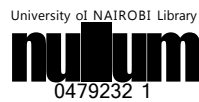


**ENROLLMENT OF INFORMAL SECTOR EMPLOYEES IN THE NATIONAL
HEALTH INSURANCE FUND IN KENYA**

BY

MUHIA MARIA WANJIKU

**A research paper submitted to the School of Economics, University of Nairobi in partial
fulfillment of the requirement for the award of Master of Arts degree in Economics.**

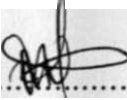


OCTOBER 2011

DECLARATION

This Research Paper is my original work and neither part nor whole of it has ever been presented for any academic award in any other university.

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APPROVAL

The research paper has been submitted for examination with our approval as university supervisors.

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Signature 

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DEDICATION

To my son Donald, let there be no intellectual height to which you cannot climb, no depth of thought to which you cannot fathom.

ACKNOWLEDGEMENT

I wish to thank all those who in one way or another contributed to make this research paper a success. I commend my supervisors, Dr. M. Mugo and Dr. M. Muriithi for their tireless and perpetual guidance, patience and encouragement in the whole process. I convey my solemn appreciation to my late dad Mr.J.M Thiong'o and my dear mum Jane, my brother and sisters for their love and support. I am grateful to the University of Nairobi for giving me the opportunity and awarding me scholarship and through this the support and assistance from the African Economic Research Consortium.

I salute my husband Mr. W.M. Njogu for his presence, understanding and support that saw me get on well everyday and look forward to greater heights. To my classmates, for the intellectual, moral support and the togetherness we shared, I wish you all the best. To God, for giving me the gift of life, energy and persistence, may I sing of his greatness forever.

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ABSTRACT

Health insurance schemes have been increasingly recognized as preferable mechanisms to finance health care provision. In this direction the National Health Insurance Fund (NHIF) in Kenya has assumed significant importance in helping Kenyans access healthcare. However the penetration of NHIF especially to the informal sector and poor persons is limited. The objective of this paper is to establish factors determining enrolment of the informal sector employees in NHIF. This will help to explore how more of the informal sector workers could be integrated into the NHIF. Using a binary probit model to examine those factors, the robustness of the model is controlled for. The data of this study is based on household utilization and expenditure survey collected by the Ministry of Health in 2007. Factors such as the education level and income of individuals strongly influence their decision to enroll in NHIF. Several policy recommendations for increasing enrolment rates in the NHIF are discussed, among them being public enlightenment of health insurance and poverty reduction strategies meant to increase income levels among the informal sector workers.

LIST OF ACRONYMS

AIDs	Acquired Immuno Deficiency Virus
WHO	World Health Organization
MDGs	Millenium Development Goals
CBHI	Community Based Health Insurance
NHIS	National Health Insurance Scheme
MHIS	Mutual Health Insurance Scheme
NHI	National Health Insurance
GDP	Gross Domestic Product
SSNIT	Social Security and National Insurance Trust
NSHIF	National Social Health Insurance Fund
NHIF	National Health Insurance Fund
NSHIS	National Social Health Insurance Strategy
OOP	Out of Pocket
LDCs	Less Developed Countries
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
LR	Likelihood Ratio
CDF	Cumulative distribution function
OLS	Ordinary Least Squares
ISED	Institute for Health and Development
ILO	International Labour Office
MASM	Medical Aid Society of Malawi
WTP	Willingness to Pay
BHI	Basic Health Insurance

CHAPTER ONE: INTRODUCTION

1.1 Background

Health insurance schemes have been increasingly recognized as preferable mechanisms to finance health care provision. Social health insurance in addition has been viewed as one of the health financing approaches with a strong potential to share risks across population groups (Wagstaff, 2009). A number of African countries are currently experimenting with different approaches, a good example being Ghana. In this direction, Kenya's National Health Insurance Fund has assumed a significant role in helping Kenyans access health care. However the penetration of NHIF especially to the informal sector and the poor is limited.

The world health organization (WHO) defines health care as the prevention, treatment and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions. Access on the other hand is concerned with helping people command appropriate health care resources in order to preserve or improve their health. If services are available and there is an adequate supply of services, then the opportunity to obtain healthcare exists and a population may have access to it. However, the extent to which a population gains access also depends on financial, organizational, social and cultural barriers that limit the utilization of services. Thus, access measured in terms of utilization is dependent on the affordability, physical accessibility and acceptability of services and not merely adequacy of supply (WHO 2000).

Huge challenges remain in the effort to improve health outcomes in developing countries and achieve related goals concerning universal coverage, basic needs, equity, inclusion, risk protection and reaching poor and marginalized groups. One of these challenges is how health should be financed - who should pay how much and through what arrangements, given the reality that the services and other actions needed to attain desired health results inevitably involve costs that must be financed somehow. The health care financing gap together with other challenges such as poverty reduction, the escalating burden of ill-health related to the AIDS epidemic, particularly in Africa and Asia, and a growing prevalence of non-communicable diseases in some low- and middle-income countries are reflected in the Millennium Development Goals (MDGs). These have spurred a growing emphasis on the need for health care financing mechanisms that protect the populations of these countries from the potentially impoverishing effects of health care costs.

Developing countries' public, private and civil society sectors, together with external donors and other partners, act as financiers of health services. Funds are mobilized through taxes, social security systems, fees, grants, loans and other revenue-generating instruments, and flow through budgets and various off-budget channels. The public and private choices that are made in this complex space have profound implications not just for which groups bear what share of the costs, but also for who actually gets services and in what quantity and quality.

In the 1980s and 1990s, cost-recovery or cost-sharing systems that called for contributions from users of public sector facilities, primarily through direct out-of-pocket payments or user fees, were much in the public eye. However, in recent years, the consensus has grown that prepayment health care financing, whereby people contribute regularly to the cost of health care through tax payments and/or health insurance contributions, provides greater financial protection to households than - and is, therefore, preferable to - out-of-pocket healthcare financing (Preker and Carrin,2004, World Health Organization, 2000).

Several studies suggest that ill-health disproportionately affects the poor, that the poor can have particular difficulties accessing health care and that when they seek care, they spend a greater proportion of their income on treatment than richer households (Ettling et al. 1994). To meet the costs of illness, poor households adopt coping strategies that are potentially 'risky' for their future economic welfare, such as selling critical assets and sinking into inescapable debt. Such people as a result inevitably slide into poverty. Again out of pocket payments may lead to denied access to needed services or prevention from receiving a full course of needed treatment. Furthermore, pro-poor policies within the public sector, for example exemptions and waivers, have been found to be relatively ineffective in protecting the poor (McIntyre et al. 2004). Such information has contributed to many governments considering a shift from charging user fees towards providing free health care services at primary levels and towards other risk pooling approaches such as community prepayment schemes and social health insurance.

Every effort should be made to achieve universal health care coverage - defined as a system that provides all citizens with adequate healthcare at an affordable cost- by a prepayment financing mechanism. A health care financing mechanism should provide sufficient financial protection, so that no household is impoverished because of a need to use health services. One way of providing such protection is by incorporating a risk-sharing plan in the health care financing mechanism, whereby unexpected health care expenditure does not fall solely on an individual or household. Without proper healthcare financing strategies, no government can hope to successfully meet the health needs of its citizens.

Health insurance plays a major role in helping people access health care. This is because health care expenses are uncertain and they can financially ruin households. Conn and Walford (1998), explain that there are three arguments that are made in favour of health insurance: First, health insurance is attractive to consumers because it is perceived as additional source of money for health care. Additional resources may be available through insurance because consumers are more enthusiastic about paying for health insurance than paying general taxation as the benefits are specific and visible; and also they are more able and prefer to pay regular, affordable premiums rather than paying fees for treatment when they are ill.

According to the World Bank (World Bank 2004), 56% of the Kenyan population is poor, that is, living on one dollar or less a day per capita .Again, in the national health accounts, (MoH, 2005a), more than a third of the poor who were ill did not seek care compared with only 15% of the rich. One of the reasons cited was financial difficulties.

The under-financing of the health sector has reduced its ability to ensure an adequate level of health care for the population. Thus, the provision of health and medical care services in Kenya is partly dependent on donors. Other factors inhibiting Kenya's ability to provide adequate health care for its citizens include: inefficient utilization of resources, the increasing burden of diseases and the rapid population growth. In 1989, the government of Kenya introduced a cost sharing scheme in an effort to bridge the growing gap between health sector expenses and available resources. Since that time, the government has strived to achieve a mix of health care financing strategies and systems that will enable the country to provide its citizens with universal access to adequate basic health services.

Xu et al., (2003), note that access to health care is severely limited in Kenya. This, they argue may be due to inadequate facilities or inability of the consumer to pay for the services. A large proportion of the privileged few who have access to medical facilities cannot afford to pay for health care due to its rapidly escalating cost. This is one facet of ill health which is of great concern.

Expanding access to health care to include the disadvantaged members of our society is therefore an important objective of the Kenyan health sector, taking into consideration that private health insurance specifically is only accessible to the higher income segment while community based health insurance (CBHI) is not yet far developed.

In view of the widespread poverty in the country, there is a great need to reduce the health care burden of households through a social health insurance plan. This study explores the factors associated with enrollment of the informally employed persons in the

NHIF which is Kenya's single social largest financier of health services. The results of this study can be used to guide policy makers in the formulation of Kenya's health policy which in essence should include all citizens. In addition the study will contribute to national and international literature and debates on health care access and health related inequities. This is important for Kenya and other countries that are considering changes in health care financing.

1.2 Financing Healthcare through Health Insurance

Feldstein and Grubber (1994), cite two principal functions of insurance in improving the economic welfare of a nation. First it pools together the financial risks facing a large group of people each of whom has a small probability of significant losses. Second, it enables individuals to transfer their risks to an insurance plan by paying a premium; the insurance plan agrees to pay specified benefit when uncertain events occur. The types of health insurance are outlined below.

1.2.1 Private health insurance

Also called "voluntary health insurance", private health insurance has historically been the preserve of higher-income groups. It is frequently employment-based where company employees join a health insurance scheme and contributions to the scheme are shared between employees and employers, although membership may be open to anyone who chooses to contribute. In the case of insurance schemes run on a for-profit basis by commercial companies, contributions tend to be risk-rated, that is, adjusted according to the anticipated cost of service use (for example, the elderly and people with chronic

conditions would pay a larger contribution than people likely to require fewer and less costly services).

Virtually all observed private health insurance contracts are of short duration - almost always only one year. This makes it difficult to pre-fund care, except through savings mechanisms outside the health system. Due to the issue of adverse selection, Private insurance may as a result become overburdened by insured persons with medium to high health risks. Adverse selection and its impact on costs and health insurance contributions may even lead to the discontinuation of private health insurance: because of the bad risks, contribution levels may rise so high that the health insurance package offered finally stops attracting the remaining potential members.

A form of voluntary health insurance that in recent years has become widespread in Africa and Asia is Community Based Health Insurance (CBHI), sometimes called "mutual health insurance", "community health funds" or "micro-insurance" (Bennett et al., 1998). These schemes exist within localized communities, most often in rural areas. Members make small payments to the scheme, often annually and after harvest time and the scheme covers the fees charged by local health services.

1.2.2 Social Health Insurance

Social Health Insurance (SHI) is an insurance system that the law requires certain population groups or the entire population to adhere to, in contrast to private health insurance, which carries no such legal requirement. It pools both the health risks of its members, on the one hand, and the contributions of enterprises, households and

government, on the other. Contributions from households and enterprises are usually based on income and on the average expected cost of health service use by the entire insured group, whereas government contributions are mostly financed from general taxes.

Social health insurance answers to the objective of universal coverage, whereby a set of basic health care services is accessible to all, irrespective of income or social status. SHI is therefore clearly different from user fee or direct payment schemes, in which the user only is responsible for the payment of his or her medical treatment.

Since SHI involves compulsory membership, this ensures that it steers clear of the pitfalls of health insurance on a private basis. First, it avoids certain population groups, such as the poorest and most vulnerable, becoming excluded. Exclusion can arise in a private scheme because the poorest simply do not have the capacity or willingness to pay the proposed health insurance contributions. Second, social insurance by its very nature also inhibits adverse selection. This occurs in a private framework when people in good health judge the health insurance contributions to be too expensive, and choose not to insure.

In the developing nations, SHI is recognized to be a very powerful method for granting the population access to health services in an equitable way. Around half of the industrialized countries have chosen social health insurance as their health financing system. A number of developing countries are certainly planning to introduce social health insurance, or to further extend the system they started up. In the Asian region, Viet Nam took the bold step of initiating a social health insurance scheme in 1992. It is

basically compulsory for workers and civil servants, and voluntary for the population in the agricultural and non-formal sectors.

Apart from governments, several non-government organizations at the community level provide social health insurance in developing countries (Dror et al, 2002). Most social health insurance schemes combine different sources of funds, with government often contributing on behalf of people who cannot afford to pay themselves (WHO 2005). The prime objectives of social health insurance are to provide health care that avoids large out of pocket expenditure, increase appropriate utilization of health services and improve health status (International Labour Office 2008).

Sometimes it is difficult to distinguish between income tax funding and social health insurance, as both are collected through payroll deductions. As Normand and Weber (1994) note, "social (mandatory) insurance is distinguished from government finance by the presence of an independent or quasi-independent insurance fund, clear separation of insurance contributions from tax for most contributors and defined rights for insured people". He further notes that these rights create a sense of entitlement: "The expectations of patients are that membership of the insurance scheme gives them rights and makes them customers of the health care providers".

There is growing international consensus of extending social protection in health to the whole population. (Carrin and Preker 2004) in order to reduce financial barriers to health care services for the needy. This option of social health insurance as a financing

mechanism in chronically under financed health systems has received attention for the informal sector too (Carrin and James 2004). However, a major challenge to social health insurance in developing countries is how to integrate the expanding informal sector and inclusion of the poor. Various low income countries (Ghana, Tanzania, Kenya and Viet Nam) and middle income countries like Mexico which have introduced or are in the process of expanding SHI, are being faced with this (Mathaur et al, 2006).

According to the ILO, the informal sector is characterized by low and non regular, non taxed incomes, insecure employment and self employment without social security. It has been difficult to assess the income of informal sector workers on the basis of which social security contributions can be deducted. This poses challenges for policy makers wishing to introduce or upscale a national social health insurance for the informal sector especially in enrolment, revenue collection and purchasing of health services. Promoting demand for social health insurance among informal sector workers is a requisite to achieving health for all (ILO, 2002).

1.3 Kenya's National Health Insurance Fund

The National Health Insurance Fund (NHIF) is a state parastatal that was established in 1966 as a department under the Ministry of Health. NHIF's core function is to collect contributions from all Kenyans earning an income of over Kenya shillings 1000 and pay hospital benefits out of the contributions to members and their declared dependants (spouse and children). Whilst ensuring that Kenyans have access to quality and affordable healthcare, NHIF operates under the social principle that "the rich should support the

poor, the healthy should support the sick and the young should support the old". Its mission is to provide accessible, affordable, sustainable and quality social health insurance through effective and efficient utilization of resources (NHIF 2005)

Under the current law, (1998 NHIF Act), NHIF membership is mandatory for all civil servants and formal sector employees. Monthly contribution rates through payroll deductions range from 120 Kenya Shillings (KES) for a monthly income of KES 5,000 - 5,999 to KES 320 for an income above KES 15,000. Self-employed and informal sector workers can join the scheme on a voluntary basis. They pay a flat-rate contribution of KES 160 per month for their entire nuclear family (father, mother and their children). Whereas contributions from formal sector employees are deducted from the monthly payroll, informal sector members have to make upfront annual payments of KES 1,920 at NHIF area offices.

Kenya is administered by 31 NHIF fully autonomous branches throughout the country. An additional 82 service points - where beneficiaries can pay premiums, update membership information and receive other forms of customer care - exist as a convenience at hospitals and other community centers. The majority of services covered by the NHIF are delivered through private facilities, indicating a preference by the bulk of formal sector workers (who make up the majority of those covered by NHIF) toward private providers rather than public institutions.

The Household Health Expenditure and Utilization survey of 2005 found utilization rates of health care for those with insurance to have had increased between 1990 and 2003 to

77.2% of ill people seeking health care. The national utilization rate increased to 1.92 visits per person annually. While access to health care increased for those with insurance, there is still a persistent concern that access to health insurance continues to remain out of reach for a large percentage of the population, especially poor, vulnerable, and pastoral people. This indicates that while NHIF is helpful in covering those who are able to afford it, the scope of those who now have access to health insurance has not been greatly expanded.

NHIF's strategy aims to increase enrolment of the informal sector considerably (NHIF, 2005). Total membership in NHIF rose from about 206,000 in 1998 to 1,372,000 in 2006. By 2011, about 2.7 million people were insured by NHIF, 2.1 million of which are employed in the formal sector. There is therefore a large potential for expanding (currently voluntary) membership. As a result, NHIF has embarked on a program to work with community-based organizations to expand informal sector membership. In this regard, it is of critical importance to understand why many more informal sector workers have not joined the NHIF as one of the few available options of health insurance. This calls for an investigation of the factors that determine enrolment in NHIF for the informal sector in Kenya.

1.4 Problem Statement

Tax revenues have proven to be an unreliable source of health finance. To fill the funding gap, MOH has pursued a policy of cost sharing, which places a higher burden for financing on out-of-pocket expenditures. This poses a serious financing issue for the 56% of the population who are considered poor.

Social health insurance is seen as an important mechanism for bridging this health financing gap in Kenya. It would help in protecting the poor and the vulnerable groups against high cost of ill health such as borrowing money or selling assets to cover healthcare costs.

However, the current social protection scheme, the NHIF, is lacking in its coverage of specific groups of the population, groups which are most vulnerable. In terms of physical accessibility, NHIF has offices in less than half of Kenya's administrative districts and about 600 accredited health facilities which are unevenly distributed. These are managed by both the public and private sector throughout Kenya's 8 provinces with about 150 of these facilities being state-run, while the remaining hospitals are managed by private and mission organizations. Thus, the initial intention of NHIF reaching out to all, by making the scheme accessible to as many Kenyans as possible, has not been attained. Again, the poorest sections of society are unable to access the NHIF as they cannot afford the full cost of insurance. Clearly, the large informal sector is also untouched by the NHIF. Another problem with NHIF is that it only covers inpatient expenses, and does not cover outpatient expenses. It also does not provide coverage for preventive health care services such as immunizations, which are critical to improving health outcomes in Kenya.

Admittedly, social health insurance as a health care financing mechanism can help in achieving universal health for all. Weaknesses such as low population coverage surely need greater attention. Characteristics that lead people to enroll or not should be mainstreamed into policy designs for marketing and service delivery of the National Health Insurance Fund.

1.5 Research Questions

1. What are the factors that determine informal sector employee's enrollment in the NHIF?
2. What is the effect of socio-economic characteristics in NHIF enrollment decision?
3. What are the policy implications of the findings from the study?

1.6 Objectives of the Study

The overall objective of the study is to establish the determinants of informal sector employee's enrollment in NHIF

Specifically, the study seeks to:

1. Identify the factors that determine informal sector employees' enrollment in the NHIF.
2. Analyze the effect of socio-economic characteristics in NHIF enrollment decision.
3. Draw relevant policies that will help to increase enrollment of informal sector employees in NHIF based on the study findings.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Several ideas and concepts have developed around the current focus on social health insurance, whose primary objective is to increase and protect access to health services, both amongst low-income rural populations, and workers in the informal sector (Bennett et al. 1998). To understand why people choose to enroll or not in health insurance, we draw insights from the consumer theory. This chapter first presents economic and social theories on decision-making. Empirical findings on insurance demand are reviewed thereafter and an overview of literature is presented in the last section.

2.2 Theoretical Literature Review:

Consumer Theory

Consumer theory assumes that if consumers are perfectly informed, they maximize their utility as a function of consuming various goods, given relative prices, their income and preferences. Changes in prices and income influence how much of different goods rational consumers will buy (Begg et al. 2000). Health insurance is expected to be a normal good with a positive income elasticity of demand, implying that the poor are less likely to insure. A price increase of a substitute for insurance - such as user fees - is expected to raise the insurance demand, as is a decrease in insurance premium. However, due to uncertainty about the unknown future health, insurance choice is not made based on utility alone but on consumers' expectation about factors such as their health status (Cameron et al. 1988). Thus, theories on decision-making under uncertainty are generally used to describe insurance enrolment, among them being: expected utility, state-

dependent utility, endowment effect, status quo bias, regret and disappointment paradigms and prospect theory.

Expected Utility (EU) Theory

This theory presents insurance demand as a choice between an uncertain loss that occurs with a probability when uninsured and a certain loss like paying a premium (Manning and Marquis 1996). EU theory assumes that people are risk averse and make choices between taking a risk that has different implications on wealth. At the time of insurance choice, consumers are uncertain whether they will be ill or not and of the related financial consequences. Insurance reduces this uncertainty. Through insurance, they can level out their income over two different states, ill/not ill, which makes the aggregate outcome relatively certain. This certainty allows the insured to reach a higher utility in case of illness than those without insurance. Accordingly, the insurance demand reflects individuals' risk aversion and demand for certainty, implying that the more risk averse individual are, the more insurance coverage they will buy (Begg et al. 2000). This theory is silent about the level of consumers' income and its impact on the insurance choice.

EU theory has been criticized in that its prediction of choice behaviour is poor. Additional factors need to be included such as the societal context about prudent behaviour or regret considerations (Schoemaker 1982). Individuals' insurance decisions may not only be affected by risk aversion but also by the access motive of insurance. The access motive reflects the gains from the availability of medical care that would otherwise be unaffordable for the poor. Gaining higher access to care when insured may

cause the poor to insure if they are unable to obtain needed health care when uninsured. Without insurance, the poor would not have enough money and time to save for an expensive health care procedure, and lending institutions may be reluctant to lend money when the ability of the patient is limited to repay these loans (Nyman 1999). Despite these critiques, EU theory is most commonly used in models of decision-making under risk (Marquis and Holmer 1996). However, other theories have emerged that aim to account for these weaknesses.

State-Dependent Utility Theory

This theory suggests that consumers' utility level and tastes are influenced by their state, such as their health or socio-economic status. Accordingly, people may have different degrees of risk aversion, which could influence their insurance decision and the magnitude of their expected insurance pay-off. Most people insure when they are healthy. A healthy person might optimistically expect to remain healthy in the near future, which has implications on the insurance choice. The resulting insurance coverage may be below full loss coverage, if the anticipated insurance pay-off is below the real loss in case of illness. Hence, the anticipated need for medical care given the current state, and the magnitude of the related insurance pay-off in case of sickness will affect individuals' insurance demand (Phelps 1973).

Prospect Theory

This theory questions the assumptions made by EU theory and states that the choice to enroll or not is about prospects of gains or losses, and not the level of uncertainty. Individuals assume an optimal risk level for every expected gain or loss. The point from which an individual perceives gains and losses to occur may influence the choice. Prospect theory suggests that people insure from a gain perspective and not because insurance reduces uncertainty. Given a premium level, people will first assess their individual health risk level and the eventual deviation from it. They may decide not to insure because of a gain prospect: they expect to pay less for their health risk than the deviation from it. This is a risk because the deviation may be greater than expected and cause a loss. So, prospect theory says that, with respect to losses, individuals are risk preferring. Following from this, individuals will only insure if the loss will occur with certainty, and not because they are risk averse as suggested by EU theory (Kahnemann and Tversky 1979).

Cumulative Prospective Theory

Combines state-dependent utility and prospect theory assuming people assign different weights to the probability that an event will occur. Then, they make choices between prospects through the weighted probabilities of losses and gains. However, they tend to overweight small probabilities, whereas high probabilities are underweighted. Applied to the insurance demand, cumulative prospective theory suggests that people insure because they overweight the relatively small probability of the event of illness. However, poor

individuals, who do not have the luxury to let health compromise their daily work (Case and Deaton 2002) might underweight the illness probability and remain uninsured.

The Endowment Effect

Assumes that decision-making is affected by individuals' risk aversion about something new. People perceive greater costs in giving something up than benefits in acquiring something new. Therefore, they will charge a higher selling price for a good than they would be ready to pay for it. They would rather stay with the old if they do not know whether the benefits of an unknown alternative exceed the costs of giving up something well known (Kahnemann et al. 1991). Under the endowment effect, poor individuals will insure if they perceive the benefits of insurance (for example, access to better quality care) as higher than the cost related to giving up being uninsured. They will also most likely remain uninsured if insurance does not improve access to care and eliminate informal under-the table payments charged by providers. The latter is particularly important where community based health insurance members are requested to pay a co-payment as a percentage of their health care bill, as is the case in many African social health insurance arrangements (Bennett et al. 1998). Where illiteracy rates are high and patients are not familiar with percentage calculations, paying a co-insurance rate gives 'mathematical discretion' to providers, and takes control away from the consumer, who as a consequence might mistrust providers and not insure.

The Status Quo Bias

Is similar to the endowment effect. Studies suggest that consumers prefer the status quo they are familiar with instead of undergoing an unknown, innovative medical procedure (Salkfeld et al. 2000). Apparently, people consider departures from the status quo as more detrimental than beneficial. In addition, individuals tend to stay with the status quo if there is an increasing number of alternatives to choose from, and if choices become more complicated (Kahnemann et al. 1991). This veil of experience appears to determine choices, especially when lacking full information on the alternatives. It highlights the importance of information when offering insurance to poor and illiterate groups; particularly, if the concept of insurance is new.

Regret and Disappointment Theories

These are based on the assumption that people have a loss aversion and conservative preferences. Individuals try to avoid regret and disappointment and do not just consider the eventual outcome, as suggested by EU theory. They factor in their feelings of regret, in case the decision would have been wrong, and of disappointment, if the outcome does not correspond to what they have expected (Bell 1982, 1986). Hence, individuals may prefer to remain uninsured because they might regret their decision, or be disappointed if they do not benefit from an insurance payout; or they insure to avoid feelings of regret from falling ill while uninsured. Regret and disappointment theory may be combined with state-dependent utility theory: an individual in a less fragile health state may factor in a 'smaller amount of regret' when deciding whether to insure. These theories are silent

about eventual differences in the amount of regret and disappointment between wealthier and poor individuals.

2.3 Agency Problems in Health Insurance

The consumption theories of demand assume that individuals maximize expected utility, within a budget constraint and according to their preferences. However, in the health sector these assumptions do not hold due to information asymmetry. For individuals, uncertainty over the quantity and type of care required and the need to consult a third party who holds the necessary information (that is, a physician), significantly erodes their sovereignty over the consumption decision. This asymmetry gives rise to significant economic problems in the insurance arrangements, the most important of them being rooted in agency problems which include moral hazard and adverse selection.

2.3.1 Moral Hazard

This occurs when the expected loss from an insured event increases as insurance coverage increases. Pioneering work into this issue was conducted by Arrow (1963). Moral hazard is a concern because it conflicts with risk-spreading goals. Theoretically, it could arise because people once knowing they are insured will take less interest and action towards prevention. This is called ex ante moral hazard. For example, if as a result of being insured, an individual feels less worried about the financial implications of falling ill, they may decide to forego certain preventive, health-improving actions. Reducing consumption of immunizations, for example, significantly increases the risk of illness.

A second scenario is that the presence of more generous insurance compared to less generous insurance is that people with more generous insurance plans will use more medical care, both in quantity and quality, compared to people with less generous insurance, even when they experience the same illness. This is referred to as ex post moral hazard.

2.3.2 Adverse Selection

For health insurance markets to spread risks efficiently, several conditions must hold true. First, the probability that insured individuals will fall ill must be known. This enables the insurer to make reasonably accurate predictions about the number and size of claims, in a given time period. Secondly, these risks must be largely independent of each other. If an event occurs in which all insured individuals, or a significant proportion of them, simultaneously suffer an insured loss, the scope for sharing risks is severely limited and the insurance function may collapse. Examples include earthquakes, tropical storms, epidemics and major crop failures; most of which are common in less developed countries. The third condition is that the probability of an individual requiring medical treatment must be significantly lower than one (not certain). For this reason, elderly patients often face problems purchasing health insurance, as their probability of falling ill tends towards one.

Insurers face problems accurately assessing the first and third conditions, that is, the likelihood of an individual making a claim. Where the information held by the insured and the insurer is asymmetrical, the health insurance market may unravel. Akerlof (1970)

formalized this phenomenon using the example of second-hand car markets, in which the seller holds more accurate information than the buyer about the quality of a particular car. The potential buyer cannot easily distinguish between good and bad cars and, as a result, prices move towards the average quality of cars in the market. In response, owners of good quality cars remove theirs from the market, leaving poorer quality cars to dominate. Prices fall further to reflect lower average quality, pushing out more good quality cars, until only low quality cars are traded.

In health insurance markets, the problem is essentially the same, although it is the consumer (patient), rather than the seller (insurer), that holds more accurate information, in this case about the quality of their own health. If new customers provide biased information to the insurer, in favour of good health, the actual number of claims and payouts will be higher than predicted. In order to protect profits, the insurance agency adjusts premiums upward. This makes individuals in relatively good health to leave the market, increasing the average risk of those remaining in the insured pool. Premium will rise further in response, increasing the incentive for lower risks to leave the pool, and for high-risk individuals to provide biased information about their health in order to lower the premium offered to them. A vicious circle of increasing average risk and increasing premium ensues. This process describes adverse selection.

2.4 Empirical Literature Review

Most of the work on health insurance demand is empirical and focuses on the socio-economic characteristics of the insured and non-insured. The studies often identify the causes of coverage or lack of it and the consequences of being without coverage.

In Kenya, Mathauer et al., (2006) analyzed the demand for social health insurance of informal sector workers. They assessed the perceptions and knowledge of and concerns regarding health insurance and the NHIF. Data used was from focus group discussions held with organized groups of informal sector workers backed by questionnaires completed by heads of NHIF branch offices. It was found that the most critical barrier to NHIF enrollment is the lack of knowledge of informal sector workers. Some cited inability to pay as their reason for not enrolling. The study recommended policies focusing on raising awareness and information, improvement of insurance design features and setting differentiated and affordable contribution rates

To investigate determinants of public health insurance in Ghana, Amposah (2009), used primary data from a survey conducted in three districts in Ghana between October 2007 and January 2008. Employing the binary logit model, the study found that women aged over 40 years were more likely to participate. Income and marital status variables had positive and significant relationship with enrolling in public health insurance, however, household size and religion showed negative and weak statistical significance.

In Senegal, Paul Jutting used the 2000 household survey by the Institute for Health and Development (ISED) to estimate determinants of participation in a mutual. From the probit analyses, the study found that religion, income and ethnicity influence decisions to enroll or not. Women were found to enroll more than males and younger people (Jutting **2001**).

Kirigia et al., (2005) used data from a cross-sectional national household sample derived from the South African Health Inequalities Survey (SANHIS). Their objective was to find the determinants of health insurance ownership among South African women. Using the logit model, they found income, education and marital status variables to positively affect the decision to own health insurance.

Based on data from the U S A , Phelps (1973) using comparative statics finds that the insurance demand correlates with income, and is positively related with other variables that tend to be linked with income, such as education level, urban areas and white households. Using time-series data, he identifies a positive relationship between insurance demand, and user fee levels, and with higher mean level of illness; and a negative association between insurance demand and premium level (Phelps 1973). Findings from these studies are consistent with consumer theory, implying that insurance is a normal good.

Asenso et al., (1997) using contingent valuation techniques finds that willingness to pay for social health insurance in Ghana increases with income, as well as in households with high recent health expenditures and difficulties in making payments, (a possible indication of adverse selection). Better education and being male also increases the amount people say they are willing to pay.

Cameron et al. (1988) model demand for health care and health insurance using a probit model. They found income to be a better predictor of health insurance purchase than health status. They however noted that health status is more important in determining health care utilization levels than choice of insurance plan. They concluded that income and price are more important than health status in explaining choice of insurance plan.

Yip and Berman (2001) analyze the Egyptian School Health Insurance Programme (SHIP), which aims to increase access and equity in access to health services. Using a logit model and data from a survey of over 10,000 households, insured children are found to have a higher probability of seeking outpatient care than the uninsured, in particular those in the lowest income quintile. On average, those children enrolled in the scheme are 34% more likely to visit a provider than children not in school, and 9% more likely than those in school but uninsured are. School Health Insurance is found to reduce out-of-pocket health expenditures by one half for the middle-income group, but only marginally for low and high-income groups.

Waters (1999) assesses the impact of the General Health Insurance scheme for formal sector workers and a separate scheme for agricultural workers in rural communities, both

in Ecuador. Using both univariate and bivariate probit estimators and correcting for the effect of clustering in the sampling framework (that is, heteroscedasticity), as well as selection bias resulting from adverse selection, he finds that being insured has a strong, positive, and highly statistically significant effect on the use of curative services, but no statistically significant effect on the use of preventive services. He also concludes that the scheme increases access to health care for its members but has a negative impact on equity overall. The primary reason for this is that insurance coverage tends to be for those already in employment, and for whom access is already relatively good.

Jowett (2003) uses data from households in Vietnam to identify the factors that affect the demand for public voluntary health insurance. His findings indicate that in the absence of informal credit- and financing-networks, households are more likely to insure in public health insurance. The income variable appears to provide inconsistent results in this analysis, which may be related to the low income inequality in the study area.

Dror et al. (2007) find that household size is the most important determinant of willingness to pay for micro health insurance, so the households prefer to insure not only the main breadwinner, but as well the entire household. Education is found to have an increasing effect on the time period of dependency, which may increase the demand for mortality coverage. A higher level of education is assumed to be positively correlated with the purchase of any type of life insurance product, as it may raise the ability to understand the benefits of risk management and savings, but as well increase individual's risk aversion. An often identified constraint in selling insurance to poor households in

developing countries is a lack of understanding of insurance products and the differences in their cognitive ability to understand such products. Further, more educated households are more likely to take up insurance (Chankova et al. 2008). This leads to the assumption that more educated household heads are more likely to understand such a product more easily and be more likely to participate in such insurance scheme compared to their less educated counterparts. In the case of social health insurance, the poor may as well not only understand the concept fully, but as well their medical knowledge is scarce, and it is difficult for them to understand what is and is not covered under the policy.

Makoka et al., (2007) investigate the determinants of demand for private health insurance among formal sector employees in Malawi, a poor country with heavy pressure on underfunded free government health services. The study is based on membership in the Medical Aid Society of Malawi's (MASM), three schemes, namely: the VIP, the best; the Executive, the intermediate; and the Econoplan, the minimum. The results indicate that formal sector employees prefer to receive medical treatment from private fee-charging health facilities, where health insurance would be relevant. The study finds that the probability of enrolling in any of MASM's schemes increases with income and with age for the top and minimum schemes. More children and good health status reduce the probability of enrolling into the two lower schemes. The results suggest the potentially important roles that can be played by information and interventions that address the affordability factor such as through employer contributions that take into consideration income and family size.

Propper (2000) using probit estimation found that the demand for private health care in the United Kingdom was strongly influenced by income, political allegiance, and attitudes to the role of state in the provision of health care and past use of health services. Generally, higher income decreases the opportunity cost associated with the purchase of health insurance. Thus, increases in both income and education are expected to increase the probability of purchasing health insurance. 1/

Savage and Wright (1999) sought to ascertain the extent to which the existence of insurance induces individuals to purchase more private hospital services than they would if they faced the true price of those services rather than the net price under insurance. Using reduced form equations, and data from the 1989-90 National Health Survey in Australia they found that except for the very old, income units act strategically in the decision to purchase insurance in the sense that, if individuals expect to be heavy users of private hospital services, they purchase private hospital insurance.

In China, Baernighausen et al., (2007) used the contingent valuation method to assess the maximum willingness to pay (WTP) for Basic Health Insurance (BHI) among informal sector workers, including unregistered rural-to-urban migrants, in Wuhan City, China. The study found that Being male, a migrant, or without permanent employment significantly decreased WTP for BHI. Income and health expenditure were found as significant predictors of willingness to pay for basic health insurance while education proved insignificant for the same. The study recommended that the Chinese municipal governments should allow informal sector workers to participate in the BHI.

2.5 Overview of literature

From the literature review, it was found that enrollment in health insurance is mainly determined by income, gender, age, size of household, household health expenditure, education, wealth status, health status and marital status which are the intermediate household characteristics. Other factors such as residence, premiums, quality of care, membership in other organizations, knowledge and perceptions of households have also been identified as important determining factors of enrolment.

However, most of this literature is concerned with health insurance more generally. It does not consider the relevance of the fact that most households in LDCs operate in the informal economy, and rely on a range of informal risk-sharing arrangements to maintain expenditures on essential goods and services, such as food, health, and education. This shows a dearth of studies that delve on the informal sector.

This study will thus concentrate on the informal sector employees in Kenya and analyze how the household socio-economic characteristics identified affect the decision to enroll or not in NHIF.

CHAPTER THREE: METHODOLOGY

3.1 Theoretical Model

Despite the criticism of EU theory as noted in the theoretical literature, none of the other decision-making concepts has proved superior in individuals' real market decisions. This study will therefore adopt the expected utility model to explain an individual's demand for insurance.

There are two kinds of risks involved in health care: (i) the risk of becoming ill, with the accompanying loss in the quality of life, cost of medical care, loss of productive time during illness and in more serious cases death; and (ii) the risk of total or incomplete or delayed recovery. Welfare economics of uncertainty predicts that individuals would like to insure against both forms of risks. The theory of expected utility, on which this study is based, assumes that each individual strives to maximize the expected value of a utility function; individuals are normally risk-averse, meaning that they have a diminishing marginal utility of income.

The potential consumers of insurance are assumed to make decisions based on the magnitude of the perceived difference between the level of expected utility with insurance (EU1) and expected utility without insurance (EU2). We need to analyse the effect of changes in the independent variables on the difference in the level of the expected utility of the two prospects, that is, $EU1 - EU2$. If the difference were equal to zero, the consumer would be expected to be indifferent between the two

prospects. However, if the difference were greater than 0, then the risk-averse consumer would be expected to opt for insurance.

We assume that the expected utility associated with enrolling in social health insurance is a function of a vector of its attributes (X_i) and a vector of a household's socioeconomic characteristics (R_i), plus a stochastic error term (\mathbf{E}) which captures errors in model specification (example, omission of relevant variables) and errors in data measurement.

Algebraically, a household's decision process can be expressed as:

$$EU_j = g(X_j, R_j) + e$$

Where: EU_j is the utility that i^{th} household expects to derive by enrolling in social health insurance

The basic assumption is that the i^{th} household opts to enrol in social health insurance if $EU_{i1} > EU_{i2}$, prefers 'not to enroll' if $EU_{i1} < EU_{i2}$, and is indifferent between the two options if $EU_{i1} = EU_{i2}$. Thus, the probability that i^{th} household prefers to enrol in health insurance is: $P_{i1} = P(EU_{i1} > EU_{i2})$. Conversely, the probability that i^{th} household prefers not to enrol in health insurance is: $P_{i2} = P(EU_{i1} < EU_{i2})$.

3.2 Empirical Model

The probit model used in the analysis is a log-linear approach used to measure the effects of the independent variable on a discrete dependent variable. In our case, the dependent variable is binary (coded 1 = NHIF members and 0 = non members). Thus binary Probit analysis, a type of regression used to analyze binomial response variables was applied. It transforms a non-linear response curve to a straight line that can then be analyzed by regression either through least squares or maximum likelihood (Finney, 1952 and Hahn and Soyer, 2008). The model assumes the categories dependent reflect an underlying quantitative variable and it uses the cumulative normal distribution. We assume that the model takes the form:

$$\Pr(r = 1 | X) =$$

Where \Pr denotes probability and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution¹. The parameters β are typically estimated by likelihood. It is also possible to motivate the probit model as a latent variable model. Suppose there exists an auxiliary random variable,

$$Y^* = X\beta + e,$$

¹ Finney (1952) and Hahn and Soyer, 2008) argue that one case in which probit is preferred to logit (logistic) model for non-linear modeling is when the data is normally distributed

Where $e \sim N(0, 1)$. Then Y can be viewed as an indicator for whether this latent variable is positive:

$$Y = \mathbf{1}_{\{Y^* > 0\}} = \begin{cases} 1 & \text{if } Y^* > 0 \text{ i.e. } -\varepsilon < X'\beta, \\ 0 & \text{otherwise.} \end{cases}$$

To estimate the determinants of enrolling in NHIF for the informally employed persons, we follow the approach applied by Kirigia et al., (2005) where health insurance enrollment is dependent on the perceived difference between the level of expected utility with insurance (EU1) and expected utility without insurance (EU2). This perceived difference and expected utility are determined by various factors, which can be grouped into personal/household characteristics, healthcare market characteristics and community characteristics.

To determine the probability of enrolling in the National Health Insurance Fund, we estimate the following model.

$$P_{ij}^* = a + \beta_1 \text{gender} + \beta_2 \text{age} + \beta_3 \text{employmentstatus} + \beta_4 \text{hhsiz} + \beta_5 \text{hhexp} + \beta_6 \text{mai} + \beta_7 \text{divorced} + \beta_8 \text{separated} + \beta_9 \text{piyeduc} + \beta_{10} \text{seceduc} + \beta_{11} \text{tertiaryeduc} + \beta_{12} \text{middle} + \beta_{13} \text{richer} + \beta_{14} \text{healthstatus} + e$$

Where: $P_{ij} = 1$ if individual i is enrolled in the NHIF ($j = 1$) and equals zero if not ($j = 0$); (a) is the intercept term; (P's) are the coefficients to be estimated; and e_i is the stochastic error term. The explanatory variables included in the model are defined in Table 3.1.

3.3. Variables, their Definitions and Expectation

Table 3.1: Definition of variables

Variable	Variable Name	Definition and Measurement	Expected sign
Nhif	National Health Insurance Fund Status	Discreet dependent variable. 1 if the respondent is enrolled in NHIF; 0 otherwise	
Gender	Gender of household head	Dummy for gender: 1 = male, 0 = female	Negative
Totalamount	Household income	Total monthly income of the household in Kenya Shillings. Continuous variable	Positive
Employmentstatus	Employment status	Whether household head is employed. 1 = employed ; 0 = otherwise	Positive
highestlevelofeducation	Education level	Respondent's education level. 1= none, 2= primary; 3= secondary, 4 = tertiary	Positive
Noeduc	No education at all	Dummy for lack of education. 1 if the respondent has none; 0 otherwise	Positive
Pryeduc	Primary education level	Dummy for primary education. 1 if the respondent has pryeduc; 0 otherwise	Positive
Seceduc	Secondary education level	Dummy for secondary education. 1 if the respondent has seceduc; 0 otherwise	Positive
Tertiaryeduc	Tertiary education level	Dummy for tertiary education. 1 if the respondent has tertiaryeduc; 0 otherwise	Positive
Age	Age	Respondent's age measured as a continuous variable	Negative

Hhsize	Size of household	Total number of persons living in a household measured as a continuous variable	Positive
Single	Whether household head is single	Dummy for marital status. 1 = single; 0 = otherwise	Indeterminate
married	Whether household head is married	Dummy for marital status. 1 = married; 0 = otherwise	Indeterminate
Divorced	Whether household head is divorced	Dummy for marital status. 1 = divorced; 0 = otherwise	Indeterminate
Separated	Whether household head is separated	Dummy for marital status. 1 = separated; 0 = otherwise	Indeterminate
poorer	Poorer wealth quintile	Dummy of poorer wealth quintile: 1 if poor or poorer, 0 otherwise	Negative
Middle	Middle wealth quintile	Dummy of middle wealth quintile: 1 if middle; 0 otherwise	Indeterminate
Richer	Richer wealth quintile	Dummy of richer wealth quintile: 1 if richer or richest; 0 otherwise	Positive
Healthstatus	Relative health status	Relative health status of respondent as he or she perceives it. 1 if rated as good, 0 otherwise	Negative

3.4 Data

Data used was obtained from the Kenya National Health Accounts (NHA), Household Expenditure and Utilization Survey (HEU) 2007. The survey is nationally representative and includes information on health service utilization, household consumption expenditures, out-of-pocket health payments and general socio-economic indicators.

Over 16,000 households were surveyed. Before use in our study, we conducted data cleaning to prepare it for suitability. Only households whose heads are in the informal sector (jua kali and small enterprises) were retained in the data for this study. However, with respect to this study, the data had some limitations regarding the following: we do not get NHIF specific questions. Again, not all variables identified during literature review stage could be got directly from the survey, in which case proxy variables were used to represent such missing variables. Good examples are household expenditures which we used to represent household incomes. Further, data for some variables was coded in alphabetic letters instead of numerals making it inactive for analysis in STATA. In this case extensive transformation had to be done. Finally there were lots of missing responses on variables in the original data set which affected the sample size.

CHAPTER FOUR: EMPIRICAL RESULTS

This chapter provides synthesized summary findings of the study. It is organized in two sections: summary of the dependent variable and predicting covariates and an interpretation of probit outputs.

4.1 Descriptive Statistics

Descriptive statistics for the variables used for estimating factors that explain enrollment of the informal sector employees in the NHIF in Kenya is presented in Table 4.1. At this exploratory stage, we conduct a comparison of means of households that are members of NHIF to those that are non-members. However being only a descriptive test, we cannot claim that characteristics of households or household heads determine membership to NHIF as yet. Such a conclusion would have to depend on causal techniques like regression.

The t-test confirms that there are higher proportions of male-headed households among non-members of NHIF than among members. We also notice that households with NHIF membership have younger heads than their counterparts and that there are more non-members than member households whose heads are employed. However, there is no difference between members and non members in terms of number of years of formal schooling the household head has completed and no difference in the household expenditures as well as size by NHIF membership status. We have more single-parent heads in households that are NHIF members but more married heads in households that are non-members. There is no difference in the categories of divorced and separated

heads in the two groups; hence we observe as many household members as non-members whose heads are wither divorced or separated

Table 4.1: Comparison of Means by NHIF Status

Variable	Mean by NHIF membership status		T-statistic
	Members	non-Members	
Gender* of household head	0.51 (51%)	0.59 (59%)	-4.47
Age (years)* of household head	38.3	40.9	5.01
Employment status*	0.74 (74%)	0.84 (84%)	8.15
Years completed (education)	5.6	5.5	-0.57
Total amount (expenditure)	74,419	111,608	0.91
Size of household	4.2	4.3	0.88
Marital Status of Household Head			
<i>Single *</i>	28%	14%	-11.14
<i>Married*</i>	57%	73%	10.5
<i>Divorced</i>	4.6%	4.1%	-0.72
<i>Separated</i>	8.2%	8.2%	-0.02
Education Level of Household Head			
<i>No education</i>	0%	0%	0
<i>Primary education*</i>	47%	53%	3.24
<i>Secondary education*</i>	20%	24%	3.22
<i>Tertiary education*</i>	0.1%	1.5%	3.47
Wealth Quintile of the Household			
<i>Poorer*</i>	46%	36%	-5.96
<i>Middle*</i>	21%	19%	-1.87
<i>Richer*</i>	33%	45%	7.32
Health status of household head	71%	68%	-1.61

* indicates differences that have statistical significance

Source: Author's computation

We observe no household headed by an uneducated head and very few headed by individuals with tertiary education. In terms of wealth status, there are higher proportions of household members in the middle wealth index category and lower proportions of non-members in the poorer and richer categories of wealth index. Finally, higher proportions of household heads rate themselves relatively healthier in the members group than in the non-members group, although this difference is not statistically significant.

4.1.1 Correlation Results

Households' membership NHIF was negatively related to age and gender of household (with younger and female heads being associated with higher membership), household size and expenditure (with larger households having more membership in NHIF) and wealth index score (whereby wealthier households are less likely to be NHIF members). Positive relationships are observed between NHIF membership status and education as well as health status of household head. Thus, more educated heads and those whose heads regard themselves relatively healthy are likely to have higher membership in the insurance scheme. To determine whether there was a problem of extreme correlation between the variables (multicollinearity) we computed tolerance levels for each variable. The mean variance inflation factor (VIF) was 1.62 below the threshold of 2.00 meaning that there was no evidence of multicollinearity hence regression techniques could be applied.

4.2 Estimation Results

Table 4.2: Factors Influencing Informal Sector Employees' Decision to Enroll or Not in NHIF

Variable	Coefficient	T - statistic
Gender	.0016	0.27
Age	.0002	0.83
Employment status	-.0418**	-1.98
Health status of household head	.0002	0.02
Marital Status of Household Head (Reference Being Single)		
Married	-.0773***	-4.72
Divorced	-.0213	-1.07
Separated	-.0569***	-3.83
Education Level of Household Head (Reference Being No Education)		
Primary education level	.0369**	2.07
Secondary education level	.0481***	2.85
Tertiary education level	.0821**	1.96
Wealth Quintile of Household (Reference Being Poorer Quintile)		
Middle	-.0100	-0.89
Richer	-.0345***	-3.20
Household size	.0001	0.06
Household expenditure	-3.97×10^8	-1.12
<i>R-square</i>	0.044	
<i>Number of obs</i>	5,059	
<i>LR chi - square statistic (9d.f)</i>	149.97	

***, **, * indicates statistical significance at 1%, 5% and 10% levels respectively

Source: Author's computation

The pseudo R^2 reports that 4% of the variation in the dependent variable (NHIF status) can be explained by changes in covariates (characteristics of the household head and household attributes). A test of joint significance of the effect of predictors has a

significant chi-square statistic of 149.97 which means that the attributes of the households and household head included in the model are important in influencing the decision to enroll in NHIF.

We only interpret results that are statistically significant since the relationship between such covariates and the dependent variable (NHIF status) is very important. The probability of a household in the informal sector enrolling in NHIF declines by .0418 if the head is employed.

Marital status of household heads affects NHIF membership in that, households whose heads are married have a .0773 lesser probability of joining NHIF while those who are separated have a .0569 lesser probability than those who are single. This finding is seen to differ from empirical works, though none had been conducted with respect to NHIF. We find single individuals to be more likely to enroll. On the contrary Savage and Wright (1999) and Trujillo (2003) found married people to be more likely to take health insurance than their single counterparts.

Education level of household head also influences the decision to enroll in NHIF. Specifically, household heads with primary, secondary and tertiary education have .0369, .0481 and .0821 respectively more likelihood of being members of NHIF compared to heads with no education.

Education is thus a highly significant determinant of NHIF membership. As the heads of households achieve higher levels of education, their probability to enroll in NHIF increases. This can be explained by the fact that education may increase a decision maker's risk aversion. This opinion is shared by Makoka et al, (2007) and Baernighausen et al., (2007). However in reality the decision maker may be enabled or constrained by other determining factors such as incomes, information or supply side aspects like insurance premiums. As a matter of fact, NHIF has been engaged in intense marketing activities to attract membership into their scheme. However, most of their promotional programs are channeled through print, visual and electronic media which are likely to be more accessed by educated individuals.

Households in the richer wealth quintile have a .0345 lower probability of being members of NHIF than those in the poorer wealth quintile. Findings of Jutting (2004), and Dror et al. (2007) from developing economies are that wealthier households are more likely to enroll in insurance. Chankova et al. (2008), lacks evidence as to whether individuals from the poorest quintiles, who are also not educated are more likely to be excluded from mutual health organizations. This is a finding that can associate with our results especially in the middle and poor wealth quintiles where we find no evidence in differences of membership in NHIF.

Gender, age, health status, household size and household expenditure do not achieve statistical significance in influencing NHIF membership. Thus, households headed by males have as good chance as those headed by females to be members of NHIF.

In this study, household size is an insignificant determinant of choice of NHIF meaning that enrolling in National Health Insurance Fund doesn't differ across different sizes of households. This could be explained by the fact that, membership to NHIF by a household head guarantees insurance of his partner and children. In that case then the number of children does not matter anymore.

Household size has been investigated with a perspective of dependency (bequest value). An assumption is made that a household's insurance participation increases with the number of dependents, especially young dependents due to intended bequest motives using a "joy-of-giving" motive (Hurd, 1994; Inkmann and Michaelides, 2010). In contrast to our findings, Dror et al. (2007) find that household size is the most important determinant of willingness to pay for micro health insurance, so the households prefer to insure not only the main breadwinner, but as well the entire household.

Although age is insignificant in influencing the decision to enroll in NHIF, the direction of this relationship is positive. Such a direction of influence is consistent with Grossman's (1972) argument that owing to the fact that health stock depreciation rate rises with age, it is not unlikely that unhealthy (old) people will make larger gross investments in health than healthy (young) people.

CHAPTER FIVE: CONCLUSION, POLICY RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

5.1 Conclusion

This study primarily investigates the determinants of enrolling in the NHIF for the informal sector workers in Kenya. Although there are several studies in health insurance both in the developed and developing countries, most of them do not focus on social health insurance but rather they focus on health insurance in general. Focusing on the popularization of social health insurance schemes in the 1990s, emphasis on the informal sector especially in sub Saharan Africa has not been explored.

This study reveals that NHIF has not yet succeeded in reaching the most vulnerable households that presumably would benefit most from protection against hazards such as illness and death. The most significant determinants of enrolling in NHIF for the informal sector in Kenya are income and education. The poor, due to lack of income and consequently, education are more likely to be excluded from enrolling.

5.2 Policy Recommendations

As indicated in the first chapter of this study, one of the objectives is to draw policy recommendations to help improve enrollment of the informal sector workers in the NHIF. This has been due to the fact that enrollment of this category has been low despite efforts to register them alongside the formal sector employees.

This study recommends that there is need to develop interventions which would ensure that poor people are covered in the NHIF. This may be done by partly subsidizing the premiums by the government. Also, People with no incomes are poor and hence their enrollment remains low. As such Poverty reduction strategies meant to increase income levels must be accelerated. This will extend financial accessibility especially to the poor and vulnerable and in turn help boost the demand for NHIF.

The lack of education can be associated with lack of access to information and public enlightenment of health insurance among the informal sector. In this regard, public enlightenment campaigns may be intensified to increase informal sector access to information. This may even help them engage in healthy practices and also reduce their chances of falling ill. Further the implementation and promotion of financial education, in a way that caters for those who have little or no education by NHIF may also improve the understanding and knowledge about NHIF especially on benefits associated with enrolling.

Overall, policies aimed at ensuring that the majority of Kenyans attain at least a secondary education level will increase the probability of enrolling in NHIF. Education will help the people understand not only the importance of enrolling in health insurance but also on the principles on which social health insurance schemes operate.

5.3 Further Research

In order to overcome the existing limitation of the NHIF regarding coverage of the informal sector, an interesting option to be further tested would be to integrate social health insurance into micro finance schemes. Further research is needed on how to link them to other social risk management instruments such as NHIF.

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Appendix 1: Correlation Matrix

	NHIF	Gender	Age	Employment status	Household size	Household expenditure	Education years completed	Wealth index score	Health status
NHIF	1								
Gender	-.05***	1							
Age	-.05***	.04***	1						
Employment status	-.09***	.12***	-.34***	1					
Household size	-.01	.16***	.06***	.00	1				
Household expenditure	-.06***	.17	.08***	.07***	.03**	1			
Education years completed	.01	.02	-.03***	-.00	-.00	-.04***	1		
Wealth index score	-.10**	.02	-.16***	.26***	-.22***	.31***	-.06***	1	
Health status	.02	.08***	-.14***	.08***	-.09***	.08***	-.00	.26***	1

* V indicates statistical significance at 1%, 5% and 10% levels respectively

Source: Author's computation