conclusions and recommendations in chapter 16.

CHAPTER THIRTEEN
WILLINGNESS TO PAY TO USE PRIVATE HOSPITALS

13.0 Introduction

To check if the respondents were being consistent and reliable in their willingness to pay to use a government hospital to treat an episode of malaria, they were asked to express the amounts they were willing to pay to use a private hospital to treat an episode of malaria so that their responses could be compared to detect if there was any strategic behaviour. This chapter presents the results of the univariable statistical analyses conducted on the responses for the willingness to pay to use a private hospital to treat an episode of malaria (WTPp), and how they were influenced by the socio-demographic variables.

When respondents were asked to state their WTPp, 3 refused to state their WTPp; 58 were willing to pay ¢5,000; 148 were willing to pay ¢10,000; 140 were willing to pay ¢20,000; 52 were willing to pay ¢30,000; and 43 were willing to pay ¢50,000 or more to use a private hospital to treat an episode of malaria (Table 13.1).

Table 13.1 Willingness to pay to use private hospital

Cedis (¢)	*Frequency*	*Percent*	*Valid Percent*
1000	1	0.2	0.2
2000	2	0.4	0.4
3500	1	0.2	0.2
4900	17	3.5	3.5
5000	58	11.9	12.0
10000	148	30.4	30.6
20000	140	28.7	28.9
30000	52	10.7	10.7
40000	22	4.5	4.5
50000	43	8.8	8.9
Total	484	99.4	100.0
Missing System	3	0.6	
Total	**487**	**100.0**	

Source: Field Survey, 2001

From the table, it can be seen that 52.7 percent of the respondents were willing to pay at least ¢20,000 to use a private hospital to treat an episode of malaria. ¢20,000 was more than thrice the daily minimum wage at the time of interview and was thus more than three times the ¢6,000 used as the baseline for government hospitals. The

difference was due to the fact that the study took into consideration how much it cost to treat malaria in government and private hospitals (section 8.4).

The mean amount that the respondents were willing to pay to use a private hospital to treat an episode of malaria was ¢19,250 with a minimum value of ¢1,000 and a maximum value of ¢100,000. The median WTPp was ¢20,000 and the mode was ¢10,000. Thus the mean WTPp was more than twice the mean WTPg.

Table 13.2 shows a summary of the univariable statistical analyses and tests conducted using the amount the respondents were willing to pay to use a private hospital to treat an episode of malaria (WTPp) as the dependent variable to determine how it was influenced by the socio-demographic characteristics of the respondents.

Table 13.2 Summary of Analyses on WTPp

VARIABLE	**TEST CONDUCTED**		
	Independent Samples T-Test	***Pearson Product-Moment Correlation***	***ANOVA***
Gender	Significant (Male>Female)	-	-
Income	-	Positive, Insignificant	Insignificant
Monthly Premium	-	Positive, Significant	-
Ranking of health Improvement	Insignificant	-	-
Choice of Hospital	Significant (Private>Government)	-	-
WTC into NHIS	Significant (Yes>No)	-	-
Marital Status	Significant (Married>Not Married)	-	Significant
Education	Insignificant	-	Significant
Occupation	-	-	Significant
Age	-	Positive, Insignificant	Insignificant
Household Size	-	Positive, Insignificant	Insignificant
Distance	-	Positive, Significant	Significant

As can be seen from table 13.2 the univariable statistical analyses showed that WTPp has positive relationships with average monthly income levels, age, distance to the nearest hospital and household size. Also, the male respondents were willing to pay higher amounts than the female respondents to use a private hospital to treat an episode of malaria. The respondents who preferred private hospitals were willing to

pay higher amounts to use private hospitals to treat an episode of malaria than those who preferred government hospitals. The respondents who were willing to contribute into a National Health Insurance Scheme were willing to pay higher amounts to use private hospitals to treat an episode of malaria than those who were not willing to contribute into such a scheme. Finally, married respondents were willing to pay higher amounts to use a private hospital to treat an episode of malaria than unmarried respondents.

WTPp and Gender

46.1 percent of all the female respondents and almost 60 percent of all the male respondents were willing to pay at least ¢20,000 to use a private hospital to treat an episode of malaria. The female respondents had an average WTPp of ¢17,148 compared to ¢20,051 expressed by the male respondents. The minimum WTPp expressed by female respondents was ¢1,000 and their maximum WTPp was ¢51,000. The minimum WTPp expressed by the male respondents was ¢2,000 and their maximum was ¢100,000. An independent-samples t-test showed that there was a statistically significant difference in the mean WTPp expressed by the female respondents [M=17148.08, SD=12912.68] and the male-respondents [M=20050.91, SD=13386.00; t (482) =-2.255, p=0.025]. However, the magnitude of the differences in means (i.e. the effect size) was small (eta squared =0.010) showing that only 1 per cent of the variance in WTPp was explained by gender. From the above results, it can be seen that just like the case of government hospitals (chapter 12), the male respondents were willing to pay higher fees to use a private hospital to treat an episode of malaria than the female respondents, which could be due to the fact that male respondents had higher incomes hence, higher ability to pay, than the female respondents.

WTPp and Income

62 percent of all the respondents who earned over ¢500,000 a month; about 49 percent of those who earned between ¢401,000 and ¢500,000 per month; 57 percent of all the respondents whose average monthly income fell between ¢301,000 and ¢400,000; 50 percent of the respondents whose average monthly income fell within the range ¢201,000 to ¢300,000; 43 percent of the respondents whose average monthly income fell between ¢101,000 and ¢200,000; and 51 percent of the

respondents who earned between ¢1,000 and ¢100,000 a month, were willing to pay at least ¢20,000 to use a private hospital to treat an episode of malaria.

Pearson's product-moment correlation analysis indicated that there was a low positive relationship between income levels and WTPp [r = 0.069, n=484; p=0.132] (table 13.3). This shows that respondents in the higher income groups were willing to pay slightly higher fees to use private hospitals than those in the lower income groups. However, this correlation was not statistically significant.

Table 13.3 WTP_p and Monthly Income Levels

		WTPp	Income levels
WTPp	Pearson Correlation	1	.069
	Sig. (2-tailed)		.132
	N	484	483
Income Levels	Pearson Correlation	.069	1
	Sig. (2-tailed)	.132	
	N	483	486

A one-way between-groups analysis of variance was therefore conducted to explore the impact of income levels on WTPp. Respondents were divided into six groups according to their income levels [Group 1: Over ¢500,000; Group 2: ¢401,000-¢500,000; Group 3: ¢301,000-¢400,000; Group 4: ¢201,000-¢300,000; Group 5: ¢101,000-¢200,000; and group 6: ¢1,000-¢100,000]. There was no statistically significant difference at the $p<0.05$ level in the WTPp for the six groups of income levels [F (5, 477) =0.850, p=0.515]. The effect size, calculated using *eta* squared, was 0.009 indicating that the actual differences in mean WTPp between the groups was very small. The mean and standard deviation values of WTPp expressed by the respondents in the various income groups are as shown in table B.6 in appendix B.

WTPp and Choice of Hospital

68.2 percent of the respondents who preferred to use a private hospital and about 49 percent of the respondents who preferred to use a government hospital to treat malaria were willing to pay ¢20,000 or more to use a private hospital to treat an episode of malaria.

The mean amount that those who preferred to use a private hospital for malaria treatment were willing to pay for private malaria treatment was ¢22,498 and that of those who preferred to use a government hospital was ¢18,262. An independent-samples t-test showed that there was statistically significant difference in the mean WTPp expressed by the respondents who preferred a private hospital [M=22497.78, SD=13289.99] and those who preferred a government hospital [M=18262.09, SD=13106.65; t (481) =2.758, p=0.006]. Thus, just like in the case of government hospitals, the respondents who preferred private hospitals were willing to pay higher amounts to use private hospitals to treat malaria than those who preferred government hospitals, which conformed to the *a priori* expectation (table 8.2). However, the magnitude of the difference in the means (i.e. the effect size) was small [*eta* squared = 0.016] showing that only 1.6 per cent of the variance in WTPp was explained by choice of hospital. Again, this could be due to the fact that the respondents who preferred private hospitals had higher monthly income, and hence higher ability to pay, than those who preferred government hospitals.

WTPp and Contribution into National Health Insurance

55.4 percent of the respondents who were willing to contribute into a national health insurance scheme and about 23 percent of the respondents who were reluctant to contribute into a national health insurance scheme, were willing to pay ¢20,000 or more to use a private hospital to treat an episode of malaria.

On the average, the respondents who were unwilling (reluctant) to contribute into a national health insurance scheme were willing to pay ¢14,600 to use a private hospital to treat an episode of malaria; and those who were willing to contribute into a national health insurance scheme were willing to pay ¢19,500. An independent-samples t-test indicated that there was a statistically significant difference in the mean WTPp expressed by the respondents who were unwilling to contribute into the scheme [M=14600.00, SD=12758.61] and those who were willing to contribute into the scheme [M=19500.00, SD=13278.77; t (482) =-2.190, p=0.029]. However, the magnitude of the difference (i.e. the effect size) was small (*eta* squared = 0.010) indicating that only 1 per cent of the variance in WTPp was explained by whether the individual was willing to contribute into a national health insurance scheme or not. It must be noted that the respondents who were willing to contribute into a NHIS had

higher average monthly income than those who were not willing to contribute into such a scheme.

Pearson's product-moment correlation analysis indicated there was a low positive relationship between the amount the respondents were willing to pay as their monthly health insurance premia and WTPp [r = 0.234, n = 484; p < 001] (table 13.4). This implies that the people who were willing to pay higher monthly health insurance premia were willing to pay higher fees to use private hospitals to treat malaria.

Table 13.4 WTP_p and Monthly Health Insurance Premium

		WTPp	Monthly Premium
WTPp	Pearson Correlation	1	.234**
	Sig. (2-tailed)		.000
	N	484	444
Monthly Premium	Pearson Correlation	.234**	1
	Sig. (2-tailed)	.000	
	N	444	445

*** means Correlation is significant at the 0.01 level (2-tailed)*

WTPp and Marital Status

57.2 percent of the married-respondents; 65.4 percent of the respondents who were single; 34.8 percent of the respondents who were divorced; and 50 percent of the respondents who were widowed were willing to pay at least ¢20,000 to use a private hospital to treat an episode of malaria.

A one-way between-group analysis of variance was conducted to explore the impact of marital status on WTPp. Respondents were divided into four groups according to their marital status [Group 1: Married; Group 2: Single; Group 3: Divorce; and Group 4: Widowed]. There was a statistically significant difference at the p<0.05 level in the WTPp for the four groups [F (3, 478) =3.907, p=0.009]. The effect size, calculated using *eta* squared, was 0.024 indicating that the actual differences in mean WTPp between the groups was small. *Post hoc* comparisons using Tukey HSD test indicated that the WTPp for the respondents who were divorced (i.e. group 3) was significantly different from that of those who were married (i.e. group 1) but did not differ

significantly from the respondents who were single or widowed (i.e. groups 2 and 4 respectively). With the mean WTPp expressed by the married respondents being greater than that of those in the other groups, the results means that the married respondents were willing to pay more to use private hospital than those who are not married. Again, this could be as a result of the higher ability to pay of the married respondents due to their higher average monthly incomes. The mean and standard deviation values of WTPp expressed by the respondents in the various marital status groups are as shown in table B.7 in appendix B.

The data on marital status was recoded into "married" and "not married" for further analysis. Those who were classified as not married included those who were single, divorced or widowed.

On the average, the respondents who were not married were willing to pay ¢16,052 and those who were married were willing to pay ¢20,115. An independent-samples t-test indicated that there was a statistically significant difference in the mean WTPp expresses by the married respondents [M=20114.60, SD=13375.95] and the unmarried respondents [M=16052.10, SD=12649.23; t (480) =-2.913, p=0.004]. Thus the married respondents were willing to pay higher fees, which could be because they have higher ability to pay since they could pool their resources together. However, the magnitude of the difference i.e. the effect size, was small (*eta* squared = 0.017) indicating that only 1.7 per cent of the variance in WTPp was explained by whether the individual is married or not married.

WTPp and Educational Background

About 32 percent of the respondents who had had no formal education; 50 percent of the respondents with basic education; 50.3 percent of the respondents with second cycle education; and 63.4 percent of the respondents who had had tertiary level education were willing to pay ¢20,000 or more to use a private hospital to treat an episode of malaria.

A one-way between-group analysis of variance was conducted to explore the impact of education on WTPp. Respondents were divided into four groups according to the highest level of formal education attained [Group 1: No Formal Education; Group 2:

Basic Education; Group 3: Second Cycle Education; and Group 4: Tertiary Education]. There was a statistically significant difference at the $p<0.05$ level in the WTPp for the four groups [$F(3, 480) = 3.774$, $p=0.011$]. The effect size, calculated using eta squared, was 0.023 indicating that the actual differences in mean WTPp between the groups was small. *Post hoc* comparisons using the Tukey HSD test indicated that the WTPp for respondents with tertiary education (i.e. group 4) was significantly different from that of those who had second cycle education (i.e. group 3) but group 3 did not differ significantly from groups 1 and 2. With the mean WTPp expressed by the respondents who had attained tertiary education being greater that that of the other groups, the result shows that respondents with tertiary education were willing to pay higher fees to use private hospitals to treat malaria than those without tertiary education. This could be because these people are in well-paid employment and can afford the high cost of private treatment. The data showed that the average monthly income of the respondents who had had tertiary education was significantly higher than those who had not had tertiary education [¢433,803 as against ¢354,132 for those with second cycle education, ¢252,564 for basic education and ¢167,857 for no formal education]. Also, the result could mean that because these people are highly skilled labour, they would be prepared to pay higher fees in private hospitals in order to avoid delays in receiving treatment, which will eventually reduce the opportunity cost of illness. The mean and standard deviation values of WTPp expressed by the respondents with the various levels education are as shown in table B.8 in appendix B.

An independent-sample t-test was also conducted to compare the WTPp expressed by the respondents who had had some form of formal education (i.e. at least basic education) and those with no formal education. There was no statistically significant difference in the mean WTPp expressed by those with formal education [$\underline{M}=19304.16$, $SD=13210.52$] and those with no formal education [$\underline{M}=15918.52$, $SD=14486.39$; $\underline{t}(482) = -1.287$, $p=0.199$]. The magnitude of the difference i.e. the effect size, was very small (eta squared = 0.003) indicating that only 0.3 per cent of the variance in WTPp was explained by whether or not the individual had had formal education.

WTPp and Distance to the Nearest Hospital

About 50 percent of the respondents who lived within 1-5 km of a hospital; 35 percent of the respondents who lived within 6-10 km of a hospital; 70.3 percent of the respondents who lived within 11-15 km of a hospital; all the 2 respondents who lived within 16-20 km of a hospital; and the only respondent who lived within 26-30 km of a hospital were willing to pay at least ¢20,000 to use a private hospital to treat an episode of malaria.

Pearson product-moment correlation was used to investigate the relationship between distance to the nearest hospital and WTPp. There was a low positive correlation between distance to the nearest hospital and WTPp [r =0.135, n=484, p=0.003] (table 13.5). This correlation was statistically significant, which means that the respondents who lived far from a hospital were willing to pay higher fees to use a private hospital to treat malaria than those who lived closer to a hospital. This conformed to the *a priori* expectation (table 8.2).

Table 13.5 WTP_p and Distance to the nearest hospital

		WTPp	Distance
WTPp	Pearson Correlation	1	.135**
	Sig. (2-tailed)		.003
	N	484	484
Distance	Pearson Correlation	.135**	1
	Sig. (2-tailed)	.003	
	N	484	487

*** means Correlation is significant at the 0.01 level (2-tailed)*

13.1 Comparison of the Results from the Analyses on WTPg and WTPp

The results from the univariable analyses on both WTPg and WTPp as shown in Tables 12.2 and 13.2 respectively (appendix C shows the 2 tables on a single page for easy comparison), did not show any difference in how the gender of respondents, their monthly income levels, education levels attained, marital status, the size of household, how they ranked health improvement as a national goal, their preferences of hospital for treatment, willingness to contribute into a national health insurance scheme, and monthly health insurance premia, influenced the amounts they were willing to pay to use either government or private hospitals to treat malaria. However, whereas distance

from respondents' homes to the nearest hospital had a negative (statistically insignificant) relationship with the amount people were willing to pay to use a government hospital to treat an episode of malaria (WTPg), distance to the nearest hospital had a positive (statistically significant) relationship with the amount people were willing to pay to use a private hospital to treat an episode of malaria (WTPp). Additionally, whilst there was a negative (statistically insignificant) relationship between age of respondents and WTPg, age had a positive (statistically insignificant) relationship with WTPp. Besides, whereas occupation had an insignificant relationship with WTPg, it had a significant relationship with WTPp with those engaged in primary occupations willing to pay higher fees to use private hospitals to treat malaria than those engaged in other occupations. This could be because those engaged in primary occupations are mostly self-employed and as such do not have any source where they could claim sick pay. Hence to reduce the opportunity cost of illness due to lost income, they would be willing to pay higher fees to get quick treatment at private hospitals.

There was some evidence of strategic behaviour on the part of the respondents because even those who said they preferred to use government hospitals because of the quality of services rendered in these facilities were still willing to pay higher fees to use private hospitals than they were willing to pay to use government hospitals. This could be because they thought any amount stated may reflect in the fees charged at the hospitals so if they stated lesser fees for government facilities, then the low fees would be retained. Also, this could be due to the usual perception that private health facilities are generally more expensive than the government health facilities. On the other hand, it could mean that the respondents were being ironic when they said government hospitals were of higher quality than the private hospitals. It is hard though, to believe that majority of the respondents (nearly 81% - i.e. 394 individuals) interviewed independently, could behave ironically in the same manner. The only plausible explanation could be the attitude that the government hospitals belong to all the citizenry and must therefore be cheaper than the private hospitals even though the government hospitals are of higher quality than the private hospitals.

Chapters 9 through 13 have presented the data obtained from the survey and the results of the univariable statistical analyses conducted to determine how the socio-

demographic characteristics of the respondents influenced their responses to the ranking of health improvement as a national goal, choice of hospital for treatment, willingness to contribute into a national health insurance scheme, monthly health insurance premium, and willingness to pay to use either government or private hospital questions. Univariable analysis has a danger of not being able to control the effects of other factors. However, multivariable analysis shows the effect of each variable after controlling other variables. In the next two chapters, (14 and 15), we present the multivariable analyses to show how the socio-demographic characteristics interacted together to influence the responses given by the respondents. Chapter 14 presents the results of the linear regressions for the continuous dependent variables (specifically, WTPg, WTPp and monthly health insurance premium) and chapter 15 presents the results of the logistic regressions for the dichotomous dependent variables (namely, choice of hospital for treatment, ranking of health improvement as a national goal, and willingness to contribute into a national health insurance scheme).

CHAPTER FOURTEEN

MULTIVARIABLE ANALYSIS

14.0 Introduction

Multivariable analyses were conducted to determine how the socio-demographic characteristics interacted together to influence the respondents' responses to the research questions. The basic aim of conducting the multivariable (regression) analyses was to test the theoretical validity of the empirical study to see the extent to which results were consistent with *a priori* expectations (Table 8.2). Also, these aimed, as a secondary objective, to quantify the behavioural effects of the determinants of WTP and the amounts respondents were willing to pay as monthly health insurance premia, in order to aid the policy recommendations that would be made from this study. The multivariable statistical techniques used were the linear and logistic regressions depending on the nature of the dependent variable (see chapter 8). The results reported here adopted and adapted the format recommended by Tabachnick and Fidell (2001).

14.1 Willingness to Pay to Use Government Hospitals in Ghana

A standard multiple linear regression was performed between the WTPg as the dependent variable and gender, age, ranking of health improvement as a national goal (RHIANG), distance to the nearest hospital, average monthly income, household size (HouSize), number of household members who fell ill over the last year (NOILLY), marital status (MStatus) and education as the independent variables. The variables were examined, using a combination of diagnostic tests, to see if there was any problem of multicollinearity.[1] The diagnostic tests used included variation-inflation factor, tolerance, zero-order correlation, partial correlation coefficients, eigenvalues and condition index (Kleinbaum *et al.*, 1988; Gujarati, 1995). The condition index is believed to be the best available multicollinearity diagnostic test. All the tests showed there was no problem of multicollinearity. Analysis was performed using SPSS regression.

Table 14.1 displays the unstandardised coefficients (B) with their standard errors; standardised coefficients (Beta); t and the probability that ($|t| \geq t$); the correlations -

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[1] Multicollinearity refers to the existence of a 'perfect' or exact (or more than one perfect) linear relationship among some or all explanatory variables of a regression model (Gujurati, 1995, p.320)

zero-order (which shows correlation between independent variables and the dependent variables), partial and semi-partial (part) – statistics and the collinearity diagnostic tests as obtained from the regression analysis.

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Table 14.1 Linear Regression results of WTPg

Variables	Unstandardised Coefficients		Standardised Coefficients			95% Confidence Interval for B		Correlations			Collinearity		
	B	*Std Error*	*Beta*	t	P-Value	*Lower Bound*	*Upper Bound*	*Zero-order*	*Partial*	*Part*	*Tolerance*	*VIF*	*Condition Index*
(Constant)	5612.27	874.43		6.42	0.000	3894.02	7330.52						1.000
Distance	137.184	27.107	0.237	5.06	0.000	83.918	190.450	0.156	.227	.219	.855	1.170	3.997
Age	-6.239	12.324	-0.025	-0.51	0.613	-30.455	17.977	-0.030	-.023	-.022	.798	1.254	5.038
Gender	381.673	282.03	0.063	1.35	0.177	-172.512	935.857	0.147	.062	.059	.852	1.174	5.339
HouSize	-72.053	61.166	-0.069	-1.18	0.239	-192.243	48.138	-0.019	-.054	-.051	.551	1.815	6.906
NoILLY	-123.037	73.020	-0.091	-1.69	0.093	-266.520	20.447	-0.051	-.077	-.073	.647	1.546	7.175
MStatus	1078.53	320.60	0.165	3.36	0.001	448.553	1708.51	0.192	.153	.146	.776	1.288	8.876
Education	132.655	570.67	0.011	0.23	0.816	-988.714	1254.02	0.063	.011	.010	.862	1.160	10.091
RHIANG	-438.172	331.16	-0.059	-1.32	0.186	-1088.90	212.552	-0.058	-.061	-.057	.949	1.054	12.008
Income	0.003	0.001	0.175	3.56	0.000	0.001	0.005	0.151	.162	.154	.773	1.294	24.368

Dependent Variable: WTPg VIF means variation inflation factor

Table 14.2 Regression statistics for WTPg

Model♥ 1	*R*	*R-Squared (R^2)*	*Adjusted R-Squared*	*Std. Error of the Estimate*	Change Statistics				
					R-Square Change	*F Change*	*df1*	*df2*	*Sig. F Change*
	0.339	0.115	0.098	2674.70423	0.115	6.838	9	473	0.000

a. *Predictors: (Constant), Distance, Age, Gender, HouSize, NoILLY, Mstatus, Education, RHIANG, Income*
b. *Dependent variable: WTPg*

Table 14.3 Regression statistics for WTPg

	Sum of Squares	df	Mean Square	F	P-value
Regression	4.40E+08	9	48919382.349	6.838	0.000
Residual	3.38E+09	473	7154042.716		
Total	3.82E+09	482			

c. *Predictors: (Constant), Distance, Age, Gender, HouSize, NoILLY, Mstatus, Education, RHIANG, Income*
d. *Dependent variable: WTPg*

♥ Model 1 here refers to the linear equation estimated using WTPg as the dependent variable and entering all the independent variables together before running the regression using OLS.

The multiple R for regression (as seen in Table 14.2 which shows R, R^2, adjusted R^2 and standard error of the estimate), was significantly different from zero, $F(9, 473) = 6.838$, $p<0.001$ (Table 14.3). This implies that a test of a null hypothesis that all the explanatory variables together are irrelevant in the determination of the variation in WTPg – i.e. the dependent variable – would be rejected.[1]

For the three regression coefficients that differed significantly from zero as shown in table 14.1 with p-value less than or equal to 0.05, their 95% confidence limits are as shown in Table 14.4. These confidence intervals do not contain zero and as such any null hypothesis that the population regression coefficients for these variables are zero would have to be rejected (Tabachnick and Fidell, 2001).

Table 14.4 Confidence Limits for significant independent variables

Variables	**95% Confidence Interval for B**	
	Lower Bound	*Upper Bound*
Distance	83.918	190.450
Income	0.001	0.005
MStatus	448.553	1708.506

a. Dependent Variable: WTPg

Basically, only 3 out of the 9 independent variables contributed significantly to prediction of the amount the respondents were willing to pay to use a government hospital (WTPg). These variables are distance to the nearest hospital ($sr_i^2=0.048)^2$; average monthly income ($sr_i^2=0.023$); and marital status ($sr_i^2=0.021$).

Altogether, only 11.5 % (9.8% adjusted) of the variability in WTPg was predicted by knowing the values of all the 9 independent variables.

[1] It must be noted that with large sample size (N), the test of this hypothesis becomes trivial because it is almost certain to be rejected (Tabachnick and Fidell, 2001).

[2] sr_i^2 is the squared semi-partial correlation, which is the square of the part correlation value shown in the result table 14.1. That is it is the square of semi-partial correlation and indicates the amount by which R^2 would be reduced if an independent variable were omitted from the estimated model. It shows the amount of R^2 attributable to the variable.

The distance to the nearest hospital variable has a positive coefficient meaning the respondents who lived far away from a hospital were willing to pay more to use a government hospital to treat an episode of malaria than those who lived nearer to a hospital. This did not conform to *a priori* expectation because it was expected that distance to nearest hospital would have a negative relationship with willingness to pay for health care since the total cost of seeking health care would include transport cost and other costs in terms of time spent in travelling and waiting for treatment. All these together would mean that the total cost of health care to people who live far from a hospital would be higher than those who live nearer to hospital and as such those who live far from hospitals would be willing to pay lesser fees than those who live nearer to hospitals.

The average monthly income variable has a positive coefficient meaning the respondents who had higher average monthly incomes were willing to pay higher fees to use a government hospital to treat an episode of malaria than those who had lower average monthly incomes. This was the case in both cases when income was entered as a continuous variable and when it was entered as a categorical variable. The result conforms to normal economic theory, which posits that there is a positive relationship between consumers' income and the quantity of a normal commodity that he/she consumes. Hence, malaria treatment in government hospitals could be said to be a normal commodity to the respondents.

The marital status variable has a positive coefficient meaning that the respondents who were married were willing to pay higher fees to use a government hospital to treat an episode of malaria than those who were not married. This conforms to *a priori* expectation because married people are expected to have higher incomes by pooling their resources together – theirs and their partners' combined – to be able to afford to pay higher fees. The mean monthly income of the married respondents was ¢349,452 and that of the unmarried respondents was ¢254,202. The difference in mean monthly incomes was statistically significant which means that married respondents had higher ability to pay than the unmarried respondents.

The household size, gender; age; ranking of health improvement as a national goal (RHIANG); and education variables were statistically insignificant in determining the

WTPg and as such statistically, one needs not take them into consideration when trying to determine people's WTPg. However, the signs of the coefficients of these variables show some interesting findings that need to be explained.

The size of household variable showed a negative coefficient meaning that respondents from larger households were willing to pay lower fees to use a government hospital compared to those from smaller households. This conforms to *a priori* expectation because all other things being equal, larger households are expected to demand larger quantities of malaria treatment than smaller households and as such should be willing to pay lesser fees.

The gender variable has a positive coefficient meaning that the male respondents were willing to pay higher fees than the females to use a government hospital. This conforms to *a priori* expectation because, as if by default, most Ghanaian households tend to have male head who is the bread winner and as such it was expected that the males would be willing to pay higher fees for quality malaria treatment in order to reduce the opportunity cost of illness. This opportunity cost could include forgone incomes through lost working hours either to take care of the afflicted person or by being the afflicted person himself who would not be able to work. Moreover, the males have higher ability to pay compared to the females. The average monthly income of the female respondents was ¢275,641 and that of the male respondents was ¢349,697. The difference in average monthly between males and females was statistically significant [mean difference = ¢74056, $p < 0.001$].

The age variable has a negative coefficient meaning the older respondents were willing to pay lesser fees to use a government hospital than the younger respondents. This conforms to *a priori* expectation because it was expected that older people would be willing to pay lesser fees for malaria treatment since they are likely to demand larger quantities of treatment due to the fact that older people are known to be more vulnerable to malaria.

The ranking of health improvement as a national goal variable has a negative coefficient meaning the respondents who ranked health improvement high as a national goal were willing to pay lesser fees to use a government hospital compared to

those who ranked health improvement low as a national goal. This did not conform to *a priori* expectation because it was expected that people who rank health improvement high as a national goal would be willing to pay higher fees in order to help raise the needed funds to improve the quality of health care delivery. However, the average monthly income of the respondents who ranked health improvement high as a national goal was ¢312,283 and that of those who ranked it low was ¢392,169. The difference in mean monthly income was statistically significant [mean difference in monthly income = ¢79,886, $p < 001$]. Hence, this result could be because though the respondents ranked health improvement high as a national goal, they lacked the ability to pay higher fees to use the health facilities.

The education variable has a positive coefficient meaning the respondents who had had some form of formal education were willing to pay higher fees to use a government hospital than those who had had no formal education. This conforms to *a priori* expectation. It was expected that respondents who have had formal education would be in the position to appreciate the cost of providing health care and as such would be willing to pay higher fees to help cover the cost of providing quality health care. Also, educated people were expected to be more aware of the serious consequences of malaria and its concomitant opportunity costs and as such should be willing to pay higher fees to get treatment.

14.2 Willingness to Pay to Use a Private Hospital (WTPp) in Ghana

Again as was done with the univariable analyses where separate analyses were conducted on WTPp, a standard multiple linear regression was performed between WTPp as the dependent variable and gender, age, ranking of health improvement as a national goal (RHIANG), distance to the nearest hospital, average monthly income, household size, number of household members who fell ill over the last year (NOILLY), marital status, and education as the independent variables. The variables were examined, using a combination of diagnostic tests, to see if there was any problem of multicollinearity. The diagnostic tests used included variation-inflation factor, tolerance, zero-order correlation, partial correlation coefficients, eigenvalues and condition index (Kleinbaum *et al.*, 1988; Gujarati, 1995). The condition index is believed to be the best available multicollinearity diagnostic test. All the tests showed

there was no problem of multicollinearity. Analysis was performed using SPSS regression.

Table 14.5 displays the unstandardised coefficients (B) with their standard errors; standardised coefficients (Beta); t; the probability that $|t| \geq t$; the correlations (zero-order correlation - which shows the correlation between each independent variable and the dependent variable – partial and semi-partial [part]) statistics and the collinearity diagnostic tests as obtained from the regression analysis.

Table 14.5 Linear Regression results of WTPp

Variables	Unstandardised Coefficients		Standardised Coefficients			95% Confidence Interval for B		Correlations			Collinearity		
	B	*Std Error*	*Beta*	t	P-Value	*Lower Bound*	*Upper Bound*	*Zero-order*	*Partial*	*Part*	*Tolerance*	*VIF*	*Condition Index*
(Constant)	11365.5	4289.9		2.65	0.008	2935.84	19795.1						1.000
Distance	482.506	132.80	0.176	3.63	0.000	221.558	743.453	0.139	.165	.163	.855	1.170	4.002
Age	9.187	60.347	0.008	0.15	0.879	-109.395	127.770	0.013	.007	.007	.798	1.253	5.037
Gender	1305.68	1380.5	0.046	0.95	0.345	-1407.12	4018.48	0.103	.044	.042	.852	1.173	5.333
HouSize	3.703	299.36	0.001	0.01	0.990	-584.548	591.954	0.053	.001	.001	.552	1.811	6.904
NoILLY	-199.888	359.55	-0.031	-0.56	0.579	-906.403	506.627	0.024	-.026	-.025	.648	1.544	7.157
MStatus	2943.21	1569.4	0.096	1.88	0.061	-140.715	6027.13	0.133	.086	.084	.776	1.288	8.880
Education	2354.28	2791.9	0.041	0.84	0.400	-3131.90	7840.46	0.059	.039	.038	.862	1.160	10.093
RHIANG	-2120.78	1629.0	-0.060	-1.30	0.194	-5321.85	1080.29	-0.050	-.060	-.058	.949	1.054	11.986
Income	0.006	0.004	0.073	1.42	0.156	-0.002	0.014	0.070	.065	.064	.772	1.296	24.368

Dependent Variable: WTPp VIF means variation inflation factor

Table 14.6 Regression statistics for WTPp

Model 1*	R	R-Squared (R^2)	Adjusted R-Squared	Std. Error of the Estimate	Change Statistics				
					R-Square Change	F Change	df1	df2	Sig. F Change
	0.228	0.052	0.034	13084.85669	0.052	2.857	9	471	0.003

e. *Predictors: (Constant), Distance, Age, Gender, HouSize, NoILLY, Mstatus, Education, RHIANG,Iincome*
f. *Dependent variable: WTPp*

*Model 1 here refers to the linear equation estimated using WTPp as the dependent variable and entering all the independent variables together before running the regression using OLS.

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The multiple R for the regression (as could be seen in Table 14.6) was significantly different from zero, F (9, 471) =2.857, p=0.003 (Table 14.7). This implies that a test of a null hypothesis that all explanatory variables together are irrelevant in the determination of the variation in WTPp – i.e. the dependent variable – would be rejected.

Table 14.7 Regression statistics for WTPp

	Sum of Squares	df	Mean Square	F	P-value
Regression	4.40E+09	9	489141578.69	2.857	0.003
Residual	8.06E+10	471	171213474.61		
Total	**8.50E+10**	**480**			

a. *Predictors: (Constant), MStatus, Distance, Income, Age, RHIANG, NoILLY, Gender, Education, HouSize,*
b. *Dependent Variable: WTPp*

Only one out of the nine independent variables contributed significantly to prediction of WTPp at the 5% level of significance. This was distance to the nearest hospital (sr_i^2=0.027). Also, the marital status variable had a coefficient that was significantly different from zero at the liberal 10% level of significance (sr_i^2=0.007). Altogether, only 5.2% (3.4% adjusted) of the variability in the WTPp was predicted by knowing the values for all the 9 independent variables.

Distance to the nearest hospital has a positive coefficient meaning the respondents who live far away from a hospital were willing to pay more to use a private hospital than those who live nearer to hospital. This conforms to *a priori* expectation (table 8.2) because, it was expected that if people thought they could get a better quality treatment quickly at a private hospital that is far away, they would be prepared to pay higher fees in addition to the travel cost to get such a treatment. The main reasons given by the respondents who preferred to use private hospitals for their health care were that there was no waste of time and that treatment was of higher quality.

The marital status variable has a positive coefficient meaning the respondents who were married were willing to pay higher fees to use a private hospital than the

unmarried respondents because they (married respondents) could afford by pooling their resources together. This conforms to *a priori* expectations (table 8.2).

The gender; age; ranking of health improvement as a national goal; average monthly income; household size; number of household members who fell ill over the previous year; and education variables were statistically insignificant in determining WTPp. This implies that their population coefficients did not differ significantly from zero and as such statistically, one needs not take these variables into consideration when trying to determine people's WTP for malaria treatment in private hospitals. However, the signs of the coefficients of these variables show some interesting findings that are discussed below.

The gender variable has a positive coefficient, which means that the male respondents were willing to pay higher fees to use a private hospital than the female respondents. This conforms to *a priori* expectation because it was expected that since Ghanaian households are mostly male-headed and also males have higher income levels than females, the males would be willing to pay higher fees for quality malaria treatment in order to reduce the opportunity cost of illness – lost incomes to both the afflicted (if matured and employable) and the carer.

The age variable has a positive coefficient meaning the older respondents were willing to pay more to use a private hospital than the younger respondents. This did not conform to *a priori* expectations.

The ranking of health improvement as a national goal variable has a negative coefficient meaning the respondents who ranked health improvement high as a national goal were willing to pay lower fees to use a private hospital than those who ranked it low. This did not conform to *a priori* expectation. The result could mean that those who ranked health improvement lowly as a national goal are those with good health, mostly higher income earners who could afford to pay higher fees to use private hospitals for quick treatments. On the other hand, those who ranked health improvement high as a national goal may lack the ability to pay higher fees. The respondents who ranked health improvement low as a national goal had significantly higher average monthly income than those who ranked it high (see 9.2).

The average monthly income variable has a positive coefficient meaning the respondents who had higher average monthly incomes were willing to pay higher fees to use a private hospital than those who had lower average monthly incomes. This conforms to normal economic theory and *a priori* expectations because all other things being equal, higher income earners have higher ability to pay than lower income earners.

The size of household variable has a positive coefficient meaning the respondents from large households were willing to pay higher fees to use a private hospital than those from small households. This did not conform to *a priori* expectation.

The education variable has a positive coefficient meaning that the respondents who had had some form of formal education were willing to pay higher fees to use a private hospital than those who have had no formal education. This conforms to *a priori* expectation. Again, this result could be due to differences in the ability to pay of the two groups because the respondents who had had some form of formal education had significantly higher income levels than those with no formal education.

14.3 Monthly Health Insurance Premium into a National Health Insurance

A standard multiple linear regression was performed between the amount the respondents were willing to pay as their monthly health insurance premium (MPremium) as the dependent variable and gender, age, ranking of health improvement as a national goal (RHIANG), distance to the nearest hospital, average monthly income (Income), household size (HouSize), marital status (MStatus), education, and the number of household members who fell ill over the last year as the independent variables. The variables were examined using a combination of diagnostic tests to see if there was any problem of multicollinearity. The diagnostic tests used included variation-inflation factor, tolerance, zero-order correlation, partial correlation coefficients, eigenvalues and condition index (Kleinbaum *et al.*, 1988; Gujarati, 1995). The condition index is believed to be the best available multicollinearity diagnostic test. All the tests showed there was no problem of multicollinearity. Analysis was once again performed using SPSS regression.

Table 14.9 displays the unstandardised coefficients (B) with their standard errors; standardised coefficients (Beta); t values; probability that $|t| \geq t$; the correlations between the variables – zero-order correlation (which shows the correlation between independent variables and dependent variable); partial and semi-partial (part) – and the collinearity diagnostic tests.

The multiple R for regression (as shown in table 14.10) was significantly different from zero, $F(9, 432) = 4.681$, $p < 0.001$ (Table 14.11). This implies that a test of a null hypothesis that all explanatory variables together are irrelevant in the determination of the variation in the amount the individual respondents were willing to pay as monthly health insurance premium – the dependent variable – would be rejected.

Table 14.9 Linear Regression results of Monthly Health Insurance Premium

Variables	Unstandardised Coefficients		Standardised Coefficients			95% Confidence Interval for B		Correlations			Collinearity Statistics		
	B	*Std Error*	*Beta*	t	P-Value	*Lower Bound*	*Upper Bound*	*Zero-order*	*Partial*	*Part*	*Tolerance*	*VIF*	*Condition Index*
(Constant)	1752.46	3924.4		0.45	0.655	-5960.89	9465.81						1.000
Distance	145.249	114.76	0.064	1.27	0.206	-80.298	370.797	-0.035	.061	.058	.829	1.206	3.997
Age	43.076	53.067	0.043	0.81	0.417	-61.225	147.378	0.049	.039	.037	.765	1.307	5.001
Gender	1603.93	1182.9	0.067	1.36	0.176	-720.944	3928.79	0.135	.065	.062	.859	1.165	5.437
HouSize	110.902	256.62	0.027	0.43	0.666	-393.482	615.286	0.075	.021	.020	.542	1.847	6.991
NoILLY	-210.596	308.38	-0.039	-0.68	0.495	-816.713	395.521	0.021	-.033	-.031	.643	1.554	7.361
Mstatus	852.377	1372.5	0.032	0.62	0.535	-1845.31	3550.06	0.123	.030	.029	.778	1.285	9.010
Education	1675.38	2518.1	0.033	0.67	0.506	-3273.96	6624.72	0.078	.032	.031	.844	1.185	10.131
RHIANG	-3784.94	1437.9	-0.125	-2.63	0.009	-6611.01	-958.863	-0.163	-.126	-.121	.936	1.068	12.045
Income	0.014	0.004	0.210	3.97	0.000	0.007	0.021	0.246	.188	.182	.753	1.329	25.991

Dependent Variable: MPremium; VIF means variation inflation factor

Table 14.10 Regression statistics for Monthly Health Insurance Premium

					Change Statistics			
Model 1*	***R***	***R-Squared (R^2)***	***Adjusted R-Squared***	***Std. Error of the Estimate***	***R-Square Change***	***F Change***	***df1***	***df2***	***Sig. F Change***
	0.298	0.089	0.070	10799.23124	0.089	4.681	9	432	0.000

g. *Predictors: (Constant), Distance, Age, Gender, HouSize, NoILLY, Mstatus, Education, RHIANG, Income*
h. *Dependent variable: MPremium*

Table 14.11 Regression statistics for Monthly Health Insurance Premium

	Sum of Squares	df	Mean Square	F	P-value
Regression	4.91E+09	9	545880431.45	4.681	0.000
Residual	5.04E+10	432	116623395.36		
Total	5.53E+10	441			

a. *Predictors: (Constant), Income, NoILLY, RHIANG, Education, Gender, Distance, Age, MStatus, HouSize,*
b. *Dependent Variable: MPremium*

*Model 1 here refers to the linear equation estimated using MPremium as the dependent variable and entering all the independent variables together before running the regression using OLS.

For the two regression coefficients that differed significantly from zero as shown in table 14.9 with p-values less than or equal to 0.05, 95% confidence limits were calculated. The confidence limits for ranking of health improvement as a national goal were -6611.011 to -958.863; and those for average monthly income were 0.007 to 0.021. These confidence limits do not contain zero therefore any null hypothesis that the population regression coefficients for these variables are zero would have to be rejected.

Thus, only two out of the 9 independent variables contributed significantly to prediction of monthly health insurance premium. These are ranking of health improvement as a national goal (sr_i^2=0.015) and average monthly income (sr_i^2=0.033).

Altogether, only 8.9% (7% adjusted) of the variability in the monthly health insurance premia the respondents were willing to pay was predicted by knowing the values of all the 9 independent variables.

The ranking of health improvement as a national goal variable has a negative coefficient meaning the respondents who ranked health improvement high as a national goal were willing to pay lower monthly health insurance premia than those who ranked it low. This did not conform to *a priori* expectation because it was expected that people who rank health improvement high as a national goal would be willing to pay higher health insurance premia to help generate adequate financial resources to improve the quality of health care delivery and also make it free at the point of use so as to make health care, at least, financially accessible to the poor who usually tend to need health care most. However, this result was due to the fact that those who ranked health improvement high as a national goal are lower income earners and as such lack the ability to pay higher monthly premia into a national health insurance scheme.

The average monthly income variable has a positive coefficient suggesting that the respondents who had higher average monthly incomes were willing to pay higher monthly health insurance premia than those who had lower average monthly income. This conforms to *a priori* expectation because it was expected that those with higher incomes would be willing to pay higher health insurance premia (because they could

easily afford) to help pool adequate financial resources together to improve the quality of health care delivery and also make it free at the point of use.

The gender, age, distance to the nearest hospital, household size, marital status, education and the number of household members who fell ill over the last year variables were statistically insignificant in determining the amount the individual respondents were willing to pay as monthly health insurance premium. This implies that the population regression coefficients for these variables did not differ significantly from zero and as such statistically, one does not need to take them into consideration when trying to determine the amount individuals would be willing to pay as monthly health insurance premium. However, the signs of the coefficients of these variables show some interesting results that are explained below.

The gender variable has a positive coefficient suggesting that the male respondents were willing to pay higher monthly health insurance premia than the female respondents. This conforms to *a priori* expectation because most Ghanaian households are male-headed, decide how household incomes are spent and also males tend to have higher income levels and as such it was expected that males would be willing to pay higher premia to help generate adequate financial resources to help improve health care delivery; make it easily accessible to all – both physically and financially – and free at the point of use.

The age variable has a positive coefficient suggesting that the older respondents were willing to pay higher monthly health insurance premia than the younger respondents. Since the older people and children are more vulnerable to malaria and as such require health care more frequently, this could mean that the older people are willing to pay higher monthly premia so as to help raise more resources to improve health care delivery and make it free at the point of use. This will reduce the catastrophic effects of huge health care bills that people encounter as a result of user fees at the point of use.

The distance variable has a positive coefficient meaning the respondents who lived far away from a hospital were willing to pay higher monthly health insurance premia than those who lived nearer to a hospital. This could mean that those who live far from

hospitals believe that if they help raise enough resources through health insurance, more health facilities would be built closer to them as the government strives to improve health care delivery. This will no doubt reduce the cost of health care in the long term in terms of both travel time and monetary costs.

The household size variable has a positive coefficient suggesting that the respondents who were from large households were willing to pay higher health insurance premia than those from smaller households. This conforms to *a priori* expectation. It could be because, all other things being equal, large households are likely to demand more health care than smaller households and as such the heads of large households would be prepared to pay higher premia to help pool together adequate financial resources to help improve health care delivery and also make it free at the point of use.

The marital status variable has a positive coefficient suggesting that married respondents were willing to pay higher monthly health insurance premia than unmarried respondents. This was because the incomes of married respondents were higher than single individuals and as such married people would be in the position to pay higher premia than those who are not married.

The education variable has a positive coefficient suggesting that the respondents who had had some form of formal education were willing to pay higher monthly health insurance premia than those who had had no formal education. This conforms to *a priori* expectation because it was expected that educated people could understand the benefits of good health and the importance of making health care more accessible – both physically and financially – to all who need them irrespective of their financial position. Also, the respondents with formal education had higher income levels than those without any formal education. Hence, such people are likely to be willing to pay higher insurance premia to help pool together adequate financial resources to improve health care delivery and make it free at the point of use.

The number of household members who fell ill over the last year variable has negative coefficient suggesting that the households that had larger numbers of their members falling ill and needing health care were willing to pay lower monthly health insurance premia than those who had smaller numbers of their households falling ill

and needing health care. This did not conform to *a priori* expectation because it was expected that the respondents who had more members of their households needing health care would realise that they could benefit from a situation whereby resources are pooled together through health insurance scheme to help improve health care delivery and make it free at the point of use. Hence, such people were expected to be willing to pay higher health insurance premia. However, it could be because these people lack the ability to pay higher premia.

14.4 Summary

This chapter has reported the results of multivariable linear regression analyses conducted to determine how all the socio-demographic characteristics of respondents interacted together to influence their willingness to pay to use government hospital (WTPg), willingness to pay to use private hospital (WTPp) and the amount they were willing to pay as monthly health insurance premium (MPremium). These were aimed at helping to determine the 'construct validity' of the empirical study (Smith *et al* 1999a). Two proposals have been made for the assessment of construct validity of WTP studies, namely, (1) that most goods have positive income elasticity, which means that, all other things being equal, higher income respondents should be associated with higher expressed WTP; and (2) that the more of a (positively valued) good which is supplied, the higher the WTP will be, subject to diminishing marginal returns, which means that as more of a commodity is valued in a contingent valuation study, the higher the WTP for it should be, increasing at a diminishing rate (Drummond et al, 1997). The results from the empirical study have shown the socio-demographic characteristics that significantly influenced the predictions of the dependent variables (WTPg, WTPp, and MPremium). They also showed the direction of relationship/association between the socio-demographic characteristics and the dependent variables. The results of the multivariable analyses have shown that the WTP values obtained from the survey are valid and reliable and such could be used to make some recommendations to help improve how health care is financed in Ghana. These results will thus, be used together with the results from the univariable statistical analyses reported in chapters 12 and 13 to draw conclusions that will inform the recommendations that will be made to help improve upon the financing of health care in Ghana.

CHAPTER FIFTEEN

15.0 LOGISTIC REGRESSION ANALYSES OF DISCRETE VARIABLES

To help determine the consistency and reliability of the responses for the discrete variables such as choice of hospital for treatment, ranking of health improvement as a national goal, and willingness to contribute into a national health insurance scheme, logistic regressions were run to determine how the responses were influenced by the socio-demographic variables. The format of the result reported here was adopted and adapted from Tabachnick and Fidell (2001).

15.1 Choice of Hospital for Treatment as Dependent Variable

A direct logistic regression analysis was performed on choice of hospital for treatment (government = 1 and private = 0) as outcome and 9 predictors: distance to the nearest hospital, age, gender, average monthly income, household size, number of household members who fell ill over the last year, marital status, education, and ranking of health improvement as a national goal. Analysis was performed using SPSS logistic regression.

Table 15.1 Logistics Regression Results of Choice of Hospital for Treatment

Variable	*B*	*S.E*	*Wald*	*df*	*P-value*	*Exp(B)*
Distance	0.027	.028	0.948	1	0.330	1.028
Age	0.032	.015	4.600	1	0.032	1.032
Gender	-0.370	.298	1.550	1	0.213	0.690
HousSize	-0.032	.062	0.269	1	0.604	0.968
NoILLY	-0.023	0.074	0.098	1	0.754	0.977
MStatus	0.274	0.327	0.706	1	0.401	1.316
Education	-0.262	0.791	0.110	1	0.740	0.769
RHIANG	-0.478	0.330	2.095	1	0.148	0.620
Income	0.000	0.000	18.628	1	0.000	1.000
Constant	2.342	1.043	5.048	1	0.025	10.407

Dependent Variable: Choice of hospital for treatment

A test of the full model with all the 9 predictors was statistically reliable[1], [$\chi^2(9, N=482)=35.758$; $p<0.001$] indicating that the predictors, as a set, reliably distinguish between people who preferred to use government hospitals for treatment and those

[1] χ^2 statistic indicates whether, taken together, the coefficients are significant.

who preferred to use private hospitals. However, the variance in the choice of hospital for treatment accounted for is small, with Cox & Snell R^2=0.072 and Nagelkerke R^2=0.115. The -2Log likelihood of the model is 431.274. The model was good because the Hosmer and Lemeshow[2] statistic was non-significant at the 5% level [$\chi^2(8, 482) = 7.218$, p=0.513]. The prediction level of the model was very impressive for the respondents who preferred to use government hospitals (with 100% successfully predicted) but very unimpressive for those who preferred to use private hospitals (with only 0% successfully predicted). The overall prediction success rate was 81.1%.

Table 15.1 shows regression coefficients (B), standard errors (S.E), Wald statistics, significant levels (p-values) and the odd ratios for each of the predictors [Exp(B)]. The odds here were for a respondent choosing to use government hospital for treatment.

According to the Wald criterion[3], only age of respondent variable ($\underline{z}$=4.6, p=0.032) and average monthly income ($\underline{z}$=18.628, p<0.001) reliably predicted respondents' choice of hospital for treatment. The odds ratio[4] for the age variable was 1.032. This implies that a one-unit increase in age multiplies the odds of a respondent choosing to use a government hospital for treatment by 1.032.

The odds ratio for the average monthly income variable was 1.000 implying that a one-unit increase in average monthly income does not change the odds of a respondent choosing to use a government hospital for treatment. Thus the respondents' income levels were neutral to their choice of hospital for treating an episode of malaria.

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[2] Hosmer and Lemeshow statistic is used to evaluate the goodness-of-fit of the logistic regression model. Here a good model produces a non-significant chi-square (χ^2) (Tabachnick and Fidell, 2001).
[3] Wald criterion (Wald Chi-Square) is used to evaluate the contribution of an individual predictor to a model just like the t-ratio in standard multiple linear regression. A significant result indicates a predictor that is reliably associated with outcome (Tabachnick and Fidell, 2001).
[4] The odds ratio is the increase (or decrease if the ratio is less than one) in odds of being in one outcome category when the value of the predictor increases by one unit. That is, a change in one unit on the part of the predictor multiplies the odds by e^B. Odds ratios greater than 1 show the increase in odds of an outcome of interest (the "response" category) with a one-unit increase in the predictor; odds ratios less than one show the decrease in odds of that outcome with a one-unit change. In the health sciences, the odds ratio is often referred to as relative risk when the predictor precedes the outcome, i.e. directionality has been determined (Tabachnick and Fidell, 2001).

The coefficients of the distance to the nearest hospital, gender, household size, number of household members who fell ill over the last year, ranking of health improvement as a national goal, marital status, and education variables were not statistically significant.

Thus, the multivariable logistic model shows that Ghanaians generally prefer to use government hospitals to treat an episode of malaria. This is evidenced by the positive constant of the model (table 15.1). This result reinforces that of the univariable statistical analysis reported in chapter 10.

Conclusion and policy implications

The study shows that, generally, Ghanaian heads of households prefer to use government hospitals for treatment, and that their income levels and age influence their preferences. Thus, the study findings confirm that these factors are important determinants of choice of health facilities for treatment. These should therefore be addressed in any government policy that aims to make health care more physically accessible to the general population.

Further research should consider replicating this study with a larger sample, representative of the general population, rather than heads of households, in order to make the finding more generalisable.

15.2 Ranking of Health Improvement as A National Goal

A direct logistic regression analysis was performed on ranking of health improvement as a national goal (ranked highly=1; ranked lowly=0) as outcome and 8 predictors: distance to the nearest hospital, age, gender, average monthly income, household size, number of household members who fell ill over the last year, marital status, and education. Analysis was performed using SPSS logistic regression.

Table 15.2 Logistics Regression Results of RHIANG

Variable	*B*	*S.E*	*Wald*	*df*	*P-value*	*Exp(B)*
Distance	.093	.034	7.291	1	.007	1.097
Age	.019	.014	1.743	1	.187	1.019
Gender	-.179.	.299	.359	1	.549	0.836
HouSize	-.045	.060	.547	1	.460	0.956
NoILLY	.015	.075	.043	1	.837	1.016
MStatus	.203	.331	.377	1	.539	1.225
Education	-.414	.785	.278	1	.598	0.661
Income	.000	.000	7.709	1	.005	1.000
Constant	1.854	.998	3.455	1	.063	6.388

Dependent Variable: RHIANG

A test of the full model with all the 8 predictors was statistically reliable, $\chi^2(8, N=484) = 28.028$, $p<0.001$ indicating that the predictors, as a set, reliably distinguish between the respondents who ranked health improvement highly as a national goal and those who ranked it lowly. However, the variance in ranking of health improvement as a national goal accounted for was small with Cox & Snell $R^2=0.056$ and Nagelkerke $R^2=0.094$. The model was good because the Hosmer and Lemeshow test statistic, $\chi^2(8, 484) = 7.156$, $p=0.520$) was non-significant. The -2Log likelihood =415.546. The prediction level of the model was very impressive for predicting those who ranked health improvement highly as a national goal (with 100% successfully predicted) but very unimpressive for predicting the respondents who ranked health improvement lowly as a national goal (with only 0% successfully predicted). The overall prediction success rate of the model was 82.9%, which is quite impressive.

Table 15.2 shows regression coefficients (B); standard errors (S.E); Wald statistics; significance level (P-values); and the odd ratios for each of the predictors [Exp(B)]. The odds here are for a respondent ranking health improvement high as a national goal.

According to the Wald criterion, only the distance to the nearest hospital (z=7.291, p=0.007), and average monthly income (z=7.709, p=0.005) variables reliably predicted respondents' ranking of health improvement as a national goal.

The odds ratio for the distance variable was 1.097, which implies that a one-unit increase in distance to the nearest hospital multiplies the odds of a respondent ranking health improvement highly as a national goal by 1.097 – thus one-unit increase in distance increases the odds of a respondent ranking health improvement high as a national goal.

The odds ratio for the average monthly income variable was 1.00, which implies that changes in average monthly income do not affect the odds of ranking health improvement high as a national goal.

As can be seen from Table 15.2, the coefficients of the age, gender, household size, number of household members who fell ill over the last year, marital status and education variables were not statistically significant.

The multivariable logistic model shows that Ghanaians generally rank health improvement high as a national goal. This is evidenced by the positive constant of the model (table 15.2). Therefore, it would have been expected that Ghanaians would be willing to support any policy that is aimed at raising more resources to finance improvements in health care delivery in the country.

15.3 Willingness to Contribute Into a National Health Insurance Scheme

A direct logistic regression analysis was performed on willingness to contribute into a National Health Insurance Scheme (NHIS) (yes=1; no=0) as outcome and 8 predictors: distance to the nearest hospital, age, gender, average monthly income, household size, number of household members who fell ill over the last year, marital status, and education. Analysis was performed using SPSS logistic regression.

Table 15.3 Logistics Regression Results of WTC into a NHIS

Variable	*B*	*S.E*	*Wald*	*df*	*P-value*	*Exp(B)*
Distance	0.200	0.058	12.031	1	.001	1.221
Age	0.014	0.017	0.664	1	.415	1.014
Gender	-0.576	0.417	1.907	1	.167	0.562
HouSize	-0.031	0.075	0.174	1	.676	0.969
NoILLY	-0.024	0.099	0.058	1	.810	0.976
MStatus	0.431	0.430	1.003	1	.317	1.538
Education	0.989	0.623	2.520	1	.112	2.689
Income	0.000	0.000	5.341	1	.021	1.000
Constant	-0.397	1.028	0.149	1	.700	0.673

Dependent Variable: WTC into NHIS

A test of the full model with all the 8 predictors was statistically reliable, $\chi^2(8, N=484) = 25.492$, $p=0.001$) indicating that the predictors, as a set, reliably distinguish between the respondents who were willing to contribute into a NHIS and those who were unwilling to contribute into a NHIS. The variance in willingness to contribute into a National Health Insurance scheme accounted for was small with Cox & Snell $R^2=0.051$ and Nagelkerke $R^2=0.120$. The model was good because the Hosmer and Lemeshow test statistic, $\chi^2(8, 484) = 11.980$, $p=0.152$) was non-significant. The -2Log likelihood =245.722. The prediction level of the model was very impressive for predicting those who were willing to contribute into National Health Insurance schemes (with 100% successfully predicted) but very unimpressive for predicting the respondents who were unwilling to contribute into such schemes (with only 0% successfully predicted). The overall prediction success rate of the model was 91.9%, which is quite impressive.

Table 15.3 shows regression coefficients (B); standard errors (S.E); Wald statistics; significance level (P-value); and the odd ratios for each of the predictors [Exp(B)]. The odds here are for a respondent willing to contribute into a NHIS.

According to the Wald criterion (Table 15.3), only distance to the nearest hospital (z=12.031, p=001) and average monthly income (z=5.341, p=0.021) reliably predicted respondents' willingness to contribute into a NHIS.

15.4 Summary

This chapter has reported the results of logistic regression analyses conducted to determine the consistency and reliability of responses given to the questions that requested information about the discrete choice dependent variables, namely, choice of hospital for treatment (ChHospital), ranking of health improvement as a national goal (RHIANG) and willingness to contribute into a national health insurance scheme (WTC into NHIS). The results show that the responses obtained from the field study are consistent and reliable and as such could be used to draw conclusions and make recommendations.

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CHAPTER SIXTEEN
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

16.0 Introduction

The World Bank (1987) identifies one of the main problems of health care systems in developing countries as inadequate funds spent on cost-effective health programmes. In addition, it is well established that the shortage of financial resources in the poorer developing countries is the most important barrier to access to health care in these countries. As a result of insufficient resources, sometimes even rudimentary health care cannot be provided in some of these countries. For instance, the annual spending on health care in many African countries (Ghana included) is noted to be under US$4.00 per capita (IFPMA, 2000). The lack of spending on health care may be because of governments not setting health care services as a high enough priority in determining the use of national resources (IFPMA, 2000). However, in some countries even when the government sets health care as a high priority, they lack the financial resources to provide higher expenditure on health care.

Investment in health constitutes an indispensable ingredient in the accumulation of human resources. These human resources are vital for the promotion of sustainable economic development in any country, particularly in developing countries like Ghana. Further, good health is an important goal in its own right because it increases the range of human potentialities of all kinds and is frequently regarded as a basic human need (IFPMA, 2000). Good health is thus valued for its own sake because everyone can benefit from better health in the present and also improved health for the youth in a country will lead to a healthier population in the future thereby securing the future productive capabilities of the country's labour force. To attain good health, adequate resources must be generated to finance health care delivery.

Although health care is important for investment purposes, it is also expensive. Those individuals who most need health care services often cannot afford to pay the full cost and therefore choose to forego the services. In Ghana, many people who suffer simple ailments such as malaria cannot seek prompt treatment due to the lack of access to affordable health care delivery, widespread poverty, and the considerable distances

from the nearest health facilities in the various communities. This is inefficient in terms of the wider investment in human resources. There is thus the need to find an effective, efficient and sustainable means of financing health care in order to make it easily accessible to all people, an objective this study seeks to contribute to achieving.

This study aimed to explore sustainable means of financing health care in Ghana. In so-doing, the study examined whether Ghanaians are willing to pay for their health care, and if so, how much they are willing to pay; whether they are willing to contribute into a national health insurance scheme; how frequently they would like to pay their health insurance premium and how much they are willing to contribute as monthly premia if asked by the government to do so. In this concluding chapter the main findings emanating from the study are summarised in three sections. The first of these relates to the extent to which Ghanaians are willing to pay for health care. The second summarises the findings on willingness to contribute to a national health insurance scheme; and the third summarises the findings in relation to monthly health insurance premiums. Following this summary, the limitations of the study are discussed. Finally, conclusions are drawn and recommendations are made based on the initial aim of the study, and the results obtained.

16.1 Results and discussion: Willingness to Pay

The results from the empirical study show that, generally, Ghanaians are willing to pay for their health care. To treat an episode of malaria, the respondents were willing to pay an average of ¢8,473 (median = ¢8,000 and mode = ¢10,000) to use a government hospital for the treatment and an average of ¢19,250 (median = ¢20,000 and mode = ¢10,000) to use a private hospital for treatment. In the year 2001, 3,003,459 cases of malaria were reported in government hospitals nationwide in Ghana so if the average amount expressed by the respondents that they were willing to pay to use a government hospital to treat an episode of malaria was charged, the government could have raised a nominal figure of ¢25,449,058,972 (¢25.4 billion) from user charges on malaria treatment only, which would have been 2.91% of the total government expenditure on health care in 2001[1]. Unfortunately, the data

[1] Ministry of Finance (2002) Public Expenditure Review Publication (2001 Fiscal Year). This publication, which is yet to come out of press, indicates that the government expenditure on health in 2001 was ¢873.8 billion.

available did not indicate the break down of the characteristics of the individuals who reported malaria cases in the government hospitals so we cannot say whether there was the need for differential charges to be made.

Evidence from the literature on willingness to pay (WTP) shows that individuals' socio-demographic characteristics could influence their WTP (see chapter 6). It is important therefore to summarise how these various characteristics appear to influence the extent to which respondents were willing to pay to use either a government or private hospital to treat an episode of malaria.

The univariable and multivariable analyses show that the male respondents were willing to pay higher fees for malaria treatment than the female respondents either to use a government or a private hospital. This was because the male respondents had higher incomes than the female respondents, which give them the ability to pay higher fees. This conforms to *a priori* expectation (table 8.2), albeit not statistically significant. Hence based on the results, the sub-hypothesis that there is a significant relationship between the gender of individuals and the amounts they are willing to pay to use either a government or a private hospital to treat an episode of malaria (specifically, that males' WTP greater than females, Stanton *et al.*, 1989) cannot be determined.

Also, the results of both the univariable and multivariable analyses show that there was a positive relationship between income levels and the amount people were willing to pay to use either government or private hospital for treatment. This conforms to normal economic theory, *a priori* expectations and evidence from the literature because all other things being equal, higher income earners have higher ability to pay than lower income earners. Demand for health care services by higher-income individuals is known to be less responsive to changes in prices than that of low-income individuals (Gertler *et al.*, 1990; Akin *et al.*, 1986a). This is because higher income individuals have the ability to pay for their health care. however, the relationship between income levels and the amount individuals were willing to pay to use a private hospital to treat an episode of malaria was not statistically significant. Based on the results of both the univariable and multivariable analyses, the sub-hypothesis that there is a significant positive relationship between income levels and

the amount people are willing to pay to use a government hospital to treat an episode of malaria cannot be rejected. However, the sub-hypothesis that there is a significant positive relationship between income levels and the amount people are willing to pay to use a private hospital to treat an episode of malaria cannot be accepted.

Again, the univariable analysis shows that how individuals ranked health improvement as a national goal did not influence the amount they were willing to pay to use either a government or a private hospital to treat an episode of malaria. The multivariable analysis, however, indicated that those who ranked health improvement high as a national goal were willing to pay lesser fees to use either a government or a private hospital to treat an episode of malaria. These results were not statistically significant and also did not conform to *a priori* expectation because it was thought that those who rank health improvement high as a national goal would be willing to pay higher fees to help raise adequate financial resources to improve health care delivery. Hence, any sub-hypothesis that there is a significant positive relationship between ranking of health improvement as a national goal and the amount people are willing to pay for their health care in Ghana could not be accepted. This result was however, because those who ranked health improvement high as a national goal are lower income earners (who need health care most) and as such lack the ability to pay higher fees to use either government or private hospitals to treat malaria (see section 9.2). On the other hand, those who ranked health improvement low as a national goal could be people with good health (who are mostly higher income earners) who even though they may have the ability to pay for their health care, do not see health improvement as a top priority national goal.

Furthermore, the univariable analyses indicated that individuals who preferred to use private hospitals were willing to pay higher fees to use either a government or a private hospital to treat an episode of malaria, than those who preferred to use government hospitals. This could be because private hospitals are more expensive than government hospitals and as a result the people who prefer private hospitals to government hospitals may be in the position to be able to afford (i.e. have the ability to pay) the relatively lower fees charged in government hospitals. The respondents who preferred private hospitals had significantly higher average monthly income

(hence higher ability to pay) than those who preferred government hospitals (see the section on choice of hospital by income levels, chapter 10).

Moreover, the results of the univariable analysis indicated that the people who were willing to contribute into a national health insurance scheme were willing to pay higher fees to use either a government or a private hospital to treat an episode of malaria, than those who were unwilling to contribute into such a scheme. This was counter to *a priori* expectation because it was expected that people who are likely to have difficulty to pay for their health care at the point of use are those who would be more willing to contribute into a national health insurance scheme in order to make health care relatively cheaper, if not free, at the point of use.

Both univariable and multivariable analyses indicated that married people are willing to pay higher fees to use either a government or a private hospital to treat an episode of malaria. This was because married people had higher average monthly incomes and could pool their resources together and as such are able to afford higher fees than unmarried people are. That is, the married respondents have higher ability to pay compared to unmarried respondents. This conforms to *a priori* expectation; consequently the sub-hypothesis that there is a significant positive relationship between marital status and the amount people are willing to pay to use either a government or a private hospital for treatment (i.e. married people would be willing to pay higher fees than unmarried people) cannot be rejected.

Additionally, the results of the univariable analyses indicated that there was no significant difference between the amount people who had no formal education were willing to pay to use either a government or a private hospital and what those with some form of formal education were willing to pay. The multivariable analysis showed the people who had had some formal education were willing to pay higher fees to use either a government or private hospital to treat an episode of malaria than those who had no form of formal education. This conforms to *a priori* expectation. However, both results from the multivariable analyses were not statistically significant. This could however, be due to biases created by the 'content' of the education variable as used in the study and how it was measured (see section 9.1). Hence, the sub-hypothesis that there is a significant positive relationship between

education and the amount people are willing to pay to use either a government or a private hospital for treatment cannot be accepted, which is counter to the findings of Zethraeus (1998) and Donaldson *et al.*, (1995) who found positive association between education and WTP.

Again, both univariable and multivariable analyses indicated that there is a negative relationship between age and the amount the individuals were willing to pay to use a government hospital to treat an episode of malaria. This result, though conforming to *a priori* expectation, was not statistically significant. On the other hand, both univariable and multivariable analyses indicated that there is a positive relationship between age and the amount the individuals were willing to pay to use a private hospital to treat an episode of malaria. This result was counter to *a priori* expectation and was statistically insignificant. Hence, the sub-hypothesis that there is a significant negative relationship between age and the amount people are willing to pay to use either a government or a private hospital for health care cannot be accepted.

Finally, the multivariable analyses showed that there is a positive relationship between distance to the nearest hospital and the amount people are willing to pay to use either a government or a private hospital to treat an episode of malaria. The results were statistically significant; therefore, the sub-hypothesis that there is a significant relationship between distance to the nearest hospital and the amount people are willing to pay for their health care cannot be rejected. However, for the government hospital, the result is counter to *a priori* expectation since total cost of seeking health care includes transport cost and other costs in terms of time spent in travelling and waiting for treatment. This means that altogether the total cost of health care to people who live far from a hospital would be higher than for those who live nearer to health facilities. Hence, these people were expected to be willing to pay lesser fees than those who live closer to health facilities. For private hospital, the result conforms to *a priori* expectation because if people think they could quickly get a better quality treatment at a private hospital that is far away, they would be prepared to pay higher fees in addition to travel cost to get the treatment.

Overall, the results show that Ghanaians are willing to pay for their health care. However, it must be noted that willingness to pay does not necessarily mean the

people will be able to pay for their health care. Being able to pay for health care depends rather on ability to pay, which is related to the general level of income. With a national per capita income of US$390[2], a national daily minimum wage of less than a dollar and an average monthly income of US$47 for the sample (¢325,926), there is no doubt many Ghanaians will find it difficult to pay for their health care at the point of use considering the uncertain nature of health care as a commodity. Therefore, any prepaid mechanism, preferably a national or social health insurance scheme put in place to help raise adequate revenue to finance health care in Ghana would be a better and sustainable alternative to the current "cash and carry" system. This is because with a national health insurance scheme, all people in the country can contribute towards affordable health care for everyone that could be free at the point of use and therefore encourage health care utilisation to the benefit of the entire country. The next section therefore looks at the main findings from this study concerning the use of national health insurance to finance health care in Ghana.

16.2 Results and discussions: Willingness to Contribute into a National Health Insurance Scheme

National health insurance schemes are seen to be more humane means of financing health care, (Bennett *et al.*, 1998; Normand 1999; Bennett 2004; Bennett & Gilson 2001) especially in poor countries, because both the rich and the poor will contribute towards affordable health care for everyone. Thus, a national health insurance scheme is a better and sustainable means of financing health care in a low income country like Ghana than the system whereby people have to pay out-of-pocket charges at the point of use. In addition, progressive health insurance premia can be charged so that the rich will be paying more to help raise adequate funds to pay for health care. This will make health care delivery more equitable, at least financially, in the society. With 92 per cent of the respondents willing to contribute into a national health insurance scheme, if the sample is taken to be representative of Ghanaian heads of households, then we can conclude that Ghanaian heads of households are willing to contribute into a national health insurance scheme.[3]

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[2]This was equivalent to ¢2,730,000 because the exchange rate at the time of the survey was ¢7,000 to US$1.

[3] Since 92 per cent of all the respondents were willing to contribute into a NHIS and 93.3 per cent of them were in the working age group, a NHIS could be designed so that the premium is deducted from

The univariable analyses showed that individuals' decisions about whether or not to contribute into a national health insurance scheme were not influenced by any of the socio-demographic variables. However, the multivariable analyses showed that distance to the nearest hospital and income levels of respondents significantly influenced the individuals' decision whether or not to contribute into a national health insurance scheme (see tables 11.2 and 15.3 in chapters 11 and 15 respectively). Hence, the sub-hypotheses that there were significant relationships between the distance to the nearest hospital, income levels of respondents and their decision whether or not to contribute into a national health insurance scheme, cannot be rejected. However, the sub-hypotheses that there were significant relationships between each of the other socio-demographic variables and the decision whether to contribute into a national health insurance scheme or not, cannot be accepted.

16.3 Results and discussions: Monthly Health Insurance Premium

The majority of the respondents (about 72 per cent) favoured monthly payment of health insurance premia. The average amount people were willing to pay, as their monthly health insurance premium, was ¢9,186. This is just about 2.8 percent of the respondents' average monthly income. The median and mode were both ¢5,000. According to the 2000 Population and Housing Census undertaken by the Ghana Statistical Service, Ghana's population was 18,800,000 with an average household size of 5.1 (GSS, 2000; see Appendix D). Hence, if the average amount that the respondents were willing to pay as monthly health insurance premia is charged per household for a National Health Insurance scheme, the government could raise ¢406,345,411,765 per annum. This is more than three times the amount (¢120 billion) the deputy director-general of the Ghana Health Service said was required to replace the "cash and carry" system in the year 2001 (see section 8.1). Meanwhile, the government could raise even more if the average premium is levied per person, which may have been what the respondents thought before giving their responses[4] given the

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the workers' salaries at source. This could help save on the cost of collecting premia, which should be kept very low for the scheme to be successful.

[4] Post data collection interaction with the interviewers revealed that they (the interviewers) did not all the time stress that the monthly health insurance premium was for the entire household. Hence, since the willingness to pay values for both government and private hospitals were for an episode of malaria, there was an impression that the respondents thought the monthly premium was for each member of their household.

fact that the average monthly income of the respondents reflected the per capita income at the time. With 11,010,855 of Ghana's population being between the ages 15-64 (the labour force), if the average premium is levied per person, the government could raise ¢1,213,748,568,360 (about ¢1.2 trillion). Thus, a national health insurance scheme could raise more financial resources to finance improvements in health care delivery, especially increasing the financial incentives of health professionals so as to retain them in the country. Besides, if well implemented, the literature suggests that such a scheme could be sustainable (Bennett 2004; Bennett & Gilson 2001).

In the following paragraphs, summary conclusions of how the various independent (socio-demographic) variables influenced the amount the individuals were willing to pay as their monthly health insurance premia are presented.

First, the results from both univariable and multivariable analyses show that the male heads of households in Ghana are willing to pay higher monthly health insurance premia into a national health insurance scheme than female heads of households. This conforms to the *a priori* expectation (table 8.2) and as such the sub-hypothesis that there is no significant relationship between gender and the amount people are willing to pay as monthly national health insurance premia cannot be accepted based on the results. This result could be due to the fact that because they had higher average monthly incomes, the male respondents have higher ability to pay than the female respondents and as such could afford to pay higher premia; or it could be because the female respondents have relatively better health conditions and felt they would not need to pay higher premia to finance a health insurance scheme which they may not need.

Also, the results from both univariable and multivariable analyses show that there is a positive relationship between income levels and the amount individuals were willing to pay as monthly health insurance premia. This relationship was statistically significant and conformed to *a priori* expectation. Thus, higher income earners are willing to pay higher monthly premia into a national health insurance because they have the ability to pay. Hence, the sub-hypothesis that there is no significant relationship between income levels and the amount people are willing to pay as monthly health insurance premia could not be accepted.

Again, the results from both univariable and multivariable analyses showed there is a positive relationship between the age of respondents and the amounts they were willing to pay as monthly health insurance premia. However, the relationship was statistically insignificant, therefore the sub-hypothesis that there is no significant relation between age and monthly national health insurance premia could not be rejected.

Furthermore, the results from both univariable and multivariable analyses showed that, people who had had some form of formal education were willing to pay higher monthly health insurance premia than those who had had no formal education. This relationship conformed to *a priori* expectation but was not statistically significant and therefore the sub-hypothesis that there is no significant relationship between education and the amount individuals are willing to pay as monthly national health insurance premia could not be rejected.

Moreover, the results show that married people were willing to pay higher monthly health insurance premia than those who were not married. This conformed to *a priori* expectation but was statistically not significant. Hence, the sub-hypothesis that there is no significant relationship between marital status and the amount people are willing to pay as monthly national health insurance premia could not be rejected.

Besides, the results from the univariable analysis showed there was negative relationship between distance to the nearest hospital and the amount people were willing to pay as monthly national health insurance premia. On the other hand, results from the multivariable analysis showed a positive relationship between distance to the nearest hospital and the amount people were willing to pay as monthly national health insurance premia. Both results were not statistically significant; hence, the sub-hypothesis that there is no significant relationship between distance to the nearest hospital and monthly national health insurance premia could not be rejected.

Additionally, the results from both univariable and multivariable analyses showed positive relationship between household size and the amount people were willing to pay as monthly national health insurance premia. This conformed to *a priori*

expectation but the results were not statistically significant, which means that any sub-hypothesis that there is no significant relationship between household size and monthly national health insurance premia could not be rejected based on the results.

Finally, the results showed that the people who ranked health improvement low as a national goal were willing to pay higher monthly national health insurance premia than those who ranked it high as a national goal. This did not conform to *a priori* expectation. However, it was statistically significant and therefore, based on the result, the sub-hypothesis that there is no significant relationship between how individuals' rank health improvement as a national goal and the amount they are willing to pay as monthly national health insurance premia could not be accepted. This result was due to the fact that those who ranked health improvement high as a national goal were low income earners and as such lacked the ability to pay higher monthly health insurance premia and those who had the ability to pay and could afford higher monthly premia did not see health improvement as a higher priority national goal, perhaps because they have better health.

We can conclude from the results that the people who formed the sample are willing to pay monthly health insurance premia into a national health insurance scheme to help raise adequate revenue to finance health care in Ghana to make it cheaper, if not free, at the point of use. Thus there is evidence that people will embrace and support the establishment of National Health Insurance schemes as a means of financing health care in Ghana. However, whether the respondents would be able to pay the amount they expressed would depend on their ability to pay, which in turn depends on their disposable incomes. It is believed that if the collection of health insurance premia were done so that local factors that influence availability of cash incomes are taken into consideration, people would be in the position to pay their premia without much difficulty (Carrin *et al.*, 1999).

16.4 Conclusions from the empirical study about the variables

The empirical results showed that for:

a. Willingness to pay to use government hospitals (WTP_g), gender, monthly income levels, distance to the nearest hospital and marital status significantly influenced the amount the respondents were willing

to pay. However, the effects of how respondents ranked health improvement as a national goal, education levels attained, age, the size of households and the number of household members who fell ill over the last year, were statistically insignificant (see tables 12.2 and 14.1). In all, the ability to pay seemed to be the over-riding factor influencing the respondents' WTP_g

b. Willingness to pay to use private hospitals (WTP_p), distance to the nearest hospital, and marital status (marginally, p-value = 0.061) significantly influenced the amount the respondents were willing to pay. However, the effects of monthly income levels, how respondents ranked health improvement as a national goal, education levels attained, age, the size of households and the number of household members who fell ill over the last year, were statistically insignificant (see tables 13.2 and 14.5).

c. Willingness to contribute into a national health insurance scheme, distance to the nearest hospital and income levels were significant. However, none of the other socio-demographic characteristics of the respondents was statistically significant in influencing the respondents' decisions whether or not to contribute into the scheme (see tables 11.1 and 15.3).

d. Monthly health insurance premium, monthly income levels, and how respondents ranked health improvement as a national goal significantly influenced the amount the respondents were willing to pay as their monthly health insurance premia. However, the effects of distance to the nearest hospital, age, gender, education level attained, marital status, the size of households and the number of houshold members who fell ill over the last year were statistically insignificant (see tables 11.3 and 14.9). Here also, the ability to pay seemed to be the over-riding factor influencing the respondents' WTP_p.

These results, some of which conformed to *a priori* expectations and some of which did not conform to *a priori* expectations (see table 8.2 and sections 16.2 and 16.3), must be used with caution. They might have been influenced by biases created by the methodology used, the contingent valuation method (see sections 6.3.3 and 16.5), the

concepts and context of the variables used for the study, and how these variables were measured (see section 9.1).

16.4.1 Conclusion concerning the main Hypotheses of the empirical study

Based on the results of the empirical study, one can conclude that, overall, Ghanaians are willing to pay for their health care whether delivered by government or private hospitals and also they are willing to contribute into a national health insurance scheme. Hence, the two main null hypotheses of the study that Ghanaians are not willing to pay for their health care; and are not willing to contribute into a national health insurance scheme, will have to be rejected in favour of the alternative hypotheses.

16.5 Problems and Limitations of the Study

The empirical part of this study was based on the collection of primary data. To ascertain the general income levels and willingness to pay of the respondents entailed the collection of information on their incomes and their components. This means that care must be taken when using the findings because of the problems encountered during data collection, as follows.

Firstly, some figures given were estimates, which could be wrong. Some of the respondents were either illiterate or semi-literate and had no records of their incomes. The interviewers therefore, had to assist these people to recollect as much as possible in judging their fairly regular monthly incomes. This may call into question the reliability of some responses.

Also, actual average incomes coming to some individuals were often difficult to ascertain. For instance, for individuals with regular incomes such as formal salaried and wages employees, mostly, only the regular incomes were given, leaving out other sources such as earnings from informal or casual activities. This is where an assets index would have helped to clarify the income levels but the data obtained could not permit the construction of such an index. However, the income levels obtained from the survey reflected the general income levels in Ghana at the time of the survey (see section 9.1).

Again, some respondents were suspicious of the 'intentions' of the survey, fearing that any knowledge of their income levels, the amount they are willing to pay to use government and private hospitals, and the amount they are willing to contribute into a national health insurance scheme, reaching 'official circles' would be used for taxation and hospital fees purposes and therefore were unwilling to provide any such information. In such circumstances the field assistants who were well educated and understood the essence of the survey helped to explain to the respondents that the exercise was purely for academic purposes, for which they did not need to have any fears and also that was why they were to remain anonymous. This assured the doubters to some extent, who then took the interviewers into some confidence and gave them their co-operation.

Furthermore, a lot of time had to be spent by the interviewers to explain the significance of the study and also for explaining terminologies like household, insurance, national goals, willingness to pay, willingness to contribute into a national health insurance and premium, more especially to the illiterate and semi-literate respondents, before getting the required information. Although, according to the field assistants, the survey thus took a considerable length of time to complete and could have influenced respondents' answers if they were becoming bored, it benefits from as thorough understanding as possible among respondents of the terminology used.

Moreover, the area covered for the empirical study was not large, likewise the sample. One would have wished to cover a wider area and sample for the study to make it more representative of the population of Ghana but lack of time and finance limited the research to only two district capitals and their immediate environs, and only 487 individuals. Also, the sample was biased because their general characteristics was not representative of Ghana's population neither was it representative of the region used as case study (see section 9.1). However, they seemed to be representative of heads of households who were the focus of the study.

Different sets of survey instruments (questionnaires) should ideally have been used to determine the willingness to pay to use government hospitals, willingness to pay to use private hospitals, willingness to contribute into a national health insurance scheme, and the monthly health insurance premia, at different times. Since only one

set of questionnaires was used for the survey, there may be relational, context misspecification and importance biases (see section 6.6) in the respondents' thinking processes when giving out their responses. This may have influenced the amount respondents were willing to contribute into a National Health Insurance Scheme and as such these figures must be used with caution.

Additionally, there was a general tendency to under-estimate the amount the people were willing to pay to use government hospitals. Even the respondents who said they preferred to use government hospitals because of their higher quality and reliability were willing to pay higher fees to use private hospitals than they were willing to pay to use government hospitals. This could be because the respondents were strategically willing to pay lower fees for the quality services in government hospitals so that the government would retain the lower fees; or it could be an artefact of the methodology used. The range of options given for willingness to pay to use government hospitals was smaller than those given for private hospitals (see section 8.4).

Unfortunately, district level revealed preference and other district level data such as average household size and average income level were not available for use in comparison with the stated preference values obtained from the field survey. Given the lack of availability of such district level data, available national level data have been used where possible. To the extent that these national level data differ from district level data this will affect the results obtained. For example, where estimates of national willingness to pay are given, these assume that the local level data are applicable at a national level. If the average income level in the regions surveyed is higher than that nationally, then the overall estimate of willingness to pay, would be too high.

Finally, the conceptual problem of whether costs are justifiably a reference point in willingness to pay studies should have been addressed in the thesis. The only time cost was implicitly referred to was when the medical officers in-charge of one government and one private hospitals were interviewed with the aim of determining how much it cost at the time of designing the survey instrument, to treat an episode of malaria. The idea was to get an idea about the range of bids to use for elicitation of WTP for government and private hospitals, following the advice of de Faria et al to

use values obtained from professionals and specialists who have knowledge of the area of study as reference points. The disadvantage of using this process, however, was that costs in the two services were very different, and so different starting points were obtained for the two services, which clearly could have lead to bias.

Despite all these problems and limitations, it is believed that the data obtained are reasonably adequate for the purposes of the study. Hence, recommendations can be made based on the conclusions from the statistical analyses and on the content of the study (dissertation) as a whole. However, before making the recommendations, the following must be noted.

First of all, the study has demonstrated that the contingent valuation method of estimating willingness to pay can be used to analyse health care financing and demand issues (in addition to being used to value the benefits of non-marketed commodities) and thus, contributed to the body of knowledge on empirical applications of contingent valuation model and willingness to pay. The use of the contingent valuation method to estimate willingness to pay in this context has been referred to as *WTP-finance studies* (Mataria et al 2004). Thus, the study has shown that by using hypothetical scenarios, we could generate information that could be used for setting prices for health care services provided by government and private health facilities, which would enhance budgeting and priority setting. Also, it could serve as a guide to setting premium for national and/or community health insurance. Notwithstanding, one needs to note that there is the risk of individuals' actual behaviour being different from what they said they would do in the hypothetical situation (hypothetical bias, see section 6.3.3), which would pose problem for applying the values obtained in CVM studies.

16.6 Recommendations

The empirical study has shown the potential for the establishment of a National Health Insurance in Ghana because Ghanaians are willing to contribute into such a scheme because they have difficulty paying for their health care at the point of use as currently being practiced. The general income levels in Ghana are low (national per capita income is US$390, daily minimum wage less than US$1 and average monthly income of the sample is US$46) but Ghanaians have to pay for their health care out-

of-pocket at the point of use, there is no doubt people will have difficulties in accessing health care. Based on the results of this empirical study and the findings from the literature on health care financing in Ghana and elsewhere as reported in the study, the following are recommended:

16.6.1 Recommendations for practice

1. Based on the evidence on the advantages of social health insurance (Bennett S, Creese A, & Monasch R 1998) vis-à-vis the socio-cultural and socio-economic conditions of Ghanaians it is suggested that the government should establish social/national health insurance schemes, preferably, community health insurance managed at the community levels. Compulsory social insurance is preferred because as discussed in section 4.2.1, private insurance schemes would lead to adverse selection whereby most people, especially the poor who need health care most, would be uninsured and will have difficulty in accessing health care. The rich people with good health could decide not to join such voluntary schemes. The researcher suggests the use of social insurance instead of a tax system because as discussed in section 3.4, the government of Ghana cannot rely on a tax-based system to finance health care due to the difficulties it faces in raising revenue through taxation. As at the time of the survey, less than 1 million Ghanaians were employed in the formal sector and paying income tax so reliance on income tax would lead to very low levels of revenue. This has compelled the government to rely on indirect taxes such as value added tax (VAT) to raise revenue. Meanwhile, over reliance on these indirect taxes could affect the poor more and even worsen their health conditions (see section 3.4 for more). With the use of social health insurance, all the people in Ghana, both rich and poor, will contribute into the scheme which will help raise more revenue to finance health care. A national health insurance scheme could raise more financial resources to finance improvements in health care delivery, including increasing the financial incentives of health professionals so as to retain them in the country.
2. Secondly, premia for the social health insurance schemes must be progressive so that the richer people in the society pay more in order to help subsidise the poor. This is because the richer people will have the ability to pay higher premium to help subsidise the poor. Our data shows that individuals who earn

¢200,000 or less per month could be asked to pay ¢6000 as monthly health insurance premium, increasing to ¢10,500 for those who earn between ¢401,000 and ¢500,000 per month, and ¢13,600 for those who earn more than ¢500,000 per month (see Table B.9 in appendix B). This will make health care delivery, at least financially, more equitable.

16.6.2 Recommendations for research

This study was unable to provide any evidence regarding the best methods for implementing a national/social health insurance scheme. In developing such a scheme in Ghana, the following must be noted and research conducted where needed:

3. Firstly, in theory, it should not be difficult to explain the concept and ideals of National Health Insurance to Ghanaians for them to embrace because there are a lot of social and cultural practices in Ghanaian communities that show pooling of resources, spreading of risk and mutual solidarity, which are the general thrust of national health insurance schemes. For instance, the "NNOBOA" system[5] among farmers in Ghanaian farming communities and compulsory donations at funerals ('NSAWABO') in most communities in Ghana, are all forms of pooling resources in mutual solidarity. So if people are able to pool their resources to help each other on their farms and during the funerals of deceased family members, then they can do the same to promote the health care of each other to keep them alive and healthy. It is however, recommended that research is done to find out how these socio-cultural practices could be capitalized on to design a national health insurance scheme in the country.
4. Also, there is the need to find out how the government could adopt the bottom-up approach in establishing the National Health Insurance schemes and adjusting to local managerial capacity. This will provide the assurance that the schemes are solidly rooted in the society. The schemes could thus be responsive to local needs and reflect local solidarity in order to stimulate better understanding as well as trust and confidence by the insured.
5. Again, collection of the premia must be adapted to suit the economic conditions of the society and/or the people in order to avoid the problems that

[5] This is a system whereby a group of farmers pool their resources together to work on each other's farms in turns.

make compulsory health insurance not feasible in environments where most people are either self-employed or are in the informal sector (Creese and Bennett, 1997). For instance, those who are employed in the formal sector can have their premia deducted at source before their wages/salaries are paid. Since most Ghanaians are self-employed in the informal sector, the "SUSU"[6] system can be used to help collect the health insurance premia. It must be noted that with the SUSU system, the individuals do get a lump sum at the end of the period but with the health insurance scheme, they will not get any money back. Hence, the public must be adequately educated to understand that no money will be paid back to them but in return, they will receive free or relatively cheaper health care when the need arises. Here also, the public must be educated about the problem of moral hazard and its adverse effects on the effectiveness of social insurance schemes so that people will not misuse the system. If the public is not well educated on the ideals of national health insurance, they may feel that once they had paid their premia, they will have to use the health services even if they are not ill. To avoid such frivolous use, deductibles and co-payments can be introduced to deter people from misusing the health services. These must be explained to them in order to avoid any mistrust. Thus, collection of health insurance premia must be made convenient to the people so that they will pay at the time they have their incomes. In the rural communities, payments can be made weekly, especially during market

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[6] The "SUSU" system is a form of saving where people regularly put aside a specified amount to help accumulate funds. The 'susu' system of saving in Ghana has two versions: Rotating Savings through 'susu' clubs; and individual 'susu' collectors who operate a deposit facility for any number of people. The typical Ghanaian 'Susu' club consists of members who agree to make regular contributions to a fund that is given, in whole or in part, to each contributor in rotation (Ardener, 1964). The individual 'Susu' collector, who is sometimes described as a "Mobile Banker", visits savers at their shops, work places, market stalls and even homes, at agreed times each day and collects a specific amount determined by the saver, in consultation with the collector. After an agreed period, usually on the last day of every month, the deposits are returned to the saver, less a day's deposit as a commission to the collector. Many market women and traders find the individual version of 'Susu' more convenient in achieving their limited savings targets of obtaining a lump sum at regular intervals to meet working capital and other financial needs.

days when people sell their produce whereas those in the formal sector can pay their premia when they are paid their salaries and/or wages.

6. Furthermore, government must embark on intensive public education to educate the general Ghanaian public about the advantages and effectiveness of the social health insurance scheme and how it operates so that people will understand and appreciate the concept. This can be done through radio programmes because large number of Ghanaians own radios (Ghana Statistical Service *et al.*, 1999 p.16)
7. Moreover, government must come out with clear protocol on any exemption schemes for the very poor and how to deal with emergency cases, which will be easy to interpret and also not lend itself to abuse. This will motivate people to seek health care early and regularly instead of seeking health care only when their health conditions had deteriorated.
8. Finally, it is recommended that a large and representative sample be selected to conduct further studies into the willingness of Ghanaians to pay for their health care and their willingness to contribute into a national health insurance scheme. Emphasis of such studies should be on how the socio-demographic variables like education, age, marital status, gender, occupation, distance to the nearest hospital, ranking of health improvement as a national goal, household size and frequency with which household members require health care, influence individuals' willingness to pay for their health care and their willingness to contribute into a national health insurance scheme. This will give the government adequate data to help in making the decision whether or not, to introduce a National Health Insurance Scheme, if so, what premia to be charged and whether there should be differential premia in order to protect the low income earners. Particularly, since the findings from this study showed that how respondents ranked health improvement as a national goal had no influence on their choice of hospital for treatment and willingness to pay, it would be interesting to further explore the relationship between how individuals rank health improvement as a national goal and the amount they are willing to pay for their health care and the amount they are willing to contribute into a national health insurance scheme. Ideally, questions could be included in the Ghana Living Standards Survey, which is sponsored by the World Bank, for these studies. However, to avoid any suspicions from the

general public that could make them behave strategically, an independent academic or research institution that is not openly connected to the government should be engaged to conduct such studies.

16.7 Closing Remarks

Ghana is a developing country and has a lot of problems that are shared by all developing countries, the main one being lack of financial resources. Meanwhile, Ghana's population is growing with its concomitant problems among which are poverty and poor health. More seriously, there is an emerging danger of HIV/AIDS, which is putting pressure on the health care delivery in the country. Meanwhile, more Ghanaian doctors and nurses are leaving the country to abroad for better conditions of service because the government is unable to pay them well. The pressure to provide for the various needs of the expanding population makes enormous demands on national resources. High costs of provision of these needs coupled with lack of adequate financial resources place the government in a dilemma, as it is unable to meet these demands. Yet, the health care needs of the population cannot be left to deteriorate. The problems affecting health care delivery in Ghana will have to be confronted one way or the other. Hence, this study concludes by proposing the establishment of a national/social health insurance scheme, which if properly implemented, could be of immense benefit in raising adequate funds to improve upon health care delivery. Further research should be implemented to determine how current cultural beliefs and practices in Ghana can be used to support the ideals of National Health Insurance.

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APPENDIX A

HOUSEHOLD QUESTIONNAIRE

DATE ----------

A study is being carried out by a student of the Economics Department, University of Strathclyde in Glasgow, UK on "The Effects of User-Charges on Health Care Delivery in Ghana: Estimating the People's Willingness to pay for Malaria Treatment". We would like to ask you a few questions to help the student write up his thesis. The research work is purely an academic work towards a fulfilment for the award of PhD in Economics.

The interview will take a few minutes. Your answers will be completely confidential. Kindly remain anonymous and feel free to respond in the best way that you can do.

[Only the head of household should be interviewed]

1. Location ---------- (Find distance to nearest hospital).

2. Age ---------- Years

3. Gender Male = (1) Female = (0)

4. Marital Status: Married =(1); Single = (2); Divorced = (3); Widowed = (4).

5. Educational Background : (0) = No Formal Education, NF
   (1) = Primary Education, PE
   (2) = Middle/Junior Secondary, M/JS
   (3)= Secondary/Vocational/Technical/Commercial,S/V/T
   (4) = Post Secondary, PS
   (5) = Tertiary, T
   (6) = Others, Specify

6. Religion:	Catholic	1
	Orthodox Protestant	2
	Syncretic	3
	Jehovah Witness	4
	Pentecostal	5
	Traditional	6
	Moslem	7
	Others (Specify)	8

7. Occupation: (a) MAIN

(1) = Farming/ Fishing/ Hunting

(2) = Trading/ Selling

(3) = Teaching

(4) = Dressmaking

(5) = Hair Dressing

(6) = Driving

(7) = Craftsmanship (e.g. Basketry, Goldsmith, etc.)

(8) = Construction Business (e.g. Carpentry, Masonry, etc)

(9) = Doesn't Work

(10) = Others (specify)

(99) = Don't Know

(b) SUPPLEMENTARY

(1) = Farming/ Fishing/ Hunting

(2) = Trading/ Selling

(3) = Teaching

(4) = Dressmaking

(5) = Hair Dressing

(6) = Driving

(7) = Craftsmanship (e.g. Basketry, Goldsmith, etc.)

(8) = Construction Business (e.g. Carpentry, Masonry, etc)

(9) = Doesn't Work

(10) = Others (specify)

(99) = Don't Know

8. Which of the following categories can you place your monthly income?

(1) = Above 500,000

(2) = 401,000 – 500,000

(3) = 301,000 – 400,000

(4) = 201,000 – 300,000

(5) = 101,000 – 200,000

(6) = 1,000 – 100,000 (All in cedis)

9. How many dependants are there in the household? (i.e. aged parents, children who are not working, house-helps, etc.) ----------

10. How many members of your household fell ill over the last month? ----------

11. How many members of your household fell ill over the last year? ----------

12. (a) May I know the type of materials used to construct your house:

WALLS:

4 = Cement Blocks

3 = Bricks

2 = Swish mud

1 =Others, specify

ROOF:

5 = Cement roof

4 = Corrugated asbestos

3 = Corrugated iron sheet

2 = Corrugated Aluminium

1 = Others (specify) ----------

FLOOR :

3 = Terrazzo

2 = Concrete

1 = Others (specify)

13. Do you own or rent this house? Own = 0 Rent = 2

14. What is your monthly rent? ---------- Cedis per month

---------- Don't pay rent.

15. If there is electricity in the house, what was your electricity bill for the month, (i.e. your own share if you do not have your own meter)? ----------

16. What is the main source of water supply for your household?

(1) = Public pipe-stand

(2) =Private home-connected pipe

(3) = Well

(4) = Streams and rivers

17. Approximately, how much do you spend on water in a month? ---------- Cedis per month

----------Don't pay for water.

18. What is the main source of cooking fuel for your household?

(1) = Wood

(2) = Charcoal

(3) = Kerosene

(4) = Electricity

(5) = Gas

19. Does this household own any of the following items (Please indicate number of each item owned):

Radio ----------

Electric Cooker ----------

Sewing Machine ----------

Fan ----------

Bicycle ----------

Refrigerator ----------

Telephone ----------

Television ----------

Water Heater ----------

Automobile ----------.

Others (specify)----------

Several issues have been of concern to the citizenry of late. One of such issues is a concern for improvement in how health care is delivered in the country.

20. How would you rank health improvement among other national goals? (Please rank in order of priority from 1 – 7)

(i) Education Improvement [ ]

(ii) Old-Age assistance [ ]

(iii) Health Improvement [ ]

(iv) Sanitation Improvement [ ]

(v) Recreational Facilities [ ]

(vi) Roads Construction [ ]

(vii) Provision of Housing [ ].

BIDDING GAME FOR QUALITY TREATMENT FOR MALARIA.

21. (a) Assuming you or any member of your household has malaria, would you like to go to a private or government hospital for treatment? Private = 0

Government = 1.

(b) Could you explain why? ----------

There has been lot of concern about how people react to their being asked to pay for their hospital treatment. The government however, argues that it lacks the resources to be able to finance health care delivery alone. Hence, to improve health care delivery, the citizenry must contribute towards cost recovery in the health sector.

22. Assuming you or any member of your household has malaria and you take him or her to a government hospital for treatment, would you be willing to pay:

(1) = Over 10,000 cedis

(2) = 8000

(3) = 6000

(4) = 4000

(5) = 2000

(6) = 1000

23. Assuming you were compelled by circumstances to go to private hospital for malaria treatment, would you be willing to pay:

1 = Over 50,000

2 = 50,000

3 = 40,000

4 = 30,000

5 = 20,000

6 = 10,000

7 = 5,000

8 = less than 5,000

24. Assuming the government wants to institute a system whereby one makes regular contributions into a common fund so that when one attends hospital for treatment, he/she doesn't pay anything at the time of using the hospital facilities (i.e. National Health Insurance Scheme). However, if one does not fall ill, he/she does not receive anything back from the contributions made. Would you be prepared to contribute into such a scheme?

Yes = (1) No = (0)

25. If yes, how frequently would you like to make your contributions into such fund?

Daily = (1) Weekly = (2) Fortnightly = (3)

Monthly = (4) Quarterly =(5) Annually = (6).

26. Supposing you were to pay your health insurance premium on monthly basis, how much would you be willing to pay? ----------

27. Have you been using traditional/herbal medicine? Yes = 1 No = 0

28. If yes, do you attribute this to the introduction of user fees in government Hospitals? Yes = (1) No = (0)

29. Could you explain why? ----------

---

30. Do you pay for the traditional medicine? (Probe for more information about the mode of payment).
31. If you were to use traditional/herbal medicine for malaria treatment, would you be willing to pay:

1 = over 7,000

2 = 6,500 - 7000

3 = 5,500 – 6000

4 = 4500 – 5000

5 = 3,500 – 4000

6 = 2500 – 3000

7 = 1500 – 2000

8 = 100 - 1000

Please thank you for your time.

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APPENDIX B

Please note that 'Group' as used in each of the tables refers to the various categories of the categorical variable used for each analysis. The groups are explained in the main text of the dissertation and the tables are meant to be used together with the main text where they are referred to.

Table B.1 Monthly Health Insurance Premium versus Income

Group	Mean	SD
1	13684	13906
2	10525	15936
3	9358	9468
4	7046	7522
5	5363	5409
6	6936	8224

Table B.2 Monthly Health Insurance Premium and Marital Status

Group	**Mean**	**SD**
1	9941	11873
2	7088	7810
3	6220	6826
4	6833	12205

Table B.3 WTPg and Income Levels

Group	Mean	SD
1	7611	2828
2	7118	2868
3	7563	2476
4	6867	2749
5	6296	2856
6	6509	3036

Table B.4 WTPg and Marital Status		
Group	Mean	SD
1	7367	2765
2	6685	2847
3	5723	2517
4	5444	2955

Table B.5 WTPg and Educational Background		
Group	Mean	SD
1	6333	2948
2	6760	2825
3	6760	2823
4	7894	2603

Table B.6 WTPp and Income Levels		
Group	Mean	SD
1	21121	13572
2	18281	12782
3	19826	12679
4	18089	12658
5	17844	14453
6	18670	13986

Table B.7 WTPp and Marital Status		
Group	Mean	SD
1	20115	13376
2	18422	13029
3	13951	12046
4	14428	12486

Table B.8 WTPp and Educational Background		
Group	Mean	SD
1	15919	14486.39
2	18563	13240.67
3	17274	11987
4	22062	13789

Table B. 9 Progressivity of monthly health insurance premium

Income levels	Frequency	Valid Percentage	Mean Premium WTP
Over ¢500,000	108	22.2	¢13,684
¢401,000 - ¢500,000	68	14.0	¢10,525
¢301,000 - ¢400,000	87	17.9	¢9,358
¢201,000 - ¢300,000	98	20.2	¢7,046
≤¢200,000	125	25.7	¢6,006

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APPENDIX C:

This is to be used together with the section titled comparison of results from analyses on WTPg and WTPp.

Table 12.2 Summary of Analyses on WTPg

VARIABLE	TEST CONDUCTED		
	Independent Samples T-Test	**Pearson Product-Moment Correlation**	**ANOVA**
Sex	Significant (Male>Female)	-	-
Income	-	Positive, Significant	Significant
Monthly Premium	-	Positive, Significant	-
Ranking of health Improvement	Insignificant	-	-
Choice of Hospital	Significant (Private>Government)	-	-
WTC into NHIS	Significant (Yes>No)	-	-
Marital Status	Significant (Married>Not Married)	-	Significant
Education	Insignificant	-	Significant
Occupation	Insignificant	-	Insignificant
Age	-	Negative, Insignificant	Insignificant
Household Size	-	Positive, Insignificant	-
Distance	-	Negative, Insignificant	-

Table 13.2 Summary of Analyses on WTPp

VARIABLE	TEST CONDUCTED		
	Independent Samples T-Test	**Pearson Product-Moment Correlation**	**ANOVA**
Sex	Significant (Male>Female)	-	-
Income	-	Positive, Insignificant	Insignificant
Monthly Premium	-	Positive, Significant	-
Ranking of health Improvement	Insignificant	-	-
Choice of Hospital	Significant (Private>Government)	-	-
WTC into NHIS	Significant (Yes>No)	-	-
Marital Status	Significant (Married>Not Married)	-	Significant
Education	Insignificant	-	Significant
Occupation	-	-	Significant
Age	-	Positive, Insignificant	Insignificant
Household Size	-	Positive, Insignificant	Insignificant
Distance	-	Positive, Significant	Significant

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APPENDIX D

General Information about Ghana

Area	238,537 sq. km (92,100 sq. mi.)
Population	18,800,000 (2000 Census) *Females- 51% male 49%*
Population Growth Rate	1.79% (2001 est.) 2.4 (2000 Census) See Graph
Population Density	78.9 persons/sq. km. (2000 census) Urban (1990): 33%.
Age Structure	0-14 years: 41.18% (male 4,123,317; female 4,068,786) 15-64 years: 55.35% (male 5,455,577; female 5,555,278) 65 years and over: 3.47% (male 328,809; female 362,247) (2001 est.)
Birth Rate	25.84 births/1,000 population (2003 est.)
Death Rate	10.53 deaths/1,000 population (2003 est.) - 2002
Net Migration Rate	-0.83 migrant(s)/1,000 population (2003 est.)
Sex Ratio	at birth: 1.03 male(s)/female under 15 years: 1.01 male(s)/female 15-64 years: 0.98 male(s)/female 65 years and over: 0.91 male(s)/female total population: 0.99 male(s)/female (2001 est.)
Major Ethnic Divisions	Ghanaian by Birth/parenthood 92.1% *Akan 49.1% Mole-Dagomba 16.5% Ewe 12.7% Ga-Dangme 8%* - 2000 Census non-Ghanaians 3.9%
HUMAN DEVELOPMENT INDICATORS	
Infant Mortality Rate	57 per 1,000 live births (2002)
Maternal Mortality	210 per 100,000 live births (1985-2001)
Life Expectancy at Birth	56.2 years male, 59.3 years female (2001)
Total Fertility Rate	4.5 children/woman (2000 census) 3.32 children born/woman (2003 est.)
Literacy Rate	74.8% 82.7%(Male); 67.1% (Female) NOTE: National Population and Housing Census showed that "43.4 per cent of those who are three years old or more have never been to school and 49.9 per cent of the adult population of 15 years or more are totally illiterate." (2001)
Average Household Size	5.1 (2000)
Access to safe water	91 percent (urban), 64 percent (rural) (2000)
Human development index value	0.567 (2001)
World Rankings	See Graph
OTHERS	
Religions	Christian 69%, Traditionalists 8.5%, Muslim 15.6%, others 6.9%. (2000 census)
Languages	English (official) African (*Akan, Mole-Dagomba, Ewe,and Ga*)
Labor force	4.1 million Agriculture and fishing- 55% Industry- 18.7% Sales and Clerical- 15.2% (2000 Census) Services, transportation, and communications- 7.7% Professional 3.7%; NOTE: 48% of population of working age. 82% of 15-64 years are in some gainful employment. adult unemployment rate for Ghana at 8.2 per cent. (2000 Census)
ECONOMIC INDICATORS	
Economic Indicators	Details

Source: http://www.ghanaweb.com/GhanaHomePage/general/

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APPENDIX E

Literature Search

- I used the search engines alta vista, Excite and Google to search the World Wide Web using the key words that were relevant for the chapter under consideration. Key words used included 'financing of health care', 'health care as a commodity', 'characteristics of health care', 'health care financing', 'government financing of health care', 'health insurance' 'types of health insurance', 'user charges' 'health care user charges', 'user fees', 'health care user fees', WTP, 'willingness to pay', 'health care willingness to pay', 'methods for measuring willingness to pay', 'CVM', 'contingent valuation model', 'health care contingent valuation model', 'valuation of non-marketed commodities', etc. Then run through the papers that resulted from the search.
- I used the Athens BIDS International Bibliography of the Social Sciences database to search using similar key words as stated above. The initial search was limited to the period 1980 to 1999 but extended as the years went by and references to papers published before 1980 were found.
- I entered the names of journals that were cited in some of the papers into the search engines and browsed through the available issues on their website in search of articles that were relevant for the chapter under consideration. The journals searched were Health Economics; Social Science and Medicine; Journal of Health Economics; the International Journal of Health Planning and Management, African Studies Review, Journal of Public Economics, etc.
- Citation tracking was also used to trace papers that had been cited by other authors.