HEALTH SHOCKS AND HOUSEHOLD CONSUMPTION SMOOTHING IN NIGERIA

By

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ABSTRACT

Households experiencing health shocks (HS-death and disability) are at the risk of incurring substantial health expenditure as they seek treatment and experience loss of productive work hours, earnings, and declines in consumption. Coping with the economic consequences of HS and maintaining consumption in the absence of formal insurance, households respond with their own risk reduction, mitigation, and coping strategy (CS). However, not much is known either about the impact of HS on the variation of households' consumption (HC) or the capacity of existing risk sharing arrangements in smoothing consumption against HS in Nigeria. This study was therefore, designed to investigate the effect of HS on the HC, identify the strategies adopted by households to deal with HS and examine the effect of the most commonly used CS on consumption.

The Full-Insurance theory provided the theoretical framework for the study. Data were obtained from two waves of the General Household Survey (GHS) panel, 2011 and 2013, produced by the National Bureau of Statistics. The GHS covered 5,000 households across the six geopolitical zones. Two measures of HS: death of a household member and disability that incapacitated a household member from carrying out normal activities of daily living were used. The HC was divided into food and non-food. A fixed effect model was estimated to examine the impact of HS on change in HC. Multinomial logit model was used to determine the CS used by households in the face of HS. The CSs were categorized into three groups: sales of assets; borrowings; and other-strategies. The effects of CS on consumption were computed by regressing the interaction term of predicted probability and measure of HS on household consumption. Estimates were validated at $p \leq 0.05$.

The average household size was 7±4 persons, and the average age of household member was 27.0±20.0 years. Thirty-one percent of households were both male-headed and married. Twenty-nine percent and Sixteen percent of sampled households reported disability and death respectively. Disability $(t = 4.18)$ and death $(t = 2.09)$ had a significant negative effect on food consumption. Disability decreased food consumption of households by 8.0%, while death reduced it by 23.0%. Disability $(t = 5.47)$ as well as death $(t = 3.48)$ of household member had significant negative impact on non-food consumption. Sales of assets and borrowing

significantly affected the ability of households to maintain consumption with likelihood of 0.67 and 0.54, respectively. Sales of assets $(t = 6.10)$ and borrowing $(t = 2.9)$ had positive and significant impacts on consumption, while other-strategies $(t = 4.55)$ were negative and significant.

Health shocks reduced household consumption in Nigeria. Sales of assets and borrowing were the most prominent coping strategies. Emphasis on measures geared towards providing financial protection against health shocks such as payment of disability benefits and assistance to households that report death should be intensified by the government.

Keywords: Health shocks, Consumption smoothing, Coping strategies, Fixed effect model

DEDICATION

To my parents Olu (late) and Felicia

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CERTIFICATION

I certify that this thesis was carried out by Idowu Daniel Onisanwa in the Department of Economics, University of Ibadan.

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CHAPTER ONE

INTRODUCTION

1.1 Statement of the Problem

Risk, shock and vulnerability are common phenomena in life. Risk is closely related to vulnerability, which measures the resilience against shock, suggesting the likelihood that shock will result in decline in well-being. Vulnerability is a function of household's asset endowment and insurance mechanisms, as well as the characteristics of shock. This is underlined by how severe and frequent they are whenever shocks occur (World Bank, 2001; Olaniyan, Oni and Adepoju, 2012). Shocks are either covariate or idiosyncratic, the former refers to social unrest, uncertainties associated with nature and institutional failure that affect the well-being of groups of households, communities or countries (World Bank 2001; Asfaw and Brawn, 2008; Khan, Bedi and Sparrow, 2015). The latter is peculiar to individuals and households, such shocks are health, unemployment of household members, loss of a breadwinner and fall in income that jeopardizes household welfare. Generally, shocks induce welfare loses, and the influence is intense in the absence of, or low access to insurance provision (Gertler and Gruber, 2002; Wagstaff, 2007).

Welfare losses associated with health shocks pose greater consequences for individual and household than other forms of shock (Genoni, 2012; Dhanaraj, 2015). Not much is known either about the effect of health shocks on the variation of households' consumption or the capacity of existing risk sharing arrangements in smoothing it in Nigeria. Health shocks refer to severe cases of illnesses or injuries that predispose the household to substantial medical expenditure and/or loss in labour productivity. It combines information on the type of health problem with indicators of its suddenness, severity and duration (Asfaw and Braun, 2004; Wagstaff, 2007). This involves time-off work due to the shock in the household. Illnesses and/or injuries become health shocks only if they are considered severe enough to affect income earning activities of the individual who is sick or of another member of the household who had to refrain from work to take care of a household member who is sick. In this light, the household must have incurred

substantial expenditure or loss of income due to sickness, accident or disability or the death of the main income earner of the household.

There are two adverse economic consequences associated with health shocks. First, it limits the ability to work and may reduce labour income. Second, a sick person needs extra care and medical expenditures, which in some cases may be substantial or catastrophic (Khan, 2010; Bales, 2014). These costs depend on a number of factors such as type and severity of illness, whether household sought any treatment, and type of service provider (traditional, public or private) patronized by the household. It also depends on employment status and whether members of the households are covered by health insurance as well as the type of health shocks they are battling with, if a working member of a household has protection against loss of income due to absence from work. While health shocks can have adverse effects on households in developed and developing countries, they are likely to have more severe effects on households in the latter, because they are typically poor and unable to access formal insurance markets to help insure consumption against such shocks.

The prevalence of poverty among Nigerian households and limited social safety nets[1] predisposes the country to health shock effects. In Nigeria, incidence of poverty is not only high, but vulnerability to poverty is also a major issue which can be higher than poverty headcount ratio in the country (Alayande and Alayande, 2004). A substantial proportion of Nigeria's population (43.3%) is multidimensionally poor with additional 17.0 per cent classified as near multidimensional poverty (UNDP, 2014). As revealed by Olaniyan *et al* (2013), poor households in Nigeria are vulnerable to different types of shocks. This is because their income tends to fluctuate widely due to the nature of their job, which is predominantly in the agriculture sector and the seasonal nature of agricultural production in Nigeria. In addition, many of the poor have to face sudden and large expenditures to cope with health shocks despite their limited and insufficient economic capabilities. Hence, Nigerian households may be bedeviled with catastrophic spending burdens that increase vulnerability to poverty.

[1] Cash or in – kind transfer programmes that seek to reduce poverty by redistributing wealth and/or protect households against shocks (FAO, 2003)

[2] *Ex ante* are actions taken to eliminate or reduce risky events from occurring. while, *ex post* are responses taken after

Few Nigerian households are enrollee of formal insurance markets that could help mitigate the impacts of health shocks and smoothen consumption. Several governmental and non-governmental organizations (NGOs) in Nigeria have been trying to reduce the volatility of consumption or income of households particularly in the rural areas. Some of the measures include establishment of institutions such as Universal Basic Education (UBE) Programme, National Poverty Eradication Programme (NAPEP) and National Health Insurance Scheme (NHIS). Others include, Nigeria Social Insurance Trust Fund (NSITF), National Emergency Management Agency (NEMA), Agricultural Credit and Rural Development Bank (NACRDB), as well as Universal Health Coverage (UHC) (Olaniyan, Oni and Adepoju, 2012). These agencies are either involved in ex ante and/or ex post risk management strategies[2]. Meanwhile, some of these institutions have been scrapped, renamed or merged. The basic primes are that the formal health insurance scheme is not accessible to all and formal risk-sharing institutions are insufficient. Less than ten percent of Nigerians are covered by health insurance, with most enrollees in the formal sector but very poor coverage in the informal sector (NHIS, 2015).

The fact that the Nigerian health indicator is characterized by poor health conditions is more worrisome. This is shown in the high incidence of illnesses such as HIV/AIDS, Tuberculosis and malaria which stood at 1,996 per 100,000, 171 per 100,000 and 31,913 per 100,000, respectively (WHO, 2015). The poor health condition in Nigeria is further aggravated by high infant mortality rate of 74.09 deaths per 1,000 live births, under-five mortality rate of 124 per 1,000 and maternal death rate of 560 per 100,000 live births (WHO, 2015). Also, the average health facility-population ratio in the country is poor. In a related case, the national doctor-patient ratio stood at 1: 3,500 in 2014, much lower than the WHO minimum standard of 1:600. While, there are private health facilities, they are sparsely located and characterized by high charges beyond what ordinary Nigerians can afford.

In Nigeria, government expenditure on health as a percentage of total public expenditure is very low, for example, in 2002 it was 3.7%, it steadily increased to 9.2% in 2007, and reduced to 6.7% in 2012. It was 8.2 as of 2014, the government spent less than five per cent (about 4.3%) on health in 2017. The nation's healthcare financing is predominantly private, with individuals

[2]*Ex ante* are actions taken to eliminate or reduce risky events from occurring. while, *ex post* are responses taken after a risk has been realized.

or households contributing about 65% of all health costs, most of which is out-of-pocket (OOP) (World Health Organization, 2017). Private expenditure on health as a percentage of total health expenditure is high; in 2002 it was 74.4% which has reduced slightly to 68.9% in 2012. OOP expenditure as a proportion of private expenditure on health has consistently remained above 90% since 2002, it was 95.7% in 2012 (World Bank, 2015). In the absence of effective exemption mechanisms, poorer households suffer as a result of paying higher user fees, a major component of out-of-pocket (OOP) payments. The increasing OOP expenditure associated with substantial burden of health risks on most vulnerable households has kept them in poverty trap. This is because many of the poor have to face sudden and substantial expenditure to cope with health shocks, despite their limited and insufficient economic capabilities.

To cope with the economic outcomes of health shocks, households respond with second-best options or the informal coping mechanism. Coping, broadly is a short-term strategy of households to counter a negative effect of crises, it may assume several forms (Sauerbor, Adams and Hien, 1996). These strategies are, reducing expenditure on food and non-food consumption, dissaving, selling of assets, borrowing, receiving financial assistance from friends and relations (Dercon, 2002; Olaniyan, Yusuf and Oni,2004; Alayande andAlayande,2004). Nonetheless, these options are insufficient or unavailable, as a result- households may cut important expenditures or reduce investments in human capital by withdrawing children from school, sending them to live with friends and increasing their labour force participation. Hence, households experience interruption in welfare such as a reduction in non-medical consumption, permanent losses where productive assets are sold in distress.

Also, the interruption of education that permanently reduces human capital and leads to further impoverishment. In the absence of sufficient assets or formal insurance to smoothen consumption, health shocks may lock their victims in perpetual poverty. Thus, the ability to smoothen consumption may be limited by the availability of assets, access to borrowing and liquidity constraint. Given the negative effects of health shocks, it is important to examine the availability and effectiveness of self and mutual insurance strategies as well as measures of mitigating the negative welfare effects of such shocks.

There are dearth of studies providing empirical evidence on health shocks and households' consumption smoothing in Nigeria. The absence of fully developed formal insurance mechanism

and the use of coping strategies with long term effects, imply Nigerian households tend to incur high OOP health expenditure and forego earnings through lost hours of work or reduced labour productivity (Olaniyan, Onisanwa and Oyinlola, 2013; WHO,2015). This may result in welfare disruption such as decline in non-medical consumption expenditure and impoverishment. Similarly, while most of the studies (Sparrow et al. 2013; Bales, 2014 Khan, 2015; Dhanaraj, 2016) in literature have focused on understanding the coping strategies with which households insure against health shocks, they do not provide deep insights about the consequences of the strategies employ by households to cope with on consumption.

This study took advantage of the availability of the General Household Survey (GHS) dataset of Nigeria with its panel structure and rich set of variables to assess the impact of health shocks (unanticipated and adverse health events including severe illness and death to any household member) on household health spending and non-medical consumption. In addition, this study investigated some specific strategies such as inter-household risk sharing- remittances, transfers and risk sharing over time- savings/dissaving, borrowing used to mitigate or cope with the impact of health shocks and assessed the effect of utilizing the various coping mechanisms (sale of productive assets, borrowing, reduction in quantity and quality of food) on the consumption of households. Specifically, the study provided answers to the following questions in relation to the below objectives: (i) Can households smoothen their consumption in the face of health shocks? (ii) How do households finance their health expenditures or what smoothening strategies do households employ? And; (iii) What are the effects of the coping mechanisms on households' consumption growth in Nigeria?

1.2 Objectives of the Study

The main objective of the study was to examine the effect of health shock on changes in per capita household's consumption of food and nonfoods in Nigeria. The specific objectives were to:

i. examine the effects of health shocks on households' consumption smoothing in Nigeria,

ii. identify the coping mechanisms households employed in contending with health shocks in Nigeria and

iii. examine the effect of employing the coping mechanisms on households' consumption smoothing in Nigeria.

1.3 Justification for the Research

Three justifications were provided for this thesis. Theoretically, this study employed the inter-temporal consumption model rooted in the full insurance theory. Incorporated into this were the various measures of health shocks (death, severe illness, and disability), which captured the change in health status of any member of households that depresses consumption growth through reduction in hours of work, falling income and rising medical cost.

Methodologically, a number of studies (Yamano and Jayne, 2004; Beegle, 2005; Bridges and Lawanson, 2008; Yamauchi et al. 2008; Ghatak and Madheswaran, 2011; Powell-Jackson and Hoque, 2012; Alam and Mahal, 2014) examined the impacts of health shocks on households' consumption in developing countries, using a single measure approach. These studies captured small, single and potentially anticipated health events, which might have led to the conclusion of existing consumption insurance in some of the studies. Rather than focus on a single measure of health shocks, this study attempted to advance knowledge by combining three measures of health shocks-severe illness, disability and death.

Further, the dominant econometric approach applied in the analysis of existing studies was the Ordinary Least Squares (OLS), for example, Kochar (1995); Beegle (2005) and Gertler, Levine and Moretti (2009). The OLS technique in this context, assumes a strict exogeneity of the dependent variables (consumption, labour supply, earnings and medical spending) but this breaks down if there is measurement error bias, an omitted variable bias and reverse causality. Therefore, the result of this method often leads to bias and inaccurate inferences. To address reverse causality, some studies (Wagstaff (2007) and Grimm (2010) made use of a lagged specification where a health shock in the previous period affects the welfare in the current period. While this may address reverse causality to some extent, it does not address an omitted variable bias or a measurement error. Gertler and Gruber (2002) as well as Genoni (2012) used a first difference, which has the advantage of differencing out a systematic measurement error and time-invariant unobserved heterogeneity. This will not remove a random measurement error or unobserved heterogeneity that varies over time, a problem not addressed by first differencing and

may be of particular concern for health shocks measures. These may lead to bias and inaccurate conclusions.

In order to overcome this challenge, this study used the estimation method of the fixed effect (FE) approach, with robust standard error in a static panel framework. This method is well-suited to deal with random measurement errors and unobserved heterogeneity that affects health and households' resources.

Most empirical studies (Asfaw and Braun, 2008; Grimm, 2010; Mohanan, 2013; Pohl, Nelson and Parro, 2013) in this area of study examined the direct effect of health shocks on households' consumption. These studies, however, failed to recognize the channels through which health shocks would affect consumption as well as the identification of the strategies adopted by households to maintain consumption. An examination of the effect of health shocks on the various channels through which health shocks affect households' consumption, in this study, as against focusing on the overall impact on consumption, provided insights into the channels through which health shocks affected households. This study further advanced the frontier of knowledge in this genre by investigating the strategies adopted by households to deal with health shocks and subsequently, investigated the effect of the most commonly used coping strategy on food and nonfood consumption. Studies that examined these in Sub-Saharan Africa (SSA)were difficult to find, Nigeria inclusive.

In addition, most empirical studies (Gertler and Gruber, 2002; Khan, 2010; Pohl et al, 2013) on health shocks used total sample of sub-national entities in their analysis. These studies did not also acknowledge the socioeconomic background as well as vulnerabilities in terms of rural and urban households. Given Nigeria's rural-urban disparity, resource distribution pattern, as well as, informal solidarity arrangements, this research developed an empirical framework that separately investigated the effects of health shocks on rural and urban households. This rural-urban household dichotomy of the analysis constituted an extension of the existing literature

1.4 Scope of the Study

This study examined health shocks impact on consumption pattern of urban and rural households in Nigeria. Households which had experienced health shocks over a 28-days period were

considered in the study, male and female households' heads were covered. The study analysis was restricted to a three-year period: 2010/2011 to 2012/2013 based on available data. The choice of this period was mainly due to the availability of data. Coping strategies examined included borrowing, sales of productive assets, withdrawing children from school, cutting back on food and nonfood consumption. The study sample was analyzed at three levels; National, educational qualification and place of residence (rural or urban).

1.5 Organization of the Study

This thesis is structured into six chapters. The background to the study proceeds from the introductory chapter. It contains overview of the Nigerian Health System, health shocks, consumption expenditure and coping strategies in Nigeria.

A review of the literature is presented in the third affiliate. This chapter has four sections; a review of conceptual issue is presented in the first section. The remaining three sections are dedicated to reviewing theoretical, methodological and empirical issues. Theoretical framework, methodology and data for this study are presented in chapter four. The first section of this chapter housed the theoretical framework on which this study is anchored. The second section (the methodology) comprises the development of the empirical model, model estimation, and data type as well as data source.

In chapter five, the study investigates effect of health shocks on households' resources, that is, effects of health shocks on hours of work, income and medical expenditure. The chapter also focuses on the effects of health shocks on household's consumption and their ability to smoothen consumption. This is accompanied by the probability of using different coping strategies and their impacts on household well-being.

Finally, chapter six summarizes the major findings of the research and draws conclusions from the thesis. It highlights policy implications and recommendations are made. The chapter also contains discussion on some caveats in the study and challenges for future research.

CHAPTER TWO

HOUSEHOLD STRUCTURE, HEALTH SYSTEM AND HEALTH CONDITIONS IN NIGERIA

2.0 Introduction

This chapter contains background information on household structure, health system and health conditions in Nigeria. It also comprises information on household consumption and coping strategies in Nigeria.

2.1 Nigerian Households' Composition

The summary statistics presented in Table 2.1 comprises the size of household, the distribution of household age and ratio of dependence based on region and residential (rural and urban) area in Nigeria. The average number of individual in the household is approximately 6. On the average, approximately 6 and 5people are found in the rural and urban households, respectively. The table reveals that South tend to have smaller household size relative to North; household size in the South ranges between 4.0 and 4.9 persons, while in the North, the range was between 5.7 and 7.9. The dependency ratio in rural areas was higher than in urban areas (1.1 against 0.9). Regionally, the highest dependency ratios were recorded in the North West (1.4) and North East (1.1). Rural households are poor, more vulnerable to disability, illness and death, they have little or no access to formal risk mitigation and reduction strategies. However, the high dependency ratio suggests evidence of intra and inters households support. In the face of health shocks such relationship can help insure consumption.

North Western region has the dependency ratio- 1.4 closely followed by North Eastern part of the country 1.1. Further, Table 2.1 reveals that the 15 to 64 age bracket accounted for the largest share of the national population, evidence in all the regions. Therefore, the labour force is high, more people in the working class to support the aged and children. Sickness or disability that prevent an individual from working, might reduce the earning of the sick member, but will not reduce households earning, given that most member lies in the working age group, other things being equal. Age bracket 10 to 14 years representing approximately 8% and 7% of the male and female population, respectively was next in size. The data also shows that 41.3% of the

populations were less than 15 years of age and 5.4% were 65 years and above. Since, elderly people tended to demand for more medical care than the younger ones, the average healthcare expenditure for the aged in Nigeria would represents a fraction of the total health expenditure. This implies medical expenditure in Nigeria should be relatively low compared to countries with aging population. Meanwhile, children need include expenditure on education, social facilities and food consumption. This suggests households will struggle to maintain non-medical consumption items when faced with adverse health conditions.

Working age (15–64) population constituted 53.3% of the population and this group was relatively evenly distributed across men (25.6%) and women (27.7%). Based on available data, it is theoretically feasible, but far from the reality in Nigeria, given that within the age bracket of 15 to 24 years, the youth are seldom employ Nationally, 21% of households were female-headed, this was predominant in the South East (38%).According to the GHS 2016, 71% male and 56.7% female were single. The percentage of men that are unmarried exceeds that of unmarried women in both urban and rural areas with the largest regional percentage of unmarried men (76.3%) recorded in North Eastern part of the country while higher proportion of single women (60.3%) was reported in the South-South. The table further reveals absence or insignificant gender disparity in age. For instance, the range for household members below age 5 is 4.40 years and 4.30 years for male and female, respectively. Similar result is observed across the geo-political zone. However, for the overall sample, there is little variation in male–female age, it ranges from 49 to 52 years for male, while for the members of the households, and the range is five years and three months.

Table 2.1: Distribution of Households by Age and Sex of Members

Region	Household size	Dependency ratio	Age 5 & below		Age 6 to 9 years		Age bracket 10 to 14years		Age 15 to 64 years		65 years and above		Overall	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
North central	5.70	0.90	6.10	5.80	7.10	5.40	8.40	7.40	26.40	28.90	2.50	2.00	50.50	49.50
North east	7.90	1.10	8.40	7.10	7.50	6.70	8.50	7.60	25.90	25.60	1.80	1.00	52.00	48.00
North west	7.40	1.40	9.90	9.40	7.60	7.60	9.40	6.90	22.50	23.50	2.30	0.90	51.70	48.30
South east	4.30	0.80	5.50	5.10	4.70	4.40	6.20	5.30	25.60	32.70	4.70	5.80	46.70	53.30
South south	4.90	0.80	5.60	5.10	4.80	5.60	6.90	7.10	29.10	30.50	4.10	4.40	47.90	52.10
South west	4.00	0.90	5.80	6.30	5.40	5.90	6.60	6.50	26.60	29.50	2.60	2.90	49.00	51.00
Urban	4.90	0.90	7.70	7.20	6.80	6.20	8.30	6.90	24.70	26.90	2.90	2.40	50.30	49.70
Rural	5.90	1.10	6.60	6.40			7.20	6.70	27.20	29.10	2.80	49.20	49.20	50.80
Nigeria	5.50	1.10	7.30	6.90	6.30	6.10	7.90	6.90	25.60	27.70	2.90	2.50	49.90	50.10

Source: Author's presentation from GHS, 2016

2.2 The Healthcare System in Nigeria

The healthcare system in Nigeria comprises public and private sectors and can also be classified into formal and informal sectors. The informal sector includes traditional healers, faith-based practitioners and non-paid family-based providers who are non-public.

2.2.1 The Public Health Sector

Government is involved in healthcare delivery services either directly or indirectly. Federal, State and the Local Councils contributed to healthcare provision in Nigeria. Most of the tertiary healthcare was provided courtesy of central council, at the state level, general and specialist healthcare services were housed by the state, while primary healthcare was managed by LGs, with support from the State Ministries of Health. The Primary Health Care (PHC) was instituted to provide accessible healthcare to all Nigerians in their communities. PHC comprises health centres and general hospital. Their services include the provision of pre-referral services, providing immunization, treating of minor illness and educating the community on the need for good hygiene and nutrition.

In Nigeria the government at the centre is charged with the responsibility of making rules and regulation on the provision of healthcare services. The function of the federal authority include formulation of policies, organizing, supervising, playing the roles of watchdog by enforcing strict compliance of laid down rules and regulation for the benefit of the society, the provision of specialized services at the University teaching hospitals and the federal medical centers, located in most of the state's capitals in Nigeria. Government makes available essential medical services by subsidizing, granting patent right for new discovery or invention and providing insurance covers to ensure equity and fairness in accessing healthcare services. Treatments of special or severe ailments such as Ebola Virus, Lassa fever, were within the jurisdiction of the federal government.

The federal government formulates policy, provides guidance on strategic issue, coordinate, supervise and monitor and evaluate national policy on health across all levels. Its operation includes control of disease, provision of necessary drugs and administration of vaccine. The tertiary health institutions are responsible for providing specialized medical services by the

Central Medical Centres and teaching hospitals. National Health System has is base in primary health care. However, PHC is characterized by under-funding, absence of skilled manpower and negligence on the part of LGs (Health Sector Reform Programme of Federal Government, 2004).

2.2.2 The Private Health Sector

The private sector consists of the formal and informal subsectors. The formal subsector is discussed in this subsection. Private sector is the major provider of healthcare services in Nigeria. It accounted for about 62% of health facilities in Nigeria. The delivery centers in Nigerian private health sector in question include hospitals, maternity clinics, medical laboratories, dispensaries, patent medicine stores, drug hawkers and nursing homes. These private health providers can be small, medium or large-scale enterprises, highly technical, average or technically low-graded; licensed or unlicensed. Adequate supervision may not be easily carried out because of differences in sizes and the location of providers. Because private health providers are profit-seeking enterprises, the costs of medical care were borne by patients thereby increasing the burden of OOP expenditures of households and individuals. Medical expenditure can be catastrophic in nature; this is a situation whereby the medical expenses exceed a defined threshold of family's income. This reduces household ability to maintain consumption of food and nonfood in the absence of shock management mechanism or coping mechanism.

2.2.3 Informal Health Sector

In spite of the modern medical facilities, the traditional health practitioners compete favourably in the healthcare delivery system. Some likely reasons include belief, nature of illness, level of exposure and formal health expenditure burden. The informal sector consists of traditional healers, faith-based practitioners and people on herbal self-medication. The traditional healers may be in form of herbalists or "native doctors" who also receive payments for their services. Beside the activities of the physical treatments, some engage in magical and religious rituals in their curative processes.

Some of the traditional cares were more financially burdensome than the formal public and private services. Nonetheless, they (the informal) receive considerable patronage because of the patients' belief in their efficacy in treating some specified illnesses. On the other hand, some of

these services were considered less expensive and affordable by all income categories (Federal Ministry of Health, 2016). Other reasons may be attributed to the fact that they were assumed to cure faster, perhaps due to high concentration of the herbs. Some patients believe that some illnesses were spiritual and should therefore require supernatural attention. The level of awareness can also contribute to more patronage of the traditional healthcare. At household level, various individuals may engage in treatment of household members without necessarily involving pay services. High OOP expenditure on health can also be responsible for people's search for less expensive medical care on their own, irrespective of its effectiveness and side effects. Most of these informal healthcare providers are not duly registered or may not have license but are engaged in sale services. There may or may not be any adequate training, workshop or seminar needed in such practices. They are learnt trades from parents, guardians or mentors. This sector operates under a free market and the participants operate as co-competitors. It is worth stating that increasingly there are attempts to inject some form of registration and regulation in the informal healthcare subsector.

2.3 Nigeria's Health Indicators

The Nigerian health sector has remained grossly underdeveloped and healthcare delivery characterized by poor funding, inefficient budget execution, poor service quality and shortage of licensed and experienced personnel needed for the delivery of public health services. Nigerian life expectancy is low relative to the global average. Fifty-five years for women and 47 for men (World Bank, 2014), with infant mortality rate of about 74.3 per 1000 live births in 2015. The country's maternal mortality rate worsened from 800 per 100,000 live births in 2000 and 1100 in 2010. Other indicators show that only about 10.0% of Nigerians have access to essential drugs, with a workforce estimated at 4 physicians to every 10,000 people in 2014. Although, the indicators look better, than what was obtainable in previous years, they still remain poor relative to health indicators in the developed countries and in some developing nations.

Nigeria health outcomes were characterized by poor health conditions. This is shown in the high incidence of illnesses, for instance, the prevalence rate of HIV/AIDS was 1,996 per 100,000, 171 per 100,000 in every Nigerian reported Tuberculosis and31,913 per 100,000 shows evidence of malaria in 2014 (WHO, 2015). Despite, the decline in the prevalence rate of Tuberculosis,

HIV/AIDS and malaria in the country, Nigeria's performance is far below World Health Organization target and poor relative to prevalence rates in Asia. The estimated number of death associated with AIDs/HIV in Nigeria per annum was approximately 210, 000 persons in 2015, representing a significant proportion of the global number of people (36.1 million) that died due to the ailment in the same year (WHO, 2015). Nigeria has improved in the treatment of Tuberculosis, leading to the reduction in the number of persons that died owing to tuberculosis. The prevalence rate was 322 persons out of every 100, 000 persons. Meanwhile, the global death rate owing to Tuberculosis was 1.7 million in the year 2015 which ranked ninth among the global sources of death in the year 2015.

The poor health condition in Nigeria is further aggravated by high infant mortality rate of 74.09 deaths per 1000 live births, under-five mortality rate of 124 per 1000 and maternal death rate of 560 per 100,000 live births (WHO, 2015). In addition, the average health facility-population ratio in the country is poor. In a related case, the national doctor-patient ratio stood at 1:3500 in 2014, much lower than the WHO minimum standard of 1:600. While, there are private health facilities, they are sparsely located and characterized by high charges beyond what ordinary Nigerians can afford. Table 2.2 reveals that the number of person surviving to age 65 and above, for a male person among his age group is 44, while the number of female survival rate as a percentage of her contemporaries is 47. This might be informed by the fact that females are less prone to risk relative to male counterpart, hence, male headed households tend to report more health shocks than female headed household.

Table 2.2: Health Indicators in Nigeria

	2015
Life expectancy (years)	54. 00
Number of children that died before their first birthday per 1,000 birth	74.30
Mortality rate, under-5 (per 1,000)	117.40
Death rate, crude (per 1,000 people)	12.70
Survival to age 65, male (% of cohort)	44.60
Survival to age 65, female (% of cohort)	47. 00
HIV/AIDS prevalence rate (%)	3.40
AIDS estimated deaths (UNAIDS estimate)	217, 354
Adults (age 15+) living with HIV	3, 000, 000
Tuberculosis prevalence rate (per 100,000)	322. 00

Source: World Health Organization (2015)

With a current life expectancy of 54.07 years, Nigeria is ranked 216 in the world, and 16th in Africa. Nigeria has a lower life expectancy than South Africa (62.9), Niger (61.8), Cameroon (57.3), Kenya (63.4) and Ethiopia (64.8).

Deaths of children under five are a persistent health challenge. For every 1,000 live births, 46.6 Nigerian children under the age of five die. That far exceeds the global figure of 38.4, and the regional average of countries in western sub-Sahara Africa, which is 40.7. Only a few countries in the region – such as Niger, Mali, and Chad – have higher rates of under-five mortality. In 2015, death rate in Nigeria was 12.8 per 1,000 people. In the ranking by death rate including 189 countries, Nigeria has the 167th rank that is close to the positions of countries such as Niger and the Rwanda. Compared to Australia which at the top of the ranking with death rate of 6.6 per 1,000 people in 2015, Nigeria has 93.42 % percent higher death rate.

In 2015, survival to age 65, male in Nigeria was 44.6 %. In the ranking by survival to age 65, male including 186 countries, Nigeria has the 170th rank that is close to the positions of such countries as Niger and the Rwanda. Compared to Australia which at the top of the ranking with survival to age 65, male of 89.2 % in 2015, Nigeria has 50.01 % percent lower survival to age 65, male. Meanwhile, survival to age 65, female in Nigeria was 48.8 %. In the ranking by survival to age 65, female including 186 countries, Nigeria has the 170th rank. When compared to Armenia which at the top of the ranking with survival to age 65, female of 86.4 % in 2015, Nigeria has 43.53 % percent lower survival to age 65, female.

Nigeria has the second largest HIV epidemic in the world. Although HIV prevalence among adults is remarkably small (2.9%) compared to other sub-Saharan African countries such as South Africa (18.9%) and Zambia (12.4%), the size of Nigeria's population means 3.2 million people were living with HIV in 2015. Adults (ages 15+) living with HIV of Nigeria increased from 1.8 million persons in 1996 to 3.2 million persons in 2015 growing at an average annual rate of 3.13 % Adults (ages 15+) living with HIV of Nigeria increased from 1.8 million persons in 1996 to 3.2 million persons in 2015 growing at an average annual rate of 3.13% World Bank, 2016. Approximately 210,000 people died from AIDS-related illnesses in Nigeria in 2015.

Mortality rate of children under-five years was high. In 2013, for every1000 children under-five years, approximately 74 died (WHO, 2015). High mortality rate was one of the challenges facing

Nigeria. High mortality rate could be associated with non-availability of medical care due to poverty level. The main causes of mortality were poor neonatal causes, malaria, pneumonia and diarrheal disease. Each of these contributed 26, 24, 20 and 16%, respectively. Others include measles, HIV/AIDS, and injuries. Another cause for alarm is the crude death rate that stood at 12.7 persons in every 1,000 people. There was a marginal improvement of 2.39 per cent declined in crude death rate per 1000 persons from 2015 to 2017.

2.4 Disease Burden in Nigeria

Nigeria had a high prevalence of communicable diseases and heightened burden of non-communicable diseases. Communicable diseases accounted for 66% of the total burden of morbidity. These diseases include malaria, acute respiratory infections (ARI), Measles, Diarrhea, Tuberculosis, HIV/AIDS and some neglected tropical diseases (Filariasis, Onchocerciasis, Trachoma, Worm infestation, Schistosomiasis, Leprosy). The incidence of HIV/AIDS declined, but the absolute member of persons affected laced a huge morbidity burden on Nigeria's resources. Malaria was an important cause of morbidity and mortality in Nigeria. Epidemics like Ebola Virus Disease (EBV), Lassa fever as well as Avian-influenza, added to burden of communicable diseases. While the surveillance system and response mechanisms have been able to detect and control these outbreaks, there is still room to strengthen them. Trop ical diseases (Filariasis, Onchocerciasis, Trachoma, Woman Infestation, Schistosomiasis and Leprosy) were major public health problem (Federal Ministry of Health, 2016; World Bank, 2016).

The epidemiological and demographic transition of the Nigerian population implied the burden of non-communicable diseases was a major issue. Morbidity and mortality associated with diseases - cardiovascular disorders, diabetes mellitus, cancers and chronic obstructive lung diseases were on the increase. Furthermore, there was an increase in injuries and disability, mental health disorders and other psycho-social problems due to violence and social unrest. Malnutrition and nutrition-related diseases were formidable public health problems in Nigeria, they accounted for 53% of under-5 mortality in the country. Some malnourished children have irreversible damage, including lower cognitive development, which will result in lifelong disadvantage (Federal Ministry of Health, 2016; World Bank, 2016).

Pregnancy and birth-related complications were other major drivers of the high burden of diseases. The maternal mortality rate in the country was high (576/100,000 live births) and the major direct causes were severe bleeding, abortion, sepsis, obstructed labour, and hypertension in pregnancy. Table 2.3 reports the burden of disease estimates compiled by the WHO Global Health Estimates (GHE). It reveals the International Classification of Diseases with respect to the definitions and causes. Diseases were categorized into three groups based on causes: Group I includes communicable, maternal, and nutritional conditions, Group II is associated with non-communicable diseases and Group III deals with injuries. Table 2.3 classified global disease into communicable, non-communicable and injuries. On the average, communicable diseases have higher costs on Nigerians than the non-communicable diseases. While there was an increase in disease burden in Nigeria from 2000 (164305.5) to 164922.4 in 2015, the burden of communicable disease declined from 80138.7 to 76929.3 within the same time frame.

Meanwhile, non-communicable diseases tend to impose more burdens within the period under studied; it grows significantly from 26, 263.2 in years 2000 to 28,023.8 in 2015. The shift in disease burden from communicable to non-communicable might not be unconnected with the global fight against parasitic diseases. The number of people reporting injury either deliberately or intentional generally increased from 9,947.4 in 2010 to 10,495.9 in 2015. Specifically, unintentional injury increased by approximately 6 per cent between 2000 and 2015, while intentional injury reduced by about one per cent over the same period. An increased in unintentional injury implies rising health shocks to household in Nigeria in the form of illness and disability, that can refrain one from doing daily routine. Similarly, rising cases of non-communicable is an indication of increase in medical spending, increased out-of-pocket spending and declining expenditure on non-medical consumption that tend to constraint household's ability to retain consumption over time.

Table 2.3: Disease Burden in Nigeria 2000 to 2015

	2000	2005	2010	2015
All Causes	164305.5	164922.4	152002.8	164922.4
Communicable, maternal, perinatal and nutritional conditions	128066.6	126367.4	108927.5	126367.4
Infectious and parasitic diseases	80138.7	76929.3	56880.4	76929.3
Respiratory Infectious	19163.1	19715.7	21624.7	19715.7
Maternal conditions	3970.4	3978.2	4060.4	3978.2
Neonatal conditions	18887.3	19598.7	19909.8	19598.7
Nutritional deficiencies	5907.1	6145.5	6452.2	6145.5
Noncommunicable diseases	26263.2	28023.8	30972.9	28023.8
Malignant neoplasms	2606.1	2707.3	2633.4	2707.3
Other neoplasms	74.9	93.5	121.7	93.5
Diabetes mellitus	759.2	881.5	988.7	881.5
Endocrine, blood, immune disorders	3054.6	3070	3579	3070.0
Mental and substance use disorders	2574.3	2909.6	3365.8	2909.6
Neurological conditions	839.2	998.2	1194.3	998.2
Sense organ diseases	937.6	980.9	1037	980.9
Cardiovascular diseases	5081.2	5419.4	5875.1	5419.4
Respiratory diseases	1274.5	1371.6	1488.5	1371.6
Digestive diseases	3113.9	3282.1	3504.5	3282.1
Genitourinary diseases	1109.3	1162	1300.9	1162.0
Skin diseases	392	438.8	507.2	438.8
Musculoskeletal diseases	1046.7	1178.7	1335	1178.7
Congenital anomalies	3258.2	3370	3859.1	3370.0
Oral conditions	141.4	160.1	183	160.1
Sudden infant death syndrome	28.2	35.3	42.8	35.3
Injuries	9947.5	10495.9	12059.5	10495.9
Unintentional injuries	8106.4	8672.3	10020.6	8672.3
Intentional injuries	1841.1	1823.6	2039	1823.6

Source: World Bank,2016

2.5 National Health Insurance Scheme

The operation of NHIS demands that prospective beneficiaries make payment of certain amount in advance. There are providers who render health services and to whom beneficiaries make payments to. Under the scheme, the social health care avails employee quality. Employer and employee contribute10% and 15% of basic salary to the scheme. Family heads or contributors can be beneficiaries with their spouse and biological children which should not be more than four and should be under 18 years old. Notably, arrangement can be made for children who are above this age with some additional contribution.

The subdivisions of the scheme include self-employed insurance for those in the urban area, social health insurance for rural dwellers. Others include social insurance for disabled Persons, prisoners. The premium in the case of the latter is being contributed by the government. In 2008, the scheme accredited and registered about seven thousand health practitioners and issue about 1.2 million health insurance identity cards had been issued.

The National Health Insurance Scheme (NHIS) is a social security programme in Nigeria. A risk mitigating and reducing strategy, it was intended to insure the health of the formal sector workers based on funding generated by mandating the workers and management to pay a stipulated percentage of their income as premium. The main objective of NHIS in Nigeria is the provision of affordable healthcare services to an individual and family member to ensure fairness, equity and unconstrained access to medical facilities (NHIS, 2006). The regulation and scheme of the NHIS allows an enrolee to register maximum of four biological children not older than eighteen years, one spouse. Provided the enrolee contributes his or her premium, the worker is entitling to clearly specified medical returns (NHIS, 2006).

The scheme involves pooling contribution from employer and employee in the formal sector to fund the medical bill of the employee to ensure access to affordable quality healthcare service (NHIS, 2006). Employees in the Federal Government parastatal are the main beneficiary of the NHIS, workers in the public sector of some states are also enrolled in the scheme. These people, however, are small proportion of Nigeria population, given that there are large proportion of households in the informal sector.

2.6 Households' Consumption Expenditure in Nigeria

Household consumption pattern in Nigeria comprises expenditure on food and non-food. Food and nonfood goods vary across regions. The highest consumption expenditure in Nigeria is expended on food. The expenditure pattern is revealed in Table 2.4 and Table 2.4b. About 25 trillion was spent on food and nonfood items. Food and non-food was about N25 trillion, 64.68% of the total household expenditure during the period went on food, the remaining 35.32% went to non-food. The tables below show expenditure on different items of consumption, both food and nonfood. Food consumption items include household expenditure on animal protein such as beef and bird, fat and oil giving food item, fruits (apples and banana) and fibre as well as food consumed household home.

Table 2.4: Expenditure on Food Consumption

S/N	Food	Overall Expenses (Billions of Naira)	% of Food	Percentage of overall spending
2	Bread and substitutes	1635	10.43	6.75
3	Tubers and plantains	586	3.74	2.42
4	Poultry	3,545	22.6	14.62
5	Meats	1397	0.58	0.38
6	oils, fats and oil rich nuts	174	1.11	0.72
7	Drinks	2318	3.74	2.42
8	Fruits and Vegetables excluding pulses	294	1.88	1.21
9	Beans and peas	2421	15.43	9.98
10	Food consumed in restaurants	82	0.52	0.34
	Aggregate	11, 055	3.13	2.02

Source: National Bureau of Statistics, 2012

Household expenditure on non-food items include spending on shelter, clothing, education, social activities, medical care as well as other services (which includes information technology and communication equipment as well as things like insurance and domestic help), fuel and light, each representing 34.3%, 13.5%, 12.7%and 12.5%respectively of total nonfood expenditure and 12.1 per cent, 4.79 per cent, 4.5 per cent and 4.43per cent of total household expenditure, respectively. The table reveals that households spend more on food items than non-food items, that is, an increase in medical spending for instance will reduce household expenditure on food items. This causes variation in household's consumption which must be financed via other sources of income in the face of devastating health condition and absence of health insurance.

Table 2.4b: Expenditure on Nonfood Consumer Goods

	Items	Overall Spending	Percentage of Nonfood	Percentage of Total Expenditure
1	Wears	1160	13.55	4.79
2	Rent	2939	34.31	12.12
3	Fuel/light	1074	12.54	4.43
4	Household Goods	1050	12.27	4.33
5	Health Expenditure	177	2.07	0.73
6	Transport Expenditure	823	9.61	3.39
7	education expenditure	140	1.64	0.58
8	Entertainment	78	0.9	0.3
9	Water	31	0.12	0.13
10	Other Services	1090	12.73	4.50
	Sub- total	8567		

Source: National Bureau of Statistics, 2012

2.7 Urban and Rural Households' Consumption Expenditure in Nigeria

In 2009/2010, total expenditure on households' consumption in urban areas stood at N10. 62 billion, relative to N13.63 billion in the rural areas (NBS, 2012). The higher rate of expenditure (Table 2.5) in the rural areas as a total relative to the urban areas was largely due to the urban-rural classification of the National Population Commission, published in 1991 and gave 30/70 split between urban and rural areas. Against this backdrop, total expenditure on food in urban areas stood at N5billion, while in rural areas it was N9billion. Also, the urban sector spent a higher proportion on rent, which accounted for 16.2% of its total expenditure; the rural sector spent most of its total expenditure, about 16% on tubers and plantain. In the urban area, food tubers and plantain as well as vegetables were the highest consumables at 23.2 % and 17.8% of the total food expenditure. Consumption expenditure in urban area was N10.62 billion relatives to N13.63 billion by rural households (NBS, 2012). The discrepancy along regions can be attributed to population classification into rural and urban.

Table 2.5: Nigeria Urban Households' Food Consumption Expenditure

Urban				
	Items	Aggregate Annual Spending (Billions of Naira)	Percentage of Food Spending	Percentage of Total Expenditure
	Food			
1	Cereal	948	3.98	2.2
2	Bread and similar food	355	6.05	3.35
3	Tubers and plantains	1,365	23.23	12.86
4	Meats	596	0.96	0.53
5	Fats and oil	214	3.65	2.02
6	Fruits and vegetables	1192	17.81	9.86
7	Drinks	436	1.02	0.56
8	Food items not mentioned above	766	2.04	1.13
	Total	5872		32.51

Source: National Bureau of Statistics, 2012

Statistics in Table 2.5b shows that urban households spent more on non-food items relative to food, that is more expenditure on rent (the highest expenditure is on housing, this can be justified by high or expensive house rent in the urban areas in Nigeria) , this was followed by expenditure on utility and fuels, closely followed by transportation expenses. These further confirmed the high cost of living in the urban area and priority given to non-food items in the allocation of household budget. However, only 75 billion was spent on healthcare, this might be attributed to better quality of life among urban households, less vulnerability to severe illness, prevalence of formal sector workers with access to formal insurance and higher income which ensures, medical expenses is a marginal proportion of total household expenditure. Only entertainment and education accounted for lower expenditure as a proportion of total spending relative to health spending.

Table 2.5b: Nigeria Urban Households Nonfood Consumption Expenditure

	Items	Aggregate Annual Expenditure (Billions of Naira)	Percentage of Food Spending	Percentage of Total Expenditure
1	Wears	517	10.91	4.87
2	Rent	1,716	36.19	16.16
3	Fuel/light	635	13.4	5.99
4	Household goods	395	8.33	3.72
5	Health expenditure	75	1.59	0.71
6	Transport	517	10.9	4.87
7	Education expenditure	70	1.48	0.66
8	Entertainment	53	1.13	0.5
10	Other services	734	15.49	6.92
	Total Nonfood	4712		44.65
	Total consumption expenditure	10, 584		

Source: National Bureau of Statistics, 2012

Table 2.6 is a breakdown of household's expenditure in rural Nigeria. Contrary to urban expenditure, rural households spent more on food items than non-food items. Tuber and cereal items of food were the major beneficiaries of household expenditure, they accounted for approximately forty per cent of rural household expenditure. Tubers and plantain were the highest expenditures for food, and also other cereals and vegetables, each consuming 22.2%, 14.3% and 14% respectively, of the total food expenditure. This shows the importance attached to food consumption in the rural area, hence, health shocks to an individual that decline earnings or reduces the number of working days will reduce food consumption. Meanwhile, households will need to respond in order to cope and sustain food consumption. The table further shows that rural households only spent approximately 9 per cent of their income on rent, this is followed by households' goods. This further confirmed that household spent minute amount of their income on healthcare services.

Table 2.6: Nigeria Rural Households' Food Consumption Expenditure

	Household Expenditure by Commodity Type: Rural Areas			
	Commodity	Overall Expenditure (Billions of naira)	% of Food expenses	Food as % of total expenditure
	Food			
1	Cereal	2828		
2	Bread &similar food	230	2.35	1.69
3	Tubers and plantains	2,179	22.23	15.99
4	Meats	764	0.36	0.26
5	Oils, fats and oil rich nuts	372	3.8	2.73
6	Fruits	151	1.55	1.12
7	Vegetables excludes pulses	1374	14.01	10.08
8	Drinks	445	4.56	3.44
9	Food items not mentioned above	1421	14.55	10.98
	Sub – total	9764		

Source: National Bureau of Statistics, 2012

For non-food expenditure, rent was the highest at 36.2% for urban and 31.9% for the rural areas. Other top non-food items for the urban areas were other services (which includes information technology, insurance and personal goods) fuel/light, clothing and footwear as well as transport. For rural dwellers, household goods, clothing and footwear as well as fuel/light were the other top items.

Table 2.6b: Nigeria Rural Households' Nonfood Consumption Expenditure

	Commodity	Overall Expenditure (billions of Naira)	% of Nonfood Expenses	Food as percentage of Expenditure
1	Clothing			
2	Rent	1,222	31.98	8.97
3	Fuel/light	438	11.47	3.22
4	Household Goods	655	17.15	4.81
5	Health Expenditure	101	2.66	0.75
6	Transport	306	8	2.25
7	Education expenditure	70	1.83	0.51
8	Entertainment	25	0.67	0.19
9	Water	4	0.12	0.04
10	Other Services	355	9.3	2.61
	Sub- total	3, 176		28.05

Source: National Bureau of Statistics, 2010

2.8 Zone Classification of Households Consumption Expenditure in Nigeria

Further disaggregation by the geopolitical zones reveals that the South-West region recorded the highest overall household expenditure. In the food category, the North-West had the highest expenditure, consuming 25.1% of the total food expenditure at the zonal level, while the South-South recorded the lowest number with 12.2% of the total food expenditure. The South-West consumed almost a third of the total non-food consumption for the nation. The South-West spent 53% more than the South-South, the second highest in the non-food section, and 225% more than the region with the lowest expenditure for non-food items, the North-East. This magnitude was however significantly less when food expenditure. The North-West, the highest in food expenditure, was about N3.9 trillion, while the South-West was about N3.6trillion for food expenditure. The South-South had the lowest food expenditure with N1.9trillion. A further breakdown of each of the zones by food and non-food classifications can be found in Table 2.7

The classification based on zones reveals North-West tend to spend more on consumption items. This closely followed by South-West. However, reverse is the case with reference to non-food consumption. South-West accounted for about 30 per cent of non-food expenditure in Nigeria. North East and South East have the least expenditure on both food and non-food items. Overall, Table 2.7 shows that South west has the highest consumption rate, followed by Northwest, while North East has the least spending capacity on consumption, this is closely followed by South East with only 12 per cent spending in total of household expenditure. The low spending in the two geographical zones may be attributed to poverty or the large size of households which implies lower per capital income.

Table 2.7: Distribution of Household Consumption by Zone

Zone	Food Expenditure (Billions of Naira)	Food as % of Total food expenditure (Billions of Naira)	Nonfood spending (Billions of Naira)	Nonfood as % of Total Non-Food spending	Aggregate Expenditure (Billions of Naira)	% of Total Expenditure
South-West	3566	22.74	2573	30.04	6139	25.31
North-West	3938	25.11	1459	17.04	5397	22.26
South-South	1908	12.17	1648	19.24	3556	14.67
North-Central	2395	15.27	1138	13.29	3534	14.57
South-East	1935	12.34	984	11.49	2919	12.04
North-East	1942	12.39	763	8.91	2706	11.16

Source: National Bureau of Statistics, 2010

2.9 Health Shocks in Nigeria

Among shocks confronting households, health shocks tended more to diminish individual and household's wellbeing relative to other shock types (Genoni, 2012; Dhanaraj, 2015). However, studies on the consequences of adverse health condition on variation in size of household's consumption and composition as well as ability of insurance arrangements in preserving consumption in Nigeria are rare.

Health shocks are prolonged adverse health conditions that expose the households to substantial medical expenditure (this can be catastrophic in nature, if exceeds certain proportion of household income. Health shocks require knowledge of the speed of occurrence, seriousness and the life span of the sickness (Asfaw and Braun, 2004; Wagstaff, 2007). A household member may abstain from work as a result of illness or an employed member of the household may refrain from work to cater for the sick person (Pryer, Rogers and Rahman, 2005). Sickness or disability could be classified as health shocks if and only if, it is severe to the extent that household member earning is negatively affected through fall in the productivity of the sick person, or fall in income of a family member who had to take time off work to care for the sick individual.

The most common health shocks in Nigeria were severe illness, disability and death of household member. Table 2.8 shows that, the most common health shock among Nigeria household is death of household member. The table shows that South East has the highest number of households that reported death shock while, the south west recorded the least number of death shock. In south west the predominant shock is the death of someone who sends remittances home. The effect of death on household welfare might be ambiguous depending on whether the dead member of the household is contributing to household earning or is a net eating member. Rural households tend to report more death than urban households, both death of a family member and death of someone who send remittance home. Generally, rural households tended to report health shocks than urban dwellers, a confirmation that rural households are more prone to health shocks. Statistics further reveal that, the most common health shock within rural households is death of household member with 7 percent of rural reporting in this category. It was also the most common shock in the North-Central, South-East and South-South regions. The

South-West households recorded death of someone who sends remittances (3.2%) as the most common health shock.

Table 2.8: Health Shocks in Nigeria (Percentage)

	North Central	North East	North West	South East	South South	South West	Urban Area	Rural Area
Death of family Member	4.9	5.8	8.6	10.8	7.1	2.1	5.2	7.0
Death of Someone who Sends Remittances	2.5	3.5	1.1	6.2	6.6	3.2	3.3	3.9
Severe Illness	2.8	2.2	5.2	4.2	4.0	2.9	3.5	3.8

Source: National Bureau of Statistics, 2015

Another form of health shocks experienced by households in Nigeria is disability or physical ailments. Table 2.8 shows the geographical distribution of the most common forms of disability in Nigeria. The table reveals that poor sight and difficulty in walking are the prevalent disability associated with rural households in Nigeria, with female member reporting more of problem associated with walking, while men are more prone to sight issues. The most prevalence form of disability shock in urban area is difficulties associated with walking, with female members mostly affected. Generally, disability associated with walking is more prevalence among Nigerian households. North central reported least cases of disability, closely followed by South-South and South west. Meanwhile, disability is predominant in North West and North East. Disability is defined with reference to injuries or accidents that incapacitates household member, such that could not carry-out their daily activities.

Table 2.9: Disability among Households in Nigeria (per cent)

Regions	Poor hearing		Poor sight		Short memory		Difficulty in walking		Incapacitated	
	Male(M)	Female (F)	Male	Female	Male	Female	Male	Female	Male	Female
North Central	1.1	1.1	2.5	3.7	1	1.1	5.7	5.8	3.3	1.4
North East	2.2	2.4	7.4	3.9	1.6	2.4	6.6	5.3	3.2	2.2
North West	2.7	2.2	4.6	5	2.1	2	7.1	9.7	3.6	3.1
South East	4.8	3.6	8.7	9.7	3.1	5.5	11.3	13.9	2.8	3.3
South South	0.2	0.4	5.5	3.3	2.3	1.9	4.9	7.1	0.5	2.2
South West	1.3	0.9	3.4	3.7	1.2	0.6	4.6	8.9	1.7	0.8
Urban	1.1	1.2	3.3	4.5	1.2	1.5	5.9	10.4	2.7	2.5
Rural	2.6	2	6.1	5.3	2.3	2.6	7	8	2.5	1.9
NGA	2.1	1.7	5.1	5	1.9	2.2	6.6	8.9	2.5	2.1

Source: National Bureau of Statistics, 2015

Available statistics reveal the households' medical history. The age brackets with the highest percentages of health problems were those between 0 and 4 and over 65 years of age. About 29% of male and 33.2% of females over 65 reported health challenge, and 20.7% of males and 18.6% of females between 0 and 4 experienced deteriorations in health status. These groups were closely followed by those in the 5 to 9 and 15 to 64 age brackets. Table 2.10 further shows that females had slightly higher percentages of health problems overall and in most of the regions. Geographically, there is no significant difference between the proportion of households reporting health shocks in rural and urban areas. South West has least case of health shocks across age group; this is followed by North Central. On the other hand, North East and North West reported more health shocks than other regions in the country. The findings tended to suggest an increased in household budget allocation to medical expenses and declined in overall spending on food.

Table 2.10: Percentage Distribution of Health Shocks in Nigeria by Sex, Age and Geographical Zone

Table Region	Ages 0-4		Ages 5-9		Ages 10-14		Ages 15-64		65 years +	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
North-Central	18.3	11.2	7.5	8.3	5.1	6.4	8.8	10.8	22.8	22.6
North-West	26.6	24.8	20	17.2	16.6	16.1	16.7	21.2	38.5	24.9
North-East	23.4	20.5	13	15.6	8.1	12.1	12.5	13.1	26.7	22.5
South-East	25.9	26.6	19.9	16.9	12.8	11.4	15	22.2	45.1	55.7
South-South	15.4	16.9	10.8	8.4	9	6.2	10.1	13.5	29.1	33
South-West	11.1	10.1	8.2	7.6	4	7.1	8.6	8.6	18.7	23.2
Urban	18.8	18.9	13.6	12.6	9.3	10.2	13.7	13.7	23.5	32.9
Rural	21.6	18.5	12.7	12.8	8.8	10.1	14.4	14.4	32.3	33.4
NGA	20.7	18.6	13	12.8	8.9	10.1	14.1	14.1	29.4	33.2

Source: National Bureau of Statistics, 2015

2. 10 Mortality across Selected Illness in Nigeria

Mortality rate was one of the challenges facing most developing countries, Nigeria inclusive. High mortality rate could be associated with non-affordable healthcare due to poverty level. Between 2000 and 2003, the main causes of mortality were neonatal, malaria, pneumonia and diarrheal diseases. Each of these contributed 26%, 24%, 20% and 16%, respectively. Other causes include measles, HIV/AIDS and injuries (WHO, 2015).

The identified top ten causes of death for all ages, according to WHO, (2015) and based on 2010 estimates, were coughing, terminal diseases and spinal cord related diseases. In year 2010, 311,000 deaths were associated to HIV/AIDS and 218,000 with Malaria (WHO, 2015). Although, HIV infections decreased by 21% and AIDS related deaths decreased by 6% since 2010, 220,000 HIV cases were reported in 2016 with about 160,000 deaths among the affected persons UNAIDS (2017).

Table 2.11: Mortality Number by Illness in Nigeria

Communicable Diseases	Deaths	Percent	World Rank
Fever	219,833	12.808	11th
HIV	213,667	12.520	18th
Tuberculosis	97,669	5.72	15th
Pertussis	32,386	1.90	4th
Non-communicable Diseases			
Stroke	87,717	5.14	32nd
Coronary heart disease	71,732	4.20	80th
Influenza & pneumonia	213,099	12.49	18th
Diarrheal diseases	173,878	10.19	19th
Diabetes mellitus	34,528	2.02	47th
Meningitis	33,935	1.99	18th
Lung Disease	25,241	1.48	42th
Kidney disease	16,892	0.99	51st
Hypertension	14,829	0.87	102nd
Others			
Road traffic accidents	24,850	1.46	65th
Congenital anomalies	19,116	1.12	50th
Violence	18,422	1.08	56th
Other injuries	14,392	0.84	97^{th}

Source: WHO, 2015

2.11 Households Coping Strategies in Nigeria

Nigerian households generally adopt mechanisms such as borrowing from friends and families, dissaving as well as sale of assets to combat health shock effects. Table 2.12 shows that approximately 8% households borrowed from family and friends in the advent of health shock as a coping mechanism. About 8% of households received assistance from family and friends. Meanwhile, 6%of households reduced food consumption and 4% reduced the consumption of non-food items. The table further reveals the order of importance of the coping strategies for each household. About seven per cent of the households used sales of assets as the most important means to preserve their consumption in the face of shocks, while four per cent reported it as the least means of preserving consumption. On the high side, eight per cent of the households that encountered shocks, borrowed from friends to finance medical care and maintain consumption, while another per cent sought assistance from relatives. The statistics further shows that approximately 7 per cent of the households did nothing when faced with adverse health conditions. This can be attributed to lack of assets, or poor access to borrowing facilities or liquidity constraints. The findings further suggest government hardly support households in coping with the negative consequences of health shocks and non-governmental organization support is limited. As expected, all the households that were interviewed, and reported health shocks, had no access to formal health insurance.

Table 2.12: Coping Mechanisms in Nigeria

	Percentage of Households	Percentage of households that report it as		
		1st most Important	2nd most Important	3rd most Important
Livestock sales	4	4	1	1
Sales of land	1	1	1	1
Sale of other properties	2	1	1	1
Stop children education	0	1	1	1
Assistance from relatives	8	5	2	1
Children staying with friends	1	1	1	1
Borrowing from relatives	8	1	3	1
Obtain loan	1	1	1	1
Reduced food consumption	6	4	2	1
Reduced nonfood consumption	4	1	2	1
Savings	1	1	1	1
Support from NGO	1	1	0	0
Took advance salary from employer	1	1	1	1
Assistance from Government	1	1	0	0
Formal social safety	0	0	0	0
Did nothing	7	7	1	1
Other	2	2	0	1

Source: National Bureau of Statistics, 2015

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter comprises the theoretical, empirical and methodological literature review in relation to health shocks and household consumption pattern.

3.1 Definition of Concepts

Vulnerability, Risks and Shocks

The rising need to achieved sustainable development in Nigeria has brought to the fore the need for deeper understanding of shocks, risks and vulnerability within their different contexts. Risks and risk factors are some of the important things determining poverty, wealth and development as well as the studies of which are important in a high-risk country like Nigeria.

The knowledge of risk emerges from the science of epidemiology, the study of health and illness in human populations. Environmental Protection Agency (EPA) defines risk as the "chance of harmful effects to human health or to ecological systems" that results from exposure to an environmental hazard (EPA, 2010). Risk is a sudden unexpected occurrence that brings about decline in welfare. It involves non-predictability that relates to the weight of the incident (The Organization for Economic Corporation and Development (OECD). Low-income households are least protected against risk, because of poor asset endowment, hence less able to cope with risks. Exposure to risk bears a direct effect on household welfare (Hoogeveen et al. 2005).

According to EPA, 2010, not all unpredictable events with potential adverse effects is actually wellbeing reducing. Sometimes, certain risks are associated with better welfare outcome, such that people tend to venture into them. For instance, some Ponzi scheme are sort after, investment also involves risk, the greater the uncertainty associated with certain businesses, the more the profitability. Household or individual becomes vulnerable to risk, when occurrence of the unexpected events is associated with adverse effects. It must be noted that, socially undesirable outcomes are relative to group, community and Country.

Undesirable outcomes could be living below the poverty line, not able to achieve the basic needs in life, like attaining education up to secondary level, poor clothing and insecure environment. It also includes poor healthcare services, evidenced by high death rate associated with infant and mortality, prevalence of avoidable communicable and non-communicable diseases.

Vulnerability measures individuals or household's resistance against shock, that is, the likelihood that shock will results in decline in well-being. Exposure to risk is basically determines by the resource at individual disposal, the nature of the risk and whether the individual has access to insurance scheme (World Bank, 2001). Oni and Yusuf (2008) studied the determinants of poverty in Nigeria and posit measure of expected poverty is synonymous with vulnerability measures. According to (Tesliuc and Lindert, 2002), vulnerability is a complex and all-encompassing term which assumes some people are susceptible to shocks, thereby threatening survival rate relative to others. Vulnerability affects the household behaviour in choosing insurance mechanism. This is because vulnerability is derived from risks susceptibility and the inability in coping with shocks probably because of asset endowment as well as inadequate social protection mechanism (Tesliuc and Lindert, 2002).

Vulnerability is multidimensional, poor households experience a number of risks. The poor are confronted with physiological shocks, internal community strife as a result of land dispute, economic crisis, epidemics and natural disasters like earthquake. The aggregation of these different shocks being it covariate or idiosyncratic constitute significant stress for households leading to an increase in welfare costs.

An individual or household can be expose to anticipate declined in welfare such that it falls short of the standard threshold norms that cannot be rejected. The extent of exposure would be based on the nature and capability of family to respond to risk. Coping in the face of risk hinge on socioeconomic status and the profile of household ((Alwang Siegel and Jorgensen, 2001). Vulnerability is an encompassing construct reflecting a conglomeration of many risks in households or community levels that affects health as well as healthcare experiences (Shi L*et al.* 2005). Vulnerable populations mostly experience risks in groups, and entities affected by multiple risk factors are more vulnerable to poor outcomes than entities predisposed to a single risk factor (Alwang, Siegel, and Jorgensen, 2001).

Spiers, 2000 argues that two possibilities exist, vulnerability is either risk amplify and lead to poorer health conditions or it may vary according to the capacity of the individual and not result in to poorer health outcomes, positive attributes of those identified as vulnerable can enable them to overcome risk and vulnerability leading to better outcomes. Cafiero and Vakis (2006) submit that there are two main definitions of vulnerability. The first groups of definition view vulnerability as something to be avoided. This definition implies that vulnerability reduction objectives are distinct and broader than poverty reduction objectives. The second group of definitions has a narrow perspective of vulnerability to mean exposure to poverty. In this context, vulnerability is regarded as the tendency of becoming or remaining materially deficient in the future.

There are two groups of argument; the first class opines that risk and shock can be used interchangeably, while the second group argues that the two concepts are distinct from each other. Shock is an unpredictable change in factors that are exogenous which may have effects on endogenous economic variables (Wikipedia). Therefore, while shocks are unpredictable changes in the economy which could be positive or negative, risks are such changes that cause a decline in well-being. Risk is distribution of uncertain events. Exposure to risk is the probability that a shock will cause an unwanted effect in the well-being of an individual or a group.

Shocks can be classified based on scope or origin. Based on scope, shocks are classified by occurrence grade (either at micro level or on a macro scale) (World Bank, 2001) and characteristic of the incident Deaton, 1992. Micro shocks impact individuals or households while macro shocks on the other hand, occur at the national or international level. They include uncertainties associated with nature such as flood, landslide, volcanic eruption and institutional failures (World Bank, 2001). The other conventional approach to classifying shocks is the severity and frequency. Severity of shocks is either light or catastrophic. Evidence abounds in literature (Bales, 2014; Genoni, 2012, Dhanaraj, 2016) of individuals and households being vulnerable to the adverse effects of risks and shocks.

Shocks tend to have idiosyncratic and covariant parts. Table 3.1 shows the different classification of shock. Oyekale and Oyekale (2010) identified the different shocks that poor households where susceptible to in Nigeria, some of them include job loss, drought, low

agricultural prices, no credit to expand business, no land, high commodity prices, low salaries and hard economic times. These factors are responsible for increasing poverty of the already poor and increasing the incidence of non-poor falling into poverty. Oni and Yusuf (2008) show that idiosyncratic and covariate shocks caused variability in the consumption of rural Nigerians. Covariate risk factors that make rural people vulnerable include fluctuating weather condition, (since rural Nigeria is agrarian with dependence on rain fed agriculture), volatility in government policies, unemployment, AIDS and river blindness. The idiosyncratic factors were low educational level/ absence of formal education, involvement in farming activities, large household size and having a female as the household head.

Table 3.1: Types of Risks

Risk	Idiosyncratic	Covariant	
		Meso	Macro
Nature		Rainfall Landslide, Volcanic eruption	Earthquake, Flood, Drought, High winds (typhoon, tsunami, cyclone)
Health	Serious sickness, Disability, Death of family member	Epidemic	
Social	Crime, Domestic violence	Terrorism, Gang activity	Civil strife, War, Social Upheaval
Economic		Unemployment, Resettlement, Harvest failure	Changes in food price, Growth collapsed, Hyperinflation, Balance of payments, Terms of trade shock, Transition costs of economic reforms
Political		Riots	Political default on social programmes

Source: World Bank, 2001

3.2 Review of Theoretical Issues

There are three theories that examine the relationship between idiosyncratic shocks such as health shocks and consumption, these are: the full insurance theory, the inter-temporal consumption theory, and permanent income hypothesis. Each of these are discussed in the following subsections.

3.2.1 The Full Insurance Theory

The full insurance theory was introduced by Arrow (1964). Supposition of the theory predicts that when households are not risk lovers, markets are not incomplete, along with existing informal institutions that pool risks to attained Pareto-optimality, then the extra satisfaction derived from consumption among households would equalize. The theory also presumed that when households are non-risk lovers and informal insurance is available, risk-sharing in the community can be attained through different risk-pooling strategies such as borrowing from friends and relations, selling of assets, dissaving. Using these mechanisms, communities will allocate health shocks (such as illness, disability or death) or share shock efficiently in such a way that ensures the Pareto-efficient allocation of shock. This implies that health shocks are pooled at community or village level by risk sharing institutions which helps to equalize the extra satisfaction from consumption among existing households in a community. The consumption of any household at a given time is the mean of the community consumption, a function of the society endowment. Therefore, the full insurance theory implies the growth or changes in household's consumption is not a function of growth or changes in the household resources rather on changes in community resources. In other words, sudden adverse health condition of individual in household is wholly secured in the village and household faces village grade overall shock (Khan, 2010).

The following assumptions are made for the theory to be relevant to this study:

- This theory is applicable to developing countries where people face substantial and catastrophic risks. In Nigeria, households face illness, diseases, injuries and accidents as well as disability of different degree.

- There is possibility of fluctuations in household earnings income with respect to community aggregate earnings.
- Health shocks are idiosyncratic in Nigeria and not covariate; hence, community insurance can be achieved.
- There are markets that enable households manage risks. For instance, people can borrow, sell assets.
- Financial institutions are available to offer protection. This includes microfinance, credit association and cooperatives.
- Finally, there informal coping mechanism of intra and inter family networks.

In summary, the main empirical implication of the full-insurance theory is that, in the presence of informal insurance institution, risk-sharing and mitigation in a village can be achieved. Hence, households are not vulnerable to health shock that is peculiar to a household. Therefore, households' consumption is maintained by the risk-sharing arrangement in the community.

The assumption of full consumption insurance is not always true, it depends on the severity of illness and household access to credit facilities. For instance, the less severe the shock, the more the family in question can preserve consumption. On the other hand, if household does not have access to borrowing facilities or when the cost of borrowing is high, then the less will be the capability to preserve consumption in the face of severe illness, disability or death.

3.2.2 Inter-temporal Consumption Theory

The inter-temporal consumption theory explains the relationship between health shocks and household ability to smoothen consumption when faced with uncertainty (Bales, 2014). The theory states that risk loving households confronted by health shocks will not want to maximize utility overtime, given household consumption. The theory states that households choose consumption such that the extra satisfaction from consumption today equalizes the discounted expected extra satisfaction of consumption tomorrow. The theory further suggests that growth in first period consumption is not a function of transitory income but of permanent income. Health shocks negatively affect household hours of work (Genoni, 2012), reduce incomes (Bales, 2014), and increase medical spending (Khan, 2015, Wagstaff, 2007) as well as reduce nonmedical consumption (Asfaw and Braun, 2008; Dhanaraj, 2015). In the absence of borrowing facilities

and institutional barriers, it is pertinent for households to preserve welfare using different risk mitigation and risk-sharing strategies. The strategies are falling back on saving, borrowing from friends and relation, gift or transfers from government and NGOs as well as sending remittances (Bales, 2014; Dhanaraj, 2016), that is, when the first best solution to preserving consumption is absence, the second-best option can be access by low-income households to maintain consumption Morduch, 1999. However, these mechanisms may be less available for not well-endowed households that are exposed to risks. The theory tends to have the same empirical implication as the full- insurance theory.

3.2.3 Permanent Income Hypothesis (PIH)

The permanent income hypothesis was formulated by Milton Friedman in 1957, an American economist. The theory states that only permanent earning has effect on overall earnings and hence, on real consumption. The theory suggests that individuals or family optimize consumption overtime by developing a likelihood of lifetime earnings, that ensures extra satisfaction derived from consuming additional unit of a good is the same throughout lifetime, therefore, severe illness or disability or death that do not affect fixed earnings cannot influence household welfare (Dhanaraj, 2015). In the absence of borrowing facilities and institutional barriers, it is pertinent for households to preserve welfare using different risk mitigation and risk-sharing strategies. The strategies are falling back on saving, borrowing from friends and relation, gift or transfers from government and NGOs as well as sending remittances (World Bank, 2001; Bales, 2014; Dhanaraj, 2016). According to PIH, the distribution of consumption across consecutive periods is the result of an optimizing method by which each consumer tries to maximize his/her utility. At the same time, whatever ratio of income one devotes to consumption in each period, all these consumption expenditures are allocated in the course of an optimization process–that is, consumer units try to optimize not only across periods but within each period (Dhanaraj, 2015).

This is presented mathematically below: Assuming a representative household i at time t optimize lifetime utility given consumption.

$$\max \sum_{t}^{T} (1+\rho)^{t-\Upsilon} u(c_{it}) \qquad (3.1)$$

Note $u^{/} > 0$ and $u^{//} < 0$, ρ is of time preference and i denotes household.

Assuming $y_t(h_t)$ be the income of the household where h_t represents health shocks to the household. The initial asset value in time $t+1$ is given by

$$A_{it+1} = (1+r)(A_{it} + y_{it}(h_{it}) - c_{it}) \qquad (3.2)$$

Where r is the interest rate on savings. Taking the First Order Condition in equation 3.1subject to 3.2, and imposing the envelope condition, yields:

$$u^{/}(c_{it}) = \frac{1+r}{1+\delta} E_{it}[u^{/}(c_{it+1})] \qquad (3.3)$$

Supposing constant relative risk aversion $c_{it}^{-\phi} e^{\theta_{it}}$ (where ϕ is the relative risk aversion coefficient and θ_{it} is the preferences parameter), taking log of both sides over two time periods, yields

$$\ln \frac{c_{it+1}}{c_{it}} = \frac{1}{\phi}[\ln(1+r) + \ln(1+\delta) + (\theta_{it+1} - \theta_{it})] + u_{it+1} \qquad (3.4)$$

Where u_{it+1} is the stochastic term with zero mean and constant variance at time t based on the assumption that households are rational in taking decision. Household consumption overtime is strictly determined by preferences given that households' fixed earnings isnot changed by negative health event subject to a non-slack credit constraint. Households use different coping strategies after carrying out a cost-benefit analysis. The full insurance and permanent income tend to have identical pragmatic conclusion. This can be obtained using equation 3.5

$$\Delta \ln\left(\frac{c_{iv}}{n_{iv}}\right) = \alpha_v + \delta \Delta h_{iv} + \Sigma \eta_k X_{iv} + u_{iv} \qquad (3.5)$$

Equation 3.5 is an estimable regression equation of changes in log of food and nonfood consumption for household i in village v, against village fixed effects α_j health shocks Δh_{ij}, demographic controls X_{ij} and stochastic term u_{ij}. The theory fails to predict the means by which consumption is maintain in this context.

3.3 Review of Methodological Issues

Literature on methodology used in the measurement of consequences of illness, disability and death on households and the insurance measures employs in smoothing consumption were reviewed in this section.

There are issues studying effect of health risks on changes in household's consumption. The first relates with the measurement of health shocks. Studies show that, a true measure for health shock must combine information on the type of health problem with indicators of its suddenness, severity and duration (Wagstaff, 2007). This implies that health shock is necessarily associated with, at least a household member abstaining from work because of health shock. In this sense, illness or disease becomes health shocks if they are critical to the point of preventing a sick person from going to work or a member of the household had to refrain from work and care for the sick person (Pohl et al.2013).The household must have incurred substantial expenditure or experience reduction in hour of works and decline in earnings due to severe illness, accident, disability in the previous year and the demise of t household's head for at least period of a year (Asfaw and Braun, 2004;Wagstaff, 2007).

Self-reported health condition is defined severally as health shocks in literature. Some studies (Asfaw and Braun (2004); Bridges and Lawson (2008); Sparrow et al.2013) defined health shocks as self-reported health status, either of any household member or household's head. While supporting the argument, Gertler and Gruber, 2002; Gertler et al. 2009 viewed self-reported health (for instance, a family member might have an ailment) as a better measure of health shocks relative to the use of Self-Assessed Health (SAH). Protracted self-reported health condition that lasted a minimum of ninety days was used as health shocks in the works of Dercon and Krishnan (2000); Rocco et al. 2011; Debebe et al. 2011. Meanwhile, self-reported health is prone to measurement error which constraints objectivity.

Baker et al, (2004) was critical of the use of self-reported health on the ground that it is prone to measurement error, hence the objectivity cannot be ascertaining. Also, Kalwij and Vermeulen (2008) argues further that a more objective measure of health issues is the Self Assessed heath because it is more encompassing and multifaceted in nature. Lindelow and Wagstaff, (2005) used worsening of household's head health condition placing it on a scale of excellent to poor, in

between the two extreme health conditions lies good and fair states of health. Several issues are associated with the use of self-reported illness as a measure of health shocks. The concept of health is relative to households depending on individual's perception of their health status, education and social class.

Cochrane, 1991; Townsend, 1994; and Dercon and Krishnan, 2000 defined health shocks as period of incapacitation from disability. A major weakness of days of disability is allowing work duration prearrangement by households, People absent from work and justified it on adverse health condition. Households with greater opportunity cost of absenting from work tend to report less disability compared to households with little or zero-real cost of missing work (Pryer, Rogers, and Rahman 2005; Wagstaff, 2007; Pohl et al.2013). Results and inferences based on such measure of health shocks will be spurious and misleading.

According to Gertler and Gruber (2002), self-reported illness was often endogenous to the number of hours devoted to work as individuals try to justify their absenteeism from work by misreporting health issues. In this scenario, there may be spurious evidence of consumption smoothening after severe illness. Supporting the argument Gertler and Gruber (2002) claims number of hours worked is internalized in self-reported illness because individual abscond from work and justified it on poor health condition. The chances of households justifying absenteeism from work on health shocks is prevalence among low-income households in formal sector. They tend to engage in other earning activities while abstaining from main job on health ground. While hours of work and earning might not be affected by health shocks, households incur medical bills thereby reducing consumption, particularly if it is out-of-pocket. In some cases, or countries, sick workers get illness benefits. In this scenario, there may be spurious evidence of consumption smoothening after severe illness.

Another measure of health shocks is the variation in indicator of inability of households to carry out their normal activities of daily living (ADL). Gertler and Guber (2002) measures health shocks using the variation in indicator of inability of household's head to carry out their normal activities of daily living. The indices were based on household assessment of their ability to carry out daily routine. Gertler and Guber (2002) emphasize the need to adequately measure adverse health condition. They argue that measurement error might have led to the conclusion of perfect consumption insurance reported in past studies.

Gertler and Gruber (2002) employ variation in individual capability to do their daily cores in measuring health shocks, the study shows earnings and household's consumption declined. The study concluded that there are hidden costs inherent in health shocks and suggest the need to focus on policies that prevent high medical spending. Their methodology however, prevents the interpretation of the findings as cause and effect relation. The results show an inverse relationship between health shocks and consumption, however, it failed to define the influence of omitted variables and cause-effect relationship. Other studies that use similar measure of health shocks include Ghatak and Madheswaran, 2011, which used inability of household member to work due to ailment (illness). Dercon and Krishnan, 2000 measure health shocks using the inability of females among poor households in Ethiopia to work for 28 days due to body weakness.

Galiano and Vera Hernandez, 2008 measure health shocks as severe illness that prevent an adult in the household from working. Gertler et al., 2009 measure health shocks using household member inability to carry out activities of daily living. Khan, 2010 uses severe illness that caused any member in the family to refrain from work. Genoni,2012 measures health shock using retrogression in doing normal activities of daily living. Also, Deiana (2013) measure health shock using incapacitation of household's member.

Death is another measure of health shock. Yaman and Jayne (2004); Grimm, 2009 measure health shocks using death. For instance, Grimm 2009 measures health shocks using death of aged person in the family. Beegle, 2005 uses demise of an individual between ages 15 and 50 due to AIDS. Dercon, Hoddinott and Woldehanna, 2005 made use of death of head, spouse or any member of household. Wagstaff, 2007, Khan, 2010 used demise of employed person in the previous periods.

Yamauchi, Buthelezi and Veha, 2008 used prime-age adult between 20 and 44 years, mortality due to AIDS. Beegle, Weerdt and Dercon, 2008, death of prime-age (20 to55years) households' member due to AIDS. Similarly, Kadiyala, Rogers, Quisumbing and Webb, 2011 used mortality of prime age adult (15 to 54 years). Wagstaff and Lindelow, 2014; Modena and Gilbert, 2011 all use demise of an individual in the household over a period of 12 months. Dercon et al.2005;

Debebe et al. (2011); Islam and Maitra, (2013) measured health shocks using death of main family earner. Omar Mahmoud and Thiele, 2013; as well as Dhanaraj, 2015 use the death of any prime age (12 years and above) household member.

Other measures in literature include decline in weight of individuals above 18 years, outset of inability of households to carry out their daily routine (Alam and Mahal, 2014). Dhanaraj, 2015 uses severe sickness or demise of household's head which reduces welfare. De Weerdt and Dercon (2006) use spending on healthcare and declining hours of work associated with severe illness. Islam and Maitra, 2013 use substantial medical bill or earnings loss as a result of health shocks to household's head. Powell- Jackson and Hoque, 2012 use serious parental complexity (haemorrhage, septic shock severe anemia). Also, Dano (2005) argues that the use of road injuries as health shocks, help resolve the problems of predictability, for instance, being injured is in most cases not expected and may, as such, can be perceived as a random health shock. Further, Mohanan (2013) employs rate of motor accidents as a measure of health shocks in India. Mohanan (2013) matched households that reports accident with those without such records, as control sample. Meanwhile, the approach is at the disadvantage of small number of observation. The study also lacks international acceptability given that the definitive measure of health shock (Islam and Maitra, 2013; Mitraet al.2016)

Another issue relates to the explanation of severe illness. The concept of severe illness is relatives to household depending on their level of earnings and academic qualification (Wagstaff and Lindelow, 2005; Islam and Maitra, 2013; Dhanaraj, 2015). This gives rise to spurious findings because having equal health problems meant to prevent people from carrying out their routines, self-employed low-income individuals would not stop working in order to earn their livelihoods, while wealthier or educated self-employed class might stop working. Therefore, severe illness differs between low-income and well to do households, educated and uneducated (Pohl et al., 2013). The argument suggests limitations in doing normal routine are not exogenous to individuals and households working hour decisions. Meanwhile, socio-cultural factors such as ethnic, political, religious and economic status influence the concept of severe illness or disability to families and affect the degree of budgetary allocation that maximises healthcare (Wagstaff, 2007).

Further, errors in measurement were associated with labour hours of work; in most studies labour hours are approximated based on number of hours worked within seven days. Households could hardly have arrived at the exact number of hours engaged in productive activities within the family in a week, given that their place of work is in the informal sector. In addition, there are occupations that are neither paid weekly nor at month end. This increases the likely complications inherent in investigating the effect of severe sickness on family earnings, because sickness could influence household work hours, while household income might remain unchanged. The argument tends to downsize the impact of sickness on family welfare. That is underestimating the influence of severe sickness on family resources (Pohl et al., 2013).

Empirical work on health shocks mostly used survey data to analyze the economic impact of disability and sickness shocks. The data used mainly come from different household panel survey that covers earnings and worked hours' changes in the different studies reviewed. For instance, Bound, Schoenbaum, Stinebnckner, and Waidmann (1999) use longitudinal health and old age survey to investigate the dynamic relationship among health shocks and alternative households work hour transitions using autoregressive functions of member of household health and derivation of a function that is zero everywhere except at the origin from the original estimation. Chou and Staiger (2001) used household's survey data that accounts for household's earnings and spending in Taiwan. On the contrary, Pohl et al (2013) used a combination of managerial data on health status and variation in consumption. The study used management appointment data and secondary and tertiary health documents to investigate the relationship illness episode and hours of work. Accidents and other exogenous health issues which were not pertinent to hidden factors of health condition coupled with working environment states were used as measures of health shocks.

Another problem of investigating association between health shocks and consumption smoothing is the likelihood of endogeneity of self-rated health status. Most studies on health shocks and consumption smoothing employs cross sectional data. Survey data are prone to the problem of heterogeneity and bias of omission or hidden endogeneity. Most studies on health and households hours of work with respect to limitations in the ability to work suffer from endogeineity. Households are often required to supply information about their health status and

consumption; hence, there are limitations associated with stating the occurrence period of illness. The ordering of event might not be clearly stated in this scenario.

It can be argued that, there was no accuracy in the measurement of household health condition, given that health issues are reported as cross-sectional data. Despite some studies arguing for self-reported determinants of health conditions, there are several limitations associated with it, particularly in relation to consumption smoothing (Wagstaff, 2007; Filmer, 2008). The consequence of the justification is that when self-reported measure is used in consumption smoothing models, the health variable would not be exogenous and the impact of adverse health conditions on change in consumption could overshoot, hence a wrong conclusion can be inferred.

Findings based on effect of an ailment on households' consumption vary depending on the measure of illness. Some studies (Kawabata, Xu and Carrin 2002) use healthcare bill or cost of hospitalization incurred in a family as a measure of health shock. The drawbacks of this healthcare bill measure is that it fails to account for the families that did not seek medical care as a result of poverty or those that are biased against formal healthcare. These families face higher future worsening health status and associated loss of future earnings ability.

The methodological review observed that results differs over studies, location and time were limited depending on choice of contrasting yardstick for health shocks and gauge (such as amount, timing) of the cost of out of pocket spending within and across countries and different studies. Similarly, mixed inferences with respect to association of self-reported illness with the outcome variables, the degree of the impact generated via omitted or hidden variables were noted. Almost all the studies reviewed used data from household survey while few utilize organizational records and hospital data.

3.4 Review of Empirical Issues

The empirical reviewed on the effect of health shocks on variation of household expenditure on food and non-food consumption have witnessed major contribution by different scholars over the years. But the empirical evidences provided by most of these studies have been mixed and a consensus has not yet emerged.

3.4.1 Vulnerability, Risks, Shocks and Welfare Costs of Exposure to Risk

Literature abound on the welfare consequences of the different shocks that individuals, communities and the nation are exposed to. The welfare costs of exposure to shock are often measured in terms of cost to consumption and or income. However, given the microeconomic theory assumption that all income is spent on consumption, the welfare cost can either be measured as a loss in consumption or income. Following Lucas' Approach (Lucas, 2003), in measuring the costs of economic fluctuations, welfare costs of risks/shocks is given as that proportion of present level of consumption that people are ready to permanently give up a proportion in order to reduce the uncertainty of variability in consumption in future. The magnitude of these costs is however, dependent on the consumers' preference and taste as well as degree of risk aversion. Otrok (1999) states that the welfare cost of consumption represents proportion of income a representative household spent overtime given the condition of health, to relocate from a state of uncertainty to an optimum consumption point. However, other non-economic welfare costs have been cited in literature, including loss of lives, malnutrition, infant mortality and low educational attainment (Tesliuc and Lindert, 2002 and Clemens and Moss, 2005).

With respect to the risks that originate from macroeconomic variables in less developed countries, Loayaza, Ranciere, Serven and Ventura (2007) conclude that the volatility experienced in terms of large external shocks, macroeconomic rigidities and weak institutions constitute direct welfare costs to risk-averse individuals as well as indirect costs to others through its adverse effect on economic development. High risk aversion could also be responsible for very stringent consumption smoothing in risk-averse individuals that may result in small welfare costs during the risk periods. Chetty and Looney (2006) suggest that many households in low income countries fall back on expensive consumption smoothing measure such as sustenance constraints

in response to risks, because of their high-risk aversion rather than invest in insurance. With regards to another macroeconomic shock, in this case, increase in import tariffs, welfare cost to the consumers in the importing countries is quite high resulting from increased cost of the imported product, particularly for an import dependent country. However, in the source country, the loss in welfare will be borne by the producers as a result of the loss of revenue from the importing country and reduction in the selling price at the domestic market (Suranovic, 2004).

Otrok (1999) used a preference method in calculating the welfare costs of business cycles in the United States. The study measured cost by relating future satisfaction of individual in disequilibrium state with the future stream of benefit at equilibrium; it also computed the amount of consumption to be discounted for the agent to be indifferent to choice of consumption whether at equilibrium or unstable state. The study found that the welfare implication of consumption volatility is 3.52 dollar per person based on 1997-dollar rate. Lucas, (2003), however argues that fluctuation in business cycles is not evenly distributed and diversified, thus studies that overlook the fact may actually underestimate the welfare costs of the business cycles.

In assessing the costs of wellbeing associated with conflicts, Humphreys, 2003 states that conflict at some level would lead to welfare losses in economic and non-economic facets. The non-economic facet includes loss of life, loss of household or relatives or well-wishers. Using as yardsticks, the measure of economic welfare cost of Lucas, 1987 approach, he found that people willingly gave up about 8% of their current consumption levels to avoid war, permanently. In Sub-Sahara Africa, Boubacar-Sid *et al.* 2007report that the cycle of conflicts and political instability in Guinea Bissau have led to loss of human lives, loss of economic growth as well as any effort at reducing poverty. The study revealed that about 40%GDP was lost as a result of the 11 months civil war in 1998. Also, one in three persons living in poverty today in the country would not have been poor but for the conflict. Barro, 2006 posits that the welfare cost of disasters including wars are large and could mean that people are willing to reduce 20% of their GDP to prevent the uncertainty of any such macroeconomic disaster. He however, thought the welfare cost of economic fluctuation was lower at a declining GDP of approximately 1.5% to reduce the uncertainty.

Agriculture and weather-related shocks also carry welfare implications. Rainfall was used to examine the impact of state of the atmosphere on crops output and earnings (Portner, 2008). Also, adverse weather condition was recorded, this include perpetual impact of students presence in colleges and institution enrolment rate (Jacoby and Skoufias, 1997) the quality of food, eating habit and how tall the children are, as well as the overall educational attainment (Alderman, Hoddinott and Kinsey 2006). As regards the cost of water stress in sub-Saharan Africa, Tatlock, (2006), reports that water stress is predominant and expected to increase in sub-Sahara Africa as a result of low level infrastructural base to harness the available water bodies unlike their counterparts in South Africa and Egypt. According to the report, water stress causes a decline in economic development and some conflict in trans- boundary water bodies, both with negative welfare impacts. He also reports that in Kenya, the 1999-2000 droughts produced a 16% decline in the GDP. In a related discussion, Moran, (2006) gave the example of Niger as a country languishing in food crisis as a result of cyclical floods and a non-responsive as well as corrupt political system.

Alayande (2003) observes that Nigeria is vulnerable to substances that pose a grave consequence on the environment and negatively influenced income generating activities of the household particularly among low-income households. The study identifies the common environmental challenges among poor households in Nigeria as environmental degradation, wide spread desert, inadequate rainfall, various forms of erosion, pollution from industries, cars, smokes, bush burning. Others are poor waste management in the urban area, overcrowding, noise pollution as well as environmental problems that adversely impacted the wellbeing of household vis-a-vis their ability to earn livelihood. This further impoverished the households. The fact that Nigeria is predominantly rural based and dependent on agriculture unpredictable weather condition is a major risk factor, (Oni and Yusuf, 2008; Oyekale and Oyekale, 2010), making most Nigerians vulnerable to poverty and causing decline in well-being.

The economic shocks could be in terms of unemployment, price rigidity, market instability, inflation, job losses and so on. Chatterjee, Corbae and Rios-Rull (2004) define economic crisis as an increase in unemployment of the magnitude experienced during the great depression and the welfare gain from setting the probability of such a crisis to zero is between 1 and 7% of lifetime consumption. This implies that individual consumption will have to be reduced by about 1 to 7%

in order to prevent such an economic crisis from happening in the United States. On the welfare loss that arises from price rigidity in the face of idiosyncratic production shocks, Dorich (2007), found that about 4.4% of the steady state consumption may be lost in time dependent pricing and 2.3% in state dependent pricing.

Carrying out an empirical assessment of the welfare gain of wage redistribution which is a means of bringing about inequality, Haethcote, Storeslethen and Violante, 2011 discovered that the welfare loss from a two-period database was almost 2 percent of lifetime consumption from the base-line. However, using an alternative approach in which a partial insurance model was applied to the wage differential, the study found a welfare gain of about 1.4% as a result of investment in human capital that followed the wage differential policy. The economic crisis which rocked Zimbabwe led to a 46% decline in real per capita GDP between 1998 and 2005(Clemens and Moss, 2005) as well as a predicted infant mortality of 3,900 per year. The cost of crisis is thus seen in the economic and non-economic aspects. In fact, the study found that a decline in earning will invariably result in rising infant mortality rates in the country.

Lucas (2003) posits that an estimated 1% of consumption will have to be perpetually reduced in order to reduce a 10% inflation rate to zero. He justified the fact that this 1% is a loss by indicating that the actual loss is dependent on the prevailing inflation rate, and thus an inflation rate of 200% will lead to about 7% perpetual loss of consumption in South America. Alayande and Alayande, 2004 show that political instability within the country, especially since the annulment of the 1993 election has led to economic and non-economic welfare costs, including marked reduction in productivity of the manufacturing sector, reduced real income, unfavourable terms of trade as well as strife- all with welfare costs of their own.

Increasing food prices also pose as a source of vulnerability worldwide. Rising commodities prices that lasted from 2006 third quarter and ended in 2009, first quarter led to lowering household incomes as well as consumption levels in Mexico (Wood, Nelson and Nogneria, 2010). The study disaggregated household by poverty status- poor and non-poor found that the welfare loss of increased food prices led to loss of income for poor and non-poor but non poor households are affected more.

Some studies (Dercon, 1999; Holzmann and Jorgensen 2000) carried out on shock consider the economic wellbeing of single shock event at a time; however, Christiaensen, Hoffmann and Sarris, 2007studied effect of three shocks (declining coffee prices, health and drought) on households in two areas known for cash crop production. These regions are Ruvuma and Tanzania- Kilimanjaro. Using the 2003 household survey, the findings reveal that while the decline in coffee prices was easily weathered by most of the farmers, the welfare losses from ill health and drought were about 8% in Kilimanjaro, Ruvuma however, records no welfare loss. In Zambia, the incidence of HIV/AIDS, macroeconomic instability and periodic drought were studied by Del Ninno and Marini (2005). Their results reveal shock of death from HIV/AIDS and placement of foster children, generally resulted in consumption declined among the low-income households. In the same study, macroeconomic instability leading to unemployment was found to bring about a decline in welfare of the households. Periodic drought also led to a decline in maize production to the tune of about 18% of total production in some of the provinces of the country.

Buera and Shin, (2011) examined the welfare consequences of persistence shocks, that is incomplete markets in the face of self-insurance (missing consumption insurance) and self-financing (imperfect financial market). The study found that the welfare cost of these persistent shocks can be unchanged, increase or reduce based on the household access to consumption insurance and financial market. However, while welfare outcomes of persistent shocks increase in the absence of consumption insurance, it decreases with the imperfect financial market.

3.4.2 Health Shocks and Households' Consumption

Studies that examined the relationship between health shocks and consumption smoothing generally show that household ability to smoothen spending on food and nonfood items when confronted with health shocks was mixed (Bales, 2013; Khan, 2015; Dhanaraj, 2015). For instance, Cochrane, 1991 investigate the perfect consumption theory, given the presumption that, variation in household consumption is not influenced by health shocks that are not endogenous to families; hence that consumption is fully insured. Cochrane, 1991 used hours of productive work for which household was incapacitated as a measure of health shock and reports thus, negative

health condition that lasted below three months could not influenced household's consumption. Meanwhile, illness that stretched beyond 100 days reduces consumption.

Townsend (1994) carried out the same investigation for southwestern families in India and argues that food and non-food expenditure were immune to sickness when computed as percentage of periods the households report sickness previous period but family food and nonfood expenditure changes with the overall community consumption Kochar (1995) investigates impact of sickness on salary and obtaining loans from friends and family employing households ICRISAT survey of India metropolis. The findings reveal that household earnings are not capable of insuring households' food and nonfood expenditure in the face of idiosyncratic shocks such as illness, death and broken home. Specifically, sickness reduces earnings and increases seeking financial assistance from friends and families whenever a male headed households report health shocks during farming harvest season.

The two studies tested the claims of perfect consumption smoothing in the absence of formal insurance, using instrumentality of informal coping system. Further, some studies Townsend, 1994 and Kochar, 1995 examine the influence of different idiosyncratic events on households' consumption growth; severe illness is one of the events. Meanwhile, these studies failed to show the degree to which sickness influenced families' ability to raise money or the informal insurance mechanism used as a survival strategy in the face of idiosyncratic health condition. Dercon and Krishnan (2000) examine the ability of rural households in Ethiopia to maintain their consumption level overtime using intra-family network. The findings show varied effects overtime. The study reveals a large proportion of the households that reported sickness were able to smoothen consumption, however, females headed households and each member of a family that could not mitigate or shared risks experienced fluctuation in their consumption items.

Meanwhile, Asfaw and Braun (2004) investigate the influence of health shocks on household expenditure on food and nonfood items in Ethiopia. The results show families were to smoothen expenditure on food items but failed to maintain expenditure on nonfood items. The study was however, criticized on the ground that it employs data only on healthy Ethiopians by dropping households that experienced health shocks in Wave 1 of the survey. Therefore, it suffers selection biased. Gertler and Gruber (2002) extend Cochrane (1991) and Townsend (1994)

analysis by investigating the impact of sickness on hours of work and income of Indonesia households. The work can be differentiated from that of other authors given that it accounted for the method of measuring health conditions.

The data permits investigation between household reports of morbidities and incapacitation as a yardstick for measurement of ailment. The results reveal limitations in physical function were better measures of adverse health conditions. Based on the health shock measures, the results show household loss approximately 40 per cent of earnings due to serious sickness. The study, therefore, reject the hypothesis of full consumption insurance. Gertler and Gruber (2002) suggest past studies that predicted perfect consumption insurance might have used not large, predictable and anticipated condition of health that have aided spurious findings. They concluded that households experiencing health shocks could not perfectly preserve consumption, with results revealing that household cannot sustain consumption level when faced with adverse health condition.

Wagstaff (2007) finds that Vietnam households that encountered health shocks experienced significant reduction in expenditure on food items. Health shock is influenced by the types of work, whether is income earning venture or not, and household location, either rural dwellers or urban residence. The study, further shows that urban dwellers are more exposed to health shocks, as evidenced by reduction in earnings and rising medical expenses owing to high user fees. Lindelow and Wagstaff (2005) revealed adverse and unpredictable health conditions caused a major declined households' earning and hours of work in China. The study also found a substantial increase in household personal health spending. When stratified along location, poor rural households tended to insured income evidence by rising income level. The study shows small ability of formal insurance mechanism to preserve family wellbeing. Meanwhile, their findings seem to suffer from omission of hidden variables and household specific effects. This is because cross-sectional data are always characterised by heterogeneity and the study employed cross sectional data. There is possibility of serial collection between health index, the hidden variables and dependent variable, hence producing spurious findings.

Gertler et al. (2009) reveal the influence of health shocks on expenditure of food and non-food items conform with the results of Gertler and Gruber's (2002). The findings suggest availability

of credit markets assist households in maintain consumption level when they encountered adverse health conditions. Meanwhile, Gertler and Gruber (2002) as well as Gertler et al. (2009) employed indicators of household inability to carry out their daily cores as a measure of unanticipated health event. The measure is however, established on the idea of incapacitation with reference to inability to walk, lift object and climb staircase, these are associated with old age. The measure dwells on physical challenges that are not readily useful in the analysis of health shocks and household's hours of work, as well as individual productivity (Strauss and Thomas, 1998). Further, using inability of family member to perform normal activities of daily living failed to capture the influence of demise of any member, which has the ability of undermining household wellbeing, especially the death of the household's breadwinner, as well as brain retardation or terminal diseases that negatively impact household wellbeing.

Genoni (2012) while accounting for health conditions correlation with omitted or unobserved variables finds unexpected and protracted sickness caused a decline in family income, however, the influence on food and nonfood item was minimal. This can be associated with unobserved household specific characteristics as well as omitted key variables. Sparrow *et al.* (2013) find evidence of perfect consumption smoothen among high income households in Indonesia, however, low income households experienced reduction in welfare. Findings further revealed the various economic channels through which health shock affected consumption. The channels are increased medical expenses and reduced household income.

3.4.3 Household Risk Management and Coping Mechanism

Existence of risk does not generate negative outcomes as this depends on the risk management options available. Two sets of strategies are utilized by household for the purpose of coping with risks; formal and informal strategies. Informal strategies are individuals or households based while social strategies are formal institution-based insurance as well as society developed strategies for the poor to lessen attendant effect of shocks (Dercon, 2001; Holzmann and Jorgensen, 2000; Jalan and Ravallion, 2000). Both sets of strategies are designed to be complementary, given the degree of vulnerability of the poor to poverty-related risks. For instance, households employed in the non-formal section of the economy could be exposed to

risk, irrespective of their economy status, because they do not have access to formal insurance in case of job loss Morduch and Sharma, 2001.

Holzmann and Jorgensen (2000) classified management of risk into two. These are *ex ante* and *ex post* strategies. *Ex ante* risk management can be further categorized into three subgroups. Prevention of risk – steps undertaken to disallow the events from happening. The reduction of exposure to risk - the strategy focuses on the fact that even if the risks occur, strategies must be in place to check against exposure to risk. The third is risk mitigation– this involves ex ante coping measures in the face of loss associated with the risk. *Ex post risk management* are responses to occurrence of risk. It includes strategies that cater or compensate for losses associated with risks. The strategies among others include depletion of valuables, borrowing from friends and families, child labour, movement of household out of their place of residence in search of greener pasture and searching for transitory jobs.

Within the risk management options, the ability of individual, household, and community to handle shocks and determines the strategies to employ in order to combat shock is a function of nature of the shock (where they come from, association, degree, and how often) as well as portfolio of assets that individuals, households and communities control (Jalan and Ravallion, 2000). De Ferranti, Perry, Gill and Serven (2000) further argue that efficient risk management must comprise the three strategies for: risk prevention; risk mitigation by pooling uncorrelated risks or by using formal and informal insurance and mitigating mechanism meant for reducing influence of shock whenever is realized. Within each of the risk management instruments, some fall under informal arrangements while others can be categorized as market-based arrangements and the remaining are those within public arrangements often as a form of social protection.

Oni (2008) identifies prevention, mitigation and coping as the risk management options available in Nigeria. Risk prevention is measures that reduce the probability of welfare reduction through risks; examples include immunisation, irrigation in the case of agriculture, education and land agreement with respect to communal clashes. Meanwhile, risk mitigation involves mechanisms that reduce the influence of welfare reducing risk; this includes price support, portfolio diversification, intercropping, mixed cropping and mixed farming as well as formal insurance. Finally, coping mechanisms are put in place to counter the consequences of a negative

unexpected event that happened; such measures include reduction in consumption, sales of assets, school dropout and borrowing. However, Oni and Yusuf (2008) implied that policy measures in risk and vulnerability management should be region specific given the different degree of unexpected negative event and exposure to risk across different regions in Nigeria.

The level of intervention in risk management and the level of arrangement determine the composition of the actors within the management strategy. Heitzman*et al*, (2002) identify intervention levels as micro, meso, macro and global, while there are formal and informal intervention practices. In all, the major actors in any risk management strategy are the households, NGOs, private sector, public sectors, donor or international organizations, which are either exposed to risks or need to, managed and/or provide the management strategies to manage the risk. Low-income households are more vulnerable to health shocks in the community relative to other income group. The incurred substantial medical spending, reduction in hours of work and subsequent falls in income associated with adverse health conditions. These tend to threaten the capability of low-income families to maintain consumption across periods.

The absence of formal health insurance scheme being it private or public which characterized most developing nations implies that households in low-income countries must device a means of combating the negative consequences of adverse health status. Hence, households turned to second-best options- a stream of informal coping measures to help preserve expenditure on food and nonfood items in the face of unexpected adverse health condition. The coping mechanism involves disposing of valuables, intra-family and community social network. This strategy, however, relies on household resource endowment, availability and access to credit facilities. Empirical evidence shows that on most occasions households failed to perfectly smoothens consumption using informal coping arrangement when they encountered negative health condition. Some studies (Khan, 2010; Asfaw and Braun, 2008; Genoni, 2012) show that vulnerable household further fall into penury in an attempt to insure consumption.

Olawuyi, Fola and Oyedapo (2011) argue that Nigeria rural households are expose to shock due to their inability to take good decision on effective coping mechanism that is constraints by the household's resource endowment. The study employs the Probit model in identifying the coping strategies of households in the face of shock. The study revealed that the major coping strategies

among households were borrowing, distress sales of assets, adjustment in food consumption and dissavings. Furthermore, earnings, household size, educational level attained and the nature of shocks affects the choice of coping strategies.

Also, Dhanaraj (2016) states that coping through sales of valuables, child labour tended to destroyed children lifetime opportunity to earn income, thereby perpetuating vicious circle of poverty. Households came up with a number of coping strategies to mitigate and combat shocks, emanating from covariate and idiosyncratic shocks. The strategies are either at the individual or family state or organized at the village or community level. Table 3.2 shows the classification of coping strategies by World Bank (2001).

Table 3.2 Responses to shocks by households and communities

	Non-formal Coping strategies		Public or Private formal strategies	
Purpose	Person and family based	Group of households or Community based	Private provision	Public based
Reduction measure	Hygienic health condition, Assured earning	Community endowment		Good economic goals, Conservation of environment Active labour market policies
Mitigating Risks Diversification	Diversification of income, crop rotation	Cooperatives, Rotational savings	Savings-account Microcredit banks	Free trade, subsidy, tax holiday
Insuring shocks	Accumulating assets, nuclear and immediate neighborhood	Remittances, gifts,	Retirement pension Insurance for disable and household reporting death	Pension systems Payment of unemployment benefits, sick leave with payment
Dealing with shocks	Disposing of valuables, borrowing organized union, Transient relocation, asking children to stay with friends	Transfers from community team; progressive groups	Loans from credit institutions Sale of credit assets	money- networks of assets Social assistance Workfare Cash transfers Subsidize, Social funds

Source: World Bank, 2001

3.4.4 Insurance Mechanisms against Health Shocks

Households in developing countries possess limited opportunities to forestall occurrence of adverse health condition because of wide spread poverty. According to Jutting (2005) there is a need for groups at different stages to combine resources in order to provide adequate healthcare and ensures better standard of living for low-income households in particular. Low-income households are vulnerable to outcomes of health shocks and simultaneously lack access to formal health insurance. The implication is that variation in household consumption moves in the same direction with changes in health conditions. Although, low income households could engage in activities associated little negative uncertainty, the less risky ventures are characterized by low turnover, hence poor remuneration for low-income households. Given access to formal insurance mechanism, the variation in household's non-medical items might not cause depletion in households' assets when faced with adverse health conditions (Skoufias andQuisumbing, 2005).

3.4.4.1 Formal Insurance Mechanisms

Formal insurance involves payment of premiums by enrollee to offset the medical expenses in case of illness to any individual in the group. The apply principle of risk pooling involves coming together of different uncertainty element with the goal of insuring risks to equalize implication of the occurrences of a risk (Smith and Witter, 2004). If risks are fully pool, the financial risk associated with health shock would be share among individual in the insurance group while ensuring individual does not bear the entire burden. An argument in favour of risk pooling, is that it moves excess wealth from their idle to state where is greater proportion of risk to households with little element of uncertainty, thus, differentiating between those seeking medication (users) and contributors.

Households that are risk-averse highly appreciate insurance given that it minimizes the uncertainty associated with risk. Risk-averse households pay premiums when they are not reporting health challenges against unforeseen future negative health condition. This implies a transfer of income from a period of perfect health, hence productive period to days of severe illness, thereby preserving future consumption. A major advantage of insurance lies in its ability to combat risk associated with health shock (Smith and Witter, 2004). Risk-sharing mechanisms

are more effective across large pools as the average healthcare spending balances out**.** Formal insurance mechanisms comprise market and public insurance.

- **Formal Private Insurance**

Although individuals attach significant importance to health insurance, there exist the problems of market failure and incomplete information particularly among developing countries in the world. There is the problem of information asymmetry between insurance provider and buyer of the insurance policy. The insurers have little knowledge of the health status of the potential insured. People tend to have a better knowledge of the uncertainty associated with their health than the insurance provider. This gives rise to the problem of adverse selection[3]. Based on the assumption of risk-averse people buying more insurance than the low risk persons, the insurer decides to charge a price far above the fair rate. As a result, the likelihood of low-risk individuals buying insurance reduced hence aggravates adverse selection (Smith and Witter, 2004). Given that individuals that are highly vulnerable to risk are also the poor people in the community, the enrolment of risk prone individuals implies more poor are insured, hence an improvement in the well-being of the people. Information asymmetries in developing nation constraints the provision of insurance markets

Some studies argued that formal private insurance does not benefit the poor people in the community. They based their argument on the fact that poor people are mostly found in the rural area without access to insurance markets. Also, it is assumed that private insurance firms discriminate against low-income individuals given that they are more vulnerable to risk, hence they are charge a price far above the market price (Balkenhol and Churchill, 2002). Poor access to information implies rise in the costs of transacting business between the insured and insurer, these costs are built into premium to be paid by poor household. Individuals in remote area might not be able to afford high premium because they are low-income people. Although there are law and regulations against charging high risk- related premiums, the insurance provider still provides service that are tailored towards the low-cost individuals in the community (Smith and Witter, 2004). Unstable income coupled with poor credit facilities further constraints the payment of premiums by poor people (Dror, Preker and Jakab, 2002).

[3]Adverse selection a situation where only high risk individual buy insurance (Acharya et al.,2010)

Meanwhile, there is the demand side of the problem, in that low-income individuals hardly see reasons to demand for health insurance cover and pay premium on regular basis. Low-income people often prefer payment at the point of receiving service than paying premium against uncertain events, knowing full well that the money cannot be recoup in the absence of risk. Similarly, income tends to constraints household ability to purchase insurance, premium might represent a large proportion of household earnings, as such insurance might be considered a non-profitable venture to invest. Conclusively, both demand and the supply sides problems ensure private insurance service is limited in developing nations in spite the risky environment and wide spread poverty (Oberlander, 2013). Hence, private health insurance is not accessible to poor household in developing nations.

- **Formal Public (Social) Insurance**

Absent or poor development of formal private health insurance and the failures of the market with respect to information asymmetry justified the need for government intervention in the insurance market. Government provide health insurance by creating a pool of risk and compelling individuals to participate, this ensure redistribution of income from less risk prone individual to individuals that are more vulnerable to risk in the society (Smith and Witter,2004). Also, wealthy households can subsidize low income households and productive households can subsidize economically-inactive households). This can be justified on the ground that aged people, children and less privilege households are more vulnerable to risk but would contribute less. Meanwhile, the able young people can pay more and demand low healthcare. The wealth redistribution mechanism is a major argument in favour of public health insurance. This ensures equity, fairness and accessibility in the provision of healthcare, thereby offsetting the negative economic consequences associated with adverse health condition.

Public health insurance schemes are financed by government through state budgetary allocation or by private firms, individuals and social groups (social insurance[4]). However, the government bears the full burden for poor households that are not able to contribute their quota. Social health insurance is not without challenges, the costs of transacting is on the high side, which low-income individuals cannot afford. Other drawbacks of the scheme are moral hazard, adverse

[4]Social health insurance involve the provision of insurance services using voluntary organizations that cut across professions and performing some functions of government (Saltmanand Dubois, 2004).

selection and inability of poor individuals to provide collateral. The problem of adverse selection is easily eliminated using the instrument of compulsory enrolment. However, the scheme is prone to moral hazard[5].

Moral hazard is less of a concern in developing nations since health facilities are underutilized and negative attitude that could bring about health challenges are limited. A major problem of social health insurance is the supplier induced moral hazard, given that the insurance provider has incentives to cheat or exploits the system. For instance, the payment of healthcare providers with fixed proportion premium would redistribute the burden of insurance from the insured to the service provider. However, the service provider can reduce demand by lowering the quality of service rendered. Also, there is a problem associated with the use of fee-for-service principle. The government tends to reimburse the service provider based on the utilization rate, but the problem with this strategy is that healthcare provider can encourage over utilization of health facilities to help increase their earnings (Smith and Witter, 2004).

Given the numerous problems in developing nations, such as, poor institution and dominance of informal sector, statutory health insurance is not efficient. The scheme is poorly funded given government tight budget, difficulty in raising fund from the public and pooling resources.
Fluctuation of macroeconomic variables (exchange rates fluctuation, rising prices) makes sources of government revenue unreliable. Further, there is no accurate figure of individual earnings since most individual or households are engaged in the informal sector and frequent variation in income. These made it impossible to adequately estimate expected premium based on income. This calls for rationing of healthcare by government, by giving priority to life threatening diseases or ailment.

However, this is more of normative issue that calls for moral, ethics and value judgment, hence no institution that guarantee sustainable health delivery system. Similarly, households tend to sought alternative to public healthcare provision given the low quality of service in the healthcare system. Irrespective of the challenges, the prospective of social health insurance tend to outweigh whatever the challenges. Therefore, it has been established in many developing

[5]Moral hazard refers to over utilization of medical facilities and indulging in activities that increases the chances of adverse health condition (Acharya et al., 2010)

nations of the world. Social health insurance is in operation in the following less developed countries; Tanzania, Ghana, Bangladesh and Vietnam. The scheme was modified in countries such as Philippines, Venezuela and Columbia to cover the informal economy.

A well-functioning statutory insurance that eliminated challenges of market forces to consumption care, can still confronted with issues of loss of income as a result of increased healthcare consumption, which impedes the entry of low-income individuals (Smith and Witter, 2004). In conclusion, statutory health insurance protects households and individual against the negative outcomes of adverse health condition by redistributing resources to ensure equitable access to healthcare. This involves risk pooling across community. However, the coverage of statutory health insurance is limited by low-income households and the high proportion of individuals in the informal economy.

3.4.4.2 Informal Coping Strategies

Access to formal health insurance in developing countries is limited, households therefore, respond with the second-best option when they encountered shocks. This comprises coping strategies, risk-sharing and risk mitigation using assets.

- **Coping Mechanisms in Response to Shocks**

Coping strategies are designed to mitigate the negative effects of uncertain health events without mandatory contribution. Households engaged within family work hour's adjustment to preserve consumption. Similarly, in India and Tanzania the use of children in income generating activities is an important means of smoothen consumption (Jacoby and Skoufias, 1997; Beegle et al., 2006). The use of child labour and out of retirement labour adjustment to increase household income and preserve consumption was not successful in smoothing consumption in Burkina Faso (Sauerborn et al.1996). This tends to results in underinvestment in human capital of the children which has adverse outcomes on future income of the children, hence, leading to perpetual poverty (Dercon, 2007). Similarly, depletion of valuables, dissavings are efficient in the preservation of consumption in the immediate period but at ultimate price of sacrificing future consumption (Skoufias and Quisumbing, 2005). In addition, individuals that travelled out send remittances or token back home and borrows from friends and relation (Wagstaff,2007; Asfaw and Braun, 2008; Dhanaraj, 2016).

In India, donations and token were efficient in smoothing consumption (Townsend 1994). However, giving and receiving gift cannot be effective in insuring family consumption against common shocks, because the efficacy of gift in insuring consumption is a function of the per capital assets endowment of a family and on the average resource endowment of intra-community network. Conclusively, the use of risk-sharing and mitigation strategies could only insured consumption against idiosyncratic shock in the short run but not in the case of covariate shocks and might hold negative future consequences.

- **Prevention and Reduction of Risk using Self-insurance**

Guiding against future consequences of health shocks, families act before the occurrence of shock by building up buffer against crisis. It is a self-insurance mitigation strategy by household in the absent of formal health insurance Oberlander (2013). Insurance in this context has nothing to do with pooling risks across household. Deaton (1991) was able to establish that when households' income was not growing, stock of asset served as shock absorber. In the face of fluctuating earnings, household maintained food and nonfood expenditure level by falling back on saving, dissaving; however, the strategies are not sustainable in the long run.

The use of buffer or falling back on stock of wealth is not appealing to households given that it requires foregoing current consumption to accumulate enough assets for equalizing consumption over time. Further, the strategy is less feasible in developing countries, because there is a low level or threshold consumption state beyond which household cannot hold further wealth or grow assets. Not even the potential threat of declining future income can persuade to save or store wealth, hence, the use of buffer suggests asset accumulation mechanisms collapsed in the face of successive unexpected negative occurrence, because the households would have attained a point at which all valuables would be dispose. The accumulation of assets to preserve consumption against shock is constraints by household's resource endowment (assets could not be accumulated to such a high level and the unwillingness of households to sacrifice current consumption for future satisfaction (Deaton, 1991).

Oberlander, 2013 reveals that households practice self-insuring by accumulating assets over time. In remote area of India Bulls were used as buffer (Rosenzweig and Wolpin, 1993). In some West Africa countries cattle serve as stock of asset (Fafchamps, Udry and Czukas, 1998).

However, households in India were not able to accumulate enough assets to weather the consequence of shocks against consumption. Supporting the argument Rosenzweig and Wolpin, 1993 found that households were not investing in Bulls not minding its monetary value and ability of preserving consumption, it might be attributed to scanty asset. Given the high costs of buying and maintaining cattle, for instance, only few households owned cattle in Tanzania Dercon (2002).

In Indonesia, selling of valuables, intra-households network and unconditional borrowing were the coping strategies employed by households Sparrow *et al*. (2013). Reduction in food and nonfood consumption, dissavings and rising number of working hours were utilized by poor households in smoothing consumption. Transfers and the intra-households labour adjustment were the basic coping strategies employed by households in Vietnam against negative health conditions Genoni, (2012).

- **Ex-ante Informal Risk-distribution Arrangements**

The consequences of risk are distributed among individuals in the family (within family risk-distribution) and distributed across households of different socio-economic status (inter-family distribution of risk). Intra-household risk-sharing can be perceiving as an institution responsible for distributing risk, in which the household as a whole insured shock to a particular member of the household (Mazzocco, 2004; Mazzocco and Saini, 2006; Dercon and Krishnan, 2000).

According to Gertler et al. (2009), the capability of household to preserve consumption in the face of shock depends on their access to Credit Institutions, such as availability of borrowing facilities and dissavings. Indonesian households used intra-household labour adjustment and dissaving to insured consumption against death of a member Grimm (2010). Meanwhile, in Laos borrowing and withdrawal of savings were the profound means of preserving consumption level by households Wagstaff and Lindelow (2014). Self-insuring via borrowing from friends and families was household's coping strategies in Pakistan, in the absence of an efficient safety-net (Heltberg and Lund 2009). Yamano and Jayne (2004) found that households in Kenya smooth consumption through selling of various valuables after the demise of working adult in the household. Households in Zambia dispose cattle in response to demise of a male head of the

family to maintain the same level of welfare, however, selling of cattle has a little influence on off farm income (Chapoto and Jayne 2005).

According to Islam and Maitra (2013) credit on a micro scale minimized household dependence on depletion of valuable items in response to health shock in Bangladesh. Wealthy households in Tanzania employ instrumentality of private transfer whenever they encountered death of a productive member, while the low-income households or households with paucity resource or deficient in asset endowment borrow to finance healthcare and maintain consumption state (Lundberg, Over and Mujinja,2003). Khan et al. (2015) fail to reject the hypothesis of consumption smoothing within a short time frame. They conclude that borrowing from friends, relatives and cash lenders was the main coping strategies to counter the negative influence of illness and death. This tends to worsen family debt-to income proportion.

Many studies on risk-sharing viewed household as an entity therefore reject the within-household risk-sharing conclusions and accept the between-different-households segment of risk-distribution hypothesis. The levels at which risks were pooled in the literatures are expanded households (Foster, 1993; Witoelar, 2005), neighbours and relations (Fafchamps and Lund 2003, communal clique (Grimard, 1997), and community (Townsend, 1994). Risk-sharing among different household tend to be more productive when the entity is not large. The larger the unit, the greater will be possibility of moral hazard and adverse selection. There are formal and intimate modes of distributing the effects of negative uncertain events. Risks can also be mitigated through financial dealings, social help and income support (Milanovic, 2000), generalized, mutual as well as gift exchange (Cashdan, 1985).

The use of informal means of rationing risks within relatively small units is ex-ante mode of insurance scheme in nature. In the non-formal mode of risk distribution, members tacitly or openly promised to assist one another in the event of unforeseen or untold suffering over time.
In the absence of moral hazards and adverse selection problems, individuals that are reluctant to take or face risk could perfectly protect themselves against risk at household or individual level via effective participation in reciprocated insurance (Goldstein, de Janvry and Sadoulet, 2007).

Information plays an important role in informal risk distribution arrangement; given that access to adequate information or perfect information help minimize the problems associated with

information asymmetry. Therefore, subject to the amount of information at their disposal, several households would be willing to participate in mutual agreement to cope with shocks (De Weerdt, 2007). The larger the informal network, the less the flows of information, and the costlier it becomes, therefore the existence of small networks in Tanzania and the Philippines (Murgai *et al.* 2002; Fafchamps and Lund, 2003; De Weerdt and Dercon (2006) were reported.
Size of the network is defined relative to number of individuals, households and geographical coverage. For instance, it is small in terms of population and location.

Small and village risk pooling arrangement can be jeopardize by common shocks, and constraints the capability of distributing risk from the high risk person to the less risk individual (Dercon, 2007). This calls for trade-off between keeping a small risk pooling unit within the community and maximize the benefits of perfect information, or a widening of the risk arrangement and enjoy a wide stream of resources but with a potential of reducing the financial feasibility of the arrangement (De Weerdt, 2005). In addition to information requirements, suitable enforcement mechanism is also an important requirement for the smooth functioning of informal risk-sharing networks.

There is need to put in place incentives to reward those that honour the mutual agreement and mechanism should also exist to punish offenders this should be established on forecast given no monetary commitment is involved. Family ties, society group and spiritual belief are germane in regard to making and enforcing rules and regulation (De Weerdt, 2005). Assurance of long-term association would improve the likelihood that estimated expected utilities of honoring the group agreement would be viewed as higher above benefits of withdrawal. Risk distribution contracts might collapse in the event of an adverse change in earnings of a member due to shocks. A representative member with windfalls earnings gains can either spend on social assistance or invest (Dercon, 2007). Likewise, a decline in household's earnings or household's income situation deteriorates the household may prefer to hold onto what is available notwithstanding the commitment made to contribute and ration resources across units (Morduch, 1999).

The development of formal insurance system has the potential to dampen the prospect of informal risk distribution arrangements (Oberlander, 2013). An individual that gain appointment in a formal sector and enroll in social safety net has a high chance of withdrawing from the

informal agreement (Dercon, 2007). Evidence of informal risk-sharing arrangements abounds in areas without access to formal insurance in Cote d'Ivoire (Grimard, 1997). In term of equity, low-income households and people that are considered insignificant possess limited opportunity in gaining access to non-formal risk distribution network. In Tanzania, rich people tend to have a stronger, deep and well-funded informal risk distribution networks than the poor De Weerdt, 2005. In southern India, given the insufficient risk-sharing within the family, risk was associated with a reduction of 1.6 to 2.3 percent in body weight of low-income women (Dercon, 2002). In Tanzania, health shocks was reported to have caused about 7.7 per cent reduction in household's food and non-food expenditure, despite the proportion of households involved in the non-formal insurance organizations (De Weerdt and Dercon, 2006).

Further, intra-family association and arrangements with friends failed to perfectly preserve consumption in the Philippines when encountered severe sickness (Fafchamps and Lund, 2003). The claims of full insurance theory among networks of non-formal insurance in the face of idiosyncratic risk cannot be accepted, particularly among low-income families. Non-formal risk-distribution mechanisms could be jeopardizing by covariate shocks and by fluctuations in macroeconomic condition (Bardhan and Udry, 2016). This implies, perfect consumption smoothing is not achievable and low-income households are not often absorbed into risk-distribution arrangement (Alam and Mahal, 2014; Hangoma, Aakvik and Robberstad, 2017).

Households rely on informal insurance mechanisms given the constraints to accessing formal insurance mechanisms (Bardhan and Udry, 2016; Alam and Mahal, 2014). The need for community-based health insurance (CBHI) schemes, such as: micro insurance and microfinance social risk management as well as social protection and safety nets is inevitable, since the mechanism of last resort (informal risk-sharing) cannot fully insure households' consumption (Olaniyan, Oni and Adepoju,2012).

3.4.5 Micro Insurance and Microfinance Social Risk Management

One of the Institutions that help to cater for the low-income earners, as well as those in the non-formal sector of the economy is the Microfinance Institution (Alwang, Siegel and Jorgensen, 2001). It targets vulnerable households in the country in order to prevent decline in welfare, as a result of exposure to risk. The Microfinance Institutions (MFIs)provide institutional structure

that sum-up clients' desires for money and facilitate provision as well as distribution of financial facilities through organization of clients into different units (Jutting, 1999; Alwang, Siegel and Jorgensen, 2001). The programmes of the MFI has been conceived to be successful in providing financial services, especially to poor households by improving their welfare. (Murdoch 1999; 2000; Alwang, Siegel and Jorgensen, 2001).

In recent years, there have been proliferations of Microfinance programmes and have become significant tool in Social Risk Management (SRM). Some of the programmes are the Grameen Bank in Bangladesh, the Rakyat Bank in Indonesia as well as BancoSol in Bolivia (Morduch, 1999; Morduch and Sharma, 2001). Furthermore, many community banks developed, especially in South and Central America. Household's risk insuring was enhanced by these programmes through the provision of cash to fund new economic opportunities and facilitate adoption of new technical know-how to generate earnings, and use class differences to ensure accessibility, affordability and reduction in costs of transactions (Alwang, Siegel, and Jorgensen, 2001).

Microfinance schemes were organized in such a way that increase the exposure of customer to risks through costs of loan, particularly when households or individuals are required to meet a stringent condition in paying back their debt. Severe unexpected negative events tend to constraints prompt repayment of debt by household. Households and individuals, in an attempt to repay the loan and avoid the consequences of defaulting, resolves to using expensive coping strategies, sometimes to their detriment- declining welfare and exposed the individuals to future impediments and help perpetuate poverty by destroying human capital (Alwang, Siegel, and Jorgensen, 2001). However, there are MFIs that concurrently satisfy its objectives and meeting the goals of clients. A good example of such is the "Life Insurance". It clearly states the necessary and sufficient conditions for granting loans. While MFIs often grant life insurance to their clients, in the real sense of it, MFIs granted loan insurance in the case of death of the insured, given that it gives the assurance of offsetting the outstanding debt of the client which would be paid in the eventuality of death.

Another insurance granted by MFIs is the property insurance, however, it only pays scraps value in the case of damaged or it repays the balance of a loan and not the full cost of the property. Evidence suggests that there is no prospect of efficient insurance provision by MFIs(Brown and McCord, 2001). People tend to demand for the service of MFIs and are more accessible than

micro insurance. Micro Insurance are relatively new innovations. Insuring life and health are the two forms of insurance on a small scale programmes in literature. MHIs are view as a segment of healthcare arrangement that relates healthcare services and health insurance. The programmes that relate micro insurance to micro financial institutions across the world includes: in Bangladesh there is the Delta Life insurance; the Card Bank in Philippines as well as FINCA international in countries like Malawi and Uganda (UNCDF, 2000). Given the limited access to life insurance in the non-formal unit of the economy, women in India developed the Self-Employed Women's Association (SEWA) (Hauck, 1997).

There was no life insurance for women in the non-formal segment of India because it is assumed that the women are poor as such cannot contribute premium. Since most of the women are engaged in the non-formal sector, the transaction cost in the payment of premium is on the high side. Finally, poor women were seen as high-risk individuals because of their vulnerability to risk and low standard of living. (Alwang, Siegel, and Jorgensen, 2001). Micro Insurance products are easily accessible given the existing arrangements, thus several efforts to provide micro insurance were connected to existing microfinance programmes and MFIs (Brown and McCord, 2001).

According to Brown and McCord (2001) micro insurance is a fundamental part of SRM. The SRM concurrently provides savings services and aid financing. However, is imperative for SRM agents to recognized that the type and scope of risks, individuals and household peculiarity, resource endowment as well as access to different insurance options determine the efficacy of risk-sharing, mitigation and coping instruments (Brown and Churchill, 2000; UNCDF, 2000; Brown and McCord, 2001).

Brown and Churchill (2000) notes that despite the prospect of micro insurance, it is confronted with many challenges. Sometimes microfinance failed their clients by not providing protection even when they must have contributed premium. It is also prone to bankruptcy.Juetting (2000) argues that low-income people in the society have little or no access to micro insurance because of high transaction costs, issues associated with information asymmetry as well as discrimination against the poor by the high-income households. Other problems include over reliance on external funding and government subsidy (Baeza, 2000).

Alwang, Siegel, and Jorgensen (2001) identified poor government intervention (negligence on the part of government) and absence of statutory health insurance as factors that popularize micro insurance as an important institution in the community. Availability of statutory formal health insurance would reduce overreliance on the informal coping strategies with long-term implication on household welfare. For instance, the provision of affordable statutory health insurance would create the impression that people can actually relied on public provision of healthcare and support from foreign aid as well as NGOs in dealing with adverse health condition. Meanwhile, the provision and management of public statutory health insurance is shrouded in secrecy and most often untimely, these tended to constraint access and impede its efficacy. However, the effectiveness of the provision of formal safety nets may be limited because they are usually not provided in a transparent and timely manner.

The pattern and operation of the micro insurance scheme influences people willingness and ability to buy insurance. The mode of operation and management of insurance in less developed countries, lack of agreement on what the premium should be, not readily accessible and unavailability in the remote area (McCord, 2000). Poor premium contribution and unavailability of micro insurance in most part of the country is often associated with culture of insurance. An efficient and developed insurance scheme is limited to Uganda and Kenya in Africa. Health insurance scheme is only accessible to the formal sector workers in Nigeria. Daniel (2008) suggests the need for poverty alleviation programmes and infrastructural development to ensure sustainable economic development; these would encourage the growth of social safety nets.

The formal credit market is responsible to about 35 per cent of Nigeria working population, while the poor informal sector caters for 65 per cent of the working population. Those in the informal sector only has access to micro financial markets, relied on donors from Non-Governmental Organizations, borrowing from peers and family, cooperative and trade unions. The development of micro-finance/safety nets policy in Nigeria is to ensure improvement in living condition of the populace with special reference for the low-income individuals. There are services and programmes that grant household access to credit on a small scale but sustainable overtime. The programmes and institutions include Microfinance Banks (MFIs), and Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). It also comprises National

Poverty Eradication Programme (NAPEP) as well as National Directorate of Employment (NDE).

The establishment of rules and regulation, to ensure the effective management of the micro-credit scheme and continuous monitoring and evaluation of the scheme performance has led to the entry of new credit provider and establishment of new micro insurance institution and growth of the non-formal sector. Aseffa (2010) identifies various challenges to micro insurance in Africa, these include: educating the market and earning its trust, understanding the market and its real needs, designing simple products and adopting a long term view, reaching huge numbers of people through innovative distribution channels, and keep them, encouraging claims, leveraging existing relationships with banks, MFIs, cooperatives, labour unions and social organisations, adopting a long-term perspective as well as consumer education.

3.4.6 Social protection and Safety Nets

Dercon and Hoddinott (2004) opines that provided moral hazard and advance selection are the major impediments to private insurance institutions, then there are no incentives for the government to profile solution to information problem. In the same vein, when the issues are partially eliminated, the transaction costs associated with provision of health insurance to low-income are often on the high side. The running expenses incur in providing insurance might continually rise; the associated deadweight loss tends to outweigh whatever the benefit of the insurance cover. High scale risks are also, difficult to insured, for instance common risks and risks that are catastrophic in nature requires joint actions from multinationals and international organization to combat. These call for the use of tax system and assistance from within the country and international institutions to fund social safety nets.

According to Dercon (2011) social protection is a major weapon in helping poor households improve their welfare and makes growth inclusive for the poor. The paper defines social protection as including social insurance, social assistance and efforts to ensure access to social insurance and assistance. Adepoju *et al.* (2011) points out that the study of vulnerability of rural households in Southwest, Nigeria brings to fore the key importance of safety nets mechanisms in alleviating hardship. According to DFID, 2005 social assistance is a form of transfers to households that are vulnerable to risks without them having to contribute or pay premium to the

scheme. The eligibility for such assistance is based on the community assessment and categorisation as poor and needy. Also, FAO (2003) sees it as a kind of payment that compensates families that are vulnerable to risk via direct money payment or through gifts and material assistance. It helps low-income households to insured their consumption by ensuring a given threshold of standard of living is maintained.

Grosh*et al*. (2008) posit that a good safety net or social assistance must be appropriate and adequate. Equity, efficiency and flexible, sustainable as well as dynamic, it must possess an instant capability to reduce inequity and abject hardship, there should be opportunity to invest in tomorrow and assist households in the mitigation and sharing of risk as well as inform policy that are to the benefit of the society at large. According to Chetty and Looney (2007) estimating the outcomes of safety nets as insurance scheme in less developed nations should be with the consideration of the attitude of the poor to risk as well as the efficiency of the social insurance policy. This is because adequate consumption smoothing may not necessarily be a result of an efficient social insurance policy but a risk averse attitude of the post which ensures that the difference in consumption between the steady state and the volatile state is minimal.

Grosh, Ninno, Tesliuc and Ouerghi (2008) classify programmes under social assistance or social safety net into three broad categories:

1. Transfers both in cash and in-kind
    - Transfers of money, near money items inclusive.
    - Community assistance, non-contributory retirement account and financial benefits for the disable, children support benefits, nutrition assistance.
    - Non-cash Benefits. Rationing, approaches based on food, supplements for mothers and children and feeding of children in colleges.
    - Subsidizing food and non-food items.
2. Earnings Scheme
    - Public ventures in which low-income households work to earn money or food
3. Provision and sustainability of human capital projects
    - Transfers based on the fulfillment of certain requirements or standard with respect to education and/or health among low-income family

- Free medical care and free education to low income households to facilitate access to basic needs of life.

The proportion of national income spent on social protection determines to a great extent the level of success in achieving the objective of bailing people out of poverty line. This proportion may be high in developed countries such as the UK and other EU countries but in the developing countries particularly of the African region, spending on social protection, if any, is abysmally negligible (Sanubi, 2011).

The safety protection and safety nets risk management strategies have been used in various countries to relieve the impacts of risks. Grosh *et al*. (2008) listed a collection of concise features of social insurance in different countries. In the United States and Sri Lanka, the food stamp programme was meant to assist poor households attained their consumption needs. They were issued stamps to be used at any retail store to obtain the food needs of the family. Need based transfers such as guaranteed minimum income programme in Bulgaria and Romania, unconditional cash transfer in Indonesia, social assistance in form of cash benefits, in-kind and personal care in Hungary have been used successfully. Other safety nets programmes include the non-contributory old age pensions schemes of Bolivia, Brazil and Chile.

In Nigeria, Olaniyan *et al.* (2004), presented a life cycle approach to social protection and safety nets. In the approach, programmes for children aged 0 to 5 years include the Vitamin A supplementation programme and the National Programme on Immunisation. For children age 6 to 14, the Universal Basic Education (UBE) programme was the focus, while for age groups of 15 to 24 and 25 to 64, whose main risks are unemployment and low human capital development. The National Poverty Eradication Programmme (NAPEP) and National Directorate on Employment (NDE) are saddled with the responsibility of providing safety net coverage. For Nigerians older than 65 years, the Nigeria Social Insurance Trust Fund (NSITF) was implemented to protect against income loss from retirement. The National Emergency Management Agency (NEMA) and the National Health Insurance Scheme (NHIS) are risk management programmes that cater for all age groups within the country. However, according to the report, safety net programmes in Nigeria are not very different from poverty alleviation programmes, thus most of the safety nets programmes come under poverty alleviation

implementing institutions. In Nigeria, Care of Poor (COPE) was established as a conditional means of transferring cash to poor households. The scheme is a subsidiary of the social safety net under the supervision of National Poverty Eradication programme. With about twelve thousand families as the pioneer member, it cut across twelve states in Nigeria and Abuja (IPC-IG, 2011).

McIntyre *et al* 2013 classified social safety nets in Nigeria into two groups. The first group helps low-income people that encountered severe illness to respond with healthcare services and offsets the transaction expenses. The associated expenses could include transportation fee to and from medical centres. Unique services rendered by this group defined the schemes, they include postponement of medical care to a later date, credit facilities for emergency and Village -level health scheme. The second group comprises exemption of vulnerable families, free medical care for nursing mothers and children. Relieves patients of health service costs altogether. The objective of this class of safety nets is to offset the total cost of healthcare services. Meanwhile, some of the schemes tend to combine the basic characteristics of the two groups, that is, payment postponement and total offsetting of costs.

Issues of meeting target are a major drawback of public social transfers, given limited resources there is a need for targeting. It has been argued that the most vulnerable group in the society should be the target. Meanwhile, people might decide to oppose targeting whenever there is no clear-cut difference between the economy of the omitted group and the planned assignee. Similarly, there is likelihood of conflict arising if the transfer raises the average expenditure on food and non-food of the beneficiary household that were worse off at the beginning above that of the secluded group (Ellis 2008). Another concern is whether the well-to-do households in the community will buy into the idea of targeting given that they stand to derived little or no satisfaction from such transfer (Pritchett, 2005).

Focussing on social safety nets alone is disadvantageous for several reasons. Foremost, there are other efficient means of managing risk with less transaction costs. They are effective after the materialisation of the risk rather being ex ante, thereby associated with adverse wellbeing.
In addition, social safety is bewildered with severe issues emanating of from inclusion and exclusion (Lustig, 2000). The challenges associated with safety nets calls for the development of approach that integrates issues of deferral and target.

3.4.7 Risk Management Agencies aimed at Reducing Shock and Risk

There is certain insurance specifically designed to serve the poor in the society. According to Brown and Churchill (2000), such insurance must satisfy the following conditions: many individuals or household must have been affected by the risk; minimal external influence on the risky event and there must be possibility of quantifying the loss associated with the negative event. Others include, the event must be free of catastrophic or covariate features; the chances of occurrence of the risk must be known prior the materialisation for accurate estimation of associated negative outcomes as well as the premium must not be too high for poor households to pay. They argued that if the associated loss is greater 40% of households' income then it is catastrophic in nature, the premium would be large and may not be bearable for low-income household.

Examples abound in literature of insurance scheme that failed the aforementioned criteria. For instance, crop insurance scheme established three decades ago across the globe. While the criteria are applicable to the low-income and well to do people in the society, it is however, less a profitable venture to protect the low-income individuals or households. The advocate of fair and affordable premium failed to acknowledge the fact that target mix might not be realised based on low amount contributed. Also, the insurance might have covered a small fraction of the loss associated with the risk that has no significant effect in minimizing the vulnerability of low-income household to shock (Dercon, Tessa and Cesar, 2004). Guiding against the problem of asymmetric information entails the use of several strategies.

In Uganda, Uganda Health Care and Microfinance organisation, stipulated that at least 60 per cent of an organization member must be enrolee before the entire organization can be covered. To avoid moral hazard and adverse selection, various mechanisms are in use. For example, two Ugandan health insurance institutions, UHC and FINCA, require that more than 60 per cent of the members of a group agree to enrol before coverage is extended to a cooperative, trade union, MFI, or to a village bank.

In Benin, Convole of Hope Initiative (COHI) requires an initial minute entry fee from potential member and a mandatory waiting period of 30 days that comes after payment of the initial premium before that can be eligible to healthcare service. In evaluation of risk management

agencies in Nigeria, Olaniyan, Oyeranti, Bankole and Oni, 2003 assessed the performance of a number of institutions namely; UBE, NDE, NAPEP, NHIS, NSITF, NEMA and NACRDB. These agencies are either involved in preventing or reducing the occurrence of risk; and/or mitigating or coping with risk. Universal Basic Education established in 1999 to increase the access of Nigerians to basic education is more of an ex ante strategy in preventing a reduction in human capital development. The aim is to ensure primary education is compulsory for children (poor and non-poor alike) up to junior secondary education level, (Olaniyan *et al* 2004). The performance of record of UBE programmes over its period of implementation showed an increase but at a decreasing rate when compared to the period prior the commencement of the UBE programme, its sustainability was described as encouraging in nominal terms.

Two types of risk, employment and income are the main focus of NDE ((Olaniyan, Oni and Adepoju, 2012; Ekong and Ekong, 2016). National Open Apprenticeship scheme is the most vibrant of all the schemes of the NDE. However, the NDE has only been able to meet less than 20 per cent of total applicants and that male has benefitted than females (Olaniyan, Oni and Adepoju, 2012). More so, NDE programme's sustainability is hinged on government that was in power as it derives it funds mainly from federal government, thus its performance depends on the perceptions of the government in power (Olaniyan, Oni and Adepoju, 2012). In addition, shortages of loanable funds as well as the high rate of default by loan beneficiaries are the major obstacles to the realisation of its programmes (Olaniyan, Oni and Adepoju, 2012). NAPEP is also an ex ante risk management strategy which comprises Youth Empowerment Scheme (YES) and Rural Infrastructural Development Scheme (RIDS). The remaining two are Natural Resource Development and Conservation Scheme (NRDCS) as well as Social Welfare Services Scheme (SOWESS) (Olaniyan, Oni and Adepoju, 2012).

Analysis of the scheme shows that the programmes of the scheme only benefits less than 1 per cent of the target population (Olaniyan, Oni and Adepoju, 2012; Ekong and Ekong, 2016). The poverty alleviation programme has the highest performance rate with the programme benefitting only 0.3 proportion of low-income households in Nigeria (Olaniyan, Oni and Adepoju, 2012). Care of the Poor (COPE) is another safety net programme implemented by the NAPEP in Nigeria, Heavily Indebted Poor Country (HIPC) and Initiative Debt Relief funds were responsible shoulders financing of the scheme (Olaniyan, Oni and Adepoju, 2012). HIPC gives

cash to low-income families that are highly exposed to uncertain negative events, provided adult in the families avail themselves the opportunity of frequent training, their wards acquire formal education and the family makes use of healthcare facilities. The scheme had 12,500 families across twelve states and in Abuja and its environs as the pioneer beneficiaries.

NSITF is a cooperative scheme for employees in the private organisation, to preserve their income against hazard of old age, disability and death owing to risk associated with employment Olaniyan, Oni and Adepoju, 2012. It is an *ex ante* risk management agency that prevent job insecurity, income insecurity, and debilitating physical disability. NSITF provides benefits to participants through: retirement pension, retirement grant, disability pension, disability grant, survivor pension, survivor grant, funeral grant and unemployment benefit. The benefits are exempted from tax. NSITF reveals that its saving increased by about 88.9 per cent between 1990 and 2000, with its contribution to gross national saving declining over the years from 2.4 per cent in 1990 to 0.3 per cent in 2000. This decline in the saving portfolio was attributed to mass investment options of the scheme. Continuous contribution and compliance of members were necessary for the survival and sustainability of NSITF.

NEMA is mandated under Nigeria law to formulate policies relating to emergency management activities and coordinate programmes as well as formulate plan aimed at responding to disasters in Nigeria. The NEMA is primarily an *ex post* risk management strategy, put in place to provide quick emergency response to cases of shocks that have already occurred. The evaluation report shows that in 2003, NEMA received 56 disasters reports from various states of the federation affecting 538,377 people out of which 4,768 lost their lives and 11,230 houses were destroyed (NEMA, 2016). There has been appreciable increase in the nominal fund to NEMA since it was established in 1999 and has recorded increased in activities. It now has functional offices in the entire geo-political zone.

The National health insurance scheme (NHIS) is a social security programme in Nigeria. A risk mitigating and reducing strategies, it was intended to insure the health of the formal sector workers based on funding generated by mandating the workers and management to pay a stipulated percentage of their income as premium. The main objective of NHIS in Nigeria is the provision of affordable healthcare services to an individual and family member to ensure

fairness, equity and unconstraint access to medical facilities (NHIS, 2006). The regulation and scheme of the NHIS allows an enrolee to register maximum of four biological children not older than eighteen years, one spouse. Provided the enrolee contributes his or her premium, the worker is entitling to clearly specified medical returns (NHIS, 2006).

The scheme involves pooling contribution from employer and employee in the formal sector to fund the medical bill of the employee to ensure access to affordable quality healthcare service (NHIS, 2006). Employees in the Federal Government parastatal are the main beneficiary of the NHIS, workers in the public sector of some states are also enrol in the scheme. These people, however, are small proportion of Nigeria population, given that are large percentage works in the informal sector. However, out-of-pocket expenditure represents about 90 per cent healthcare spending in Nigeria.

Moghalu (2004) observes that informal sector worker is at liberty to register with the scheme. This implies that the scheme covers a negligible percentage of Nigeria population since the formal sector employs not more than 10% of the Nigerian workforce. Towards resolving this obvious limitation, the Scheme came up with two programmes to reach the informal sector workers: Rural Community Social Health Insurance Programme (RCSHIP) and Urban Self-Employed Social Health Insurance Programme (USESHIP). These programmes were non-profitable arrangements to cover self-employed individuals within the urban and rural areas respectively which are bound by a common economic engagement (Moghalu, 2004).

Another ex-ante risk measure established in 2004 is National Pension Commission (PenCom). The objectives of the scheme include supervision, regulation and efficient management of retirement or old age pension in Nigeria. A review of the commission 2010 annual report shows that the informal sector has the highest number of enrolees in the Retirement Saving Account. The statistics tended to suggest an increase in the rate of compliance by the private sector, more private sectors are participating relative to the initial number. According to Oni, 2013 private and public enrolment in Retirement Savings Account experienced significant growth as RSA holders that was 4,012,498 in 2009 increased to 4,542,250 in 2010, representing about 13 per cent growth. The private enterprises accounted for a lower percentage of RSA enrolment of about 44 per.

The age distribution reveals youth between the ages of thirty to forty were duly enrolled; they have a significant proportion of 35.24 per cent (Olaniyan, Oni and Adepoju, 2012). This implies the working age population in Nigeria is tailored towards the young able-bodied men and women. Hence, a large proportion of contributors will still contribute for more years before they can call for pension. The statistics further suggests the need for public and private employees to get cover against anticipated and unanticipated shocks.

In general, households capability to preserve food and nonfood expenditure whenever they encountered risk is a function of their resource endowment or assets endowment (Gertler and Gruber, 2002), degree of the negative health condition (Cochrane, 1991), employment status of the person experiencing risks (Wagstaff, 2007), availability of credit facility and the ease of getting loans (Islam and Maitra, 2013), intra-community networks (De Weerdt and Dercon, 2006), groups and unions like cooperative, trade union (Asfaw and von Braun, 2004). Problems still abound that are yet to be resolved with respect to influence of health shocks on household ability to smoothen consumption: the correlation between measure of health challenges and food and nonfood expenditure, the importance of gifts and support from extended family and friends, the role of formal financial institutions as well as influence of hidden or omitted household characteristics and exogenous variables that affect households.

However, this study sheds light specifically on households in Nigeria. The study investigated the influence of coping mechanism employed by family in the face of health shocks that literature seems to dwell less on. The study employs severe illness, disability to family member and demise of household member.

3.5 Summary of Reviewed Literature

Three main theories in the literature that explained how a health shock leave households' consumption unchanged are the full insurance theory, inter-temporal consumption hypothesis and the permanent income hypothesis. The basic supposition of the full-insurance theory is that when households are risk averse, and formal insurance is unavailable, risk pooling within a community could be achieved through a variety of risk-sharing mechanisms such as borrowing from friends and relations, selling of assets, dissaving etc. In other words, an idiosyncratic health

shock of household is completely insured within the community and household only face community level aggregate risk (Mace,1991). Therefore, the growth in each household's consumption will not depend on changes in household resources once the growth of community resources has been controlled (Gertler et al., 2009). The weakness of this theory is that, it assumes households can always insure consumption against shocks. However, this may not be true in the face of major illness. More generally, the more severe the illness, the less affected households will be able to insure consumption. Also, when households have access to credit at reasonable rates they are fairly able to insure their consumption. Household characteristics, such as socioeconomic status appears also to influence consumption smoothing of the households in the face of health shocks.

The permanent income hypothesis (Friedman 1957) postulates that transitory changes in income have no effect on permanent income and hence on actual consumption. The theory predicts that households optimize the time path of consumption by forming an expectation of life-time income. That is, the marginal utility of consumption is constant over time, thus shocks that do not affect permanent income should not affect consumption. In the event of shock, households adopt different inter-temporal strategies that enable them to spread the effect of income shocks on consumption over a period of time. A major challenge in empirical test of the PIH, is that of separating the consumption effects of transitory income from the permanent income. Since Friedman's permanent income hypothesis considers transitory income effects to be analogous to measurement error, the transitory income term gets absorbed into the stochastic term in an econometric model. The estimation strategy often depends on the identification of instruments that are correlated with permanent income that do not directly affect the propensity to consume in relation to transitory income.

Some studies (Hall 1978; Musgrove 1978; Wolpin 1982) employed instruments such as assets, education, lagged income, and long-run average rainfall. The estimation of the consumption smoothing effects of health shocks in this study employs an analogous strategy by using transitory health shocks in the form of severe illness, disability, and death of household member. There is the challenge of measuring health shocks, as they can take many forms and vary in levels of intensity. A true measure for health shock must combine information on the type of health problem with indicators of its suddenness, severity, and duration. Among the common

measures of health shocks in literature is the self-reported health (SRH) status (Asfaw and Braun, 2004), limitations in household's ability to perform activities of daily living (ADLs) (Gertler and Guber (2002); Genoni, 2012), decline in average body mass index (BMI) (Wagstaff, 2005). Other measures are onset of disability (Bales, 2014), death of father (Dhanaraj, 2014), substantial medical expenditure (De Weerdt and Dercon, 2006). However, there are limited representative surveys that track different health facets and severity levels over time.

Also, when measurements are available, endogeneity may be a problem. This endogeneity can arise from measurement errors in health and economics' well-being that may be correlated with characteristics that are often included in models such as age and education. On the other hand, there is unobserved heterogeneity that affects both health and economic welfare. For instance, there may be unobserved factors that affect economic welfare and may be correlated with health. Unobserved factors may be time-invariant or time-varying. It is difficult to establish causality as there is likely two-way causation between health and economic welfare. Therefore, health shocks are not strictly exogenous.

Finally, different econometric specifications have been used to measure the impact of health on welfare. Earlier works use ordinary least squares (OLS) (Kochar, 1995). However, they do not address the challenges outlined earlier with respect to a measurement error bias, an omitted variable bias, and reverse causality. To address reverse causality, some studies (Wagstaff, 2007; Grimm, 2010) made use of lagged specification where a health shock in the previous period affects the welfare in the current period. While this may address reverse causality to some extent, it does not address an omitted variable bias or a measurement error. Other studies (Gertler and Gruber, 2002; Gertler et al., 2009) have used a first difference, which has the advantage of differencing out a systematic measurement error and time-invariant unobserved heterogeneity. However, Strauss and Thomas (2008), argues that there may be a random measurement error or unobserved heterogeneity that varies over time, which is not addressed by first differencing and may be of particular concern for health measures. Similarly, Genoni (2012) used a first difference specification with instrumental variables (IVs) in an attempt to address a random measurement error using physical limitations as health measures.

The reviewed studies show economic costs of health shocks have mixed effects on the consumption of households. While the results vary in the magnitude of the impacts and are

difficult to compare, either because they focused on specific subpopulations, or because varying methodologies (including indicators of health shocks) were used, food and non-food consumption decline in most of the studies analyzed. For example, Dercon and Krishnan, 2000; Gertler and Gruber, 2002; Lindelow and Wagstaff, 2005; Wagstaff, 2007; and Somi et al. 2009). However, the results were ambiguous in some or not statistically significant (Townsend, 1994; Genoni, 2012; Islam and Maitra, 2012; Bales, 2014). Effects of health shocks on consumption have been found to vary across subgroups and health measures. Welfare effects of health shocks have been found to be more pronounced on the poor (Dercon and Krishnan, 2000; Khan, 2014), urban areas (Wagstaff, 2007) and low-educated households (Genoni, 2012).

Evidence suggests that households use a range of informal coping strategies to protect their nonmedical consumption from health shocks. The use of current income and savings are often the immediate household response to financing medical healthcare expenses following health shocks. Flores et al, 2008 finds that households use relatively more of current income to finance moderate levels of medical health expenditures when they are economically better-off or if the healthcare spending is not excessive. Households that experience health shocks, such as hospitalization or major illnesses (cancer, heart disease) tend to rely on borrowing or asset sales to finance their health expenditure (Mohanan,2013). Among poor households, informal borrowing, loans and sale of assets are frequently used to meet OOP healthcare spending due to common illness (Bales, 2014, Khan, 2014; Dhanaraj, 2015). Although households use a variety of strategies to 'cope' with the impacts of health shocks, these appear not be enough to protect their non-medical consumption. The inconclusive evidence on the effect of coping mechanism on households' resource also suggests that such insurance may only provide partial protection against the impact of health shocks on consumption. There is evidence that better off households are able to protect their non-medical spending in response to health shocks (Dercon and Krishnan, 2000).

Also, the effect of health shocks on consumption depends on the type of health problem and type of health service used. For example, Wang et al (2006) found that in China, the adverse effects on consumption due to hospitalization were considerably greater than if a member suffered from a chronic disease but was not hospitalized. As for the differences in outcomes related to the health measures examined, Gertler and Gruber (2002) for instance, find that households are able

to fully insure health shocks as measured by illness symptoms but are unable to insure those measured by limitations in the ability to perform ADL.

3.6 Synthesis of Research Gap

From the empirical studies, particularly those on developing countries, the dominant measure of health shocks was self-reported illness or Change in index of limitations in household's head ability to perform activities of daily living (ADLs). For example, Asfaw and Braun, 2004; and Gertler et al (2009) used self-reported illness of household head; and limitations in husband's ADLs, respectively. However, a single measure of health shocks cannot account for the full effect of shocks on household consumption. Similarly, previous contributions to the literature may have been capturing small and potentially anticipated health events, which may have led others to conclude that there is consumption insurance by using self-reported illness. This study addresses the problem by using the severe illness of a household member, changes in the ability to perform activities of daily living to capture disability, and death of a household member.

In addition, none of the reviewed studies on shocks in Nigeria has attempted to analyze the impact of shocks and coping mechanism using two waves of GHS in Nigeria. This study bridge this gap by employing two waves of General Household Survey (GHS), the 2010/2011 and 2012/2013 to measure the effects of health shocks on household's consumption. The use of panel data provides more accurate inference of model parameters, capturing the complexity of human behavior than using a single cross-sectional data and also allowed for the use of more challenging methodology.

Additionally, most of the studies, focused on direct influence of health shocks on consumption to draw conclusions on household welfare without showing the transmission channels through which health shocks affect consumption but this could be a misleading indicator of the economic consequences of health shocks, especially if consumption is maintained by incurring high debt (Mohanan, 2013), assets depletion (Islam and Maitra 2012) or foregoing human capital investments in children. Following Bales (2014) assessments of the effect of health shocks on various outcomes, this research analyses the impacts of health shocks on the channels through which health shocks affect households' consumption. On the contrary, it can be argued that the

impacts of health shocks on work hours, income, and medical spending reveal nothing about the effect of health shocks on household non-medical consumption. Hence, the relationship between the transmission channels and consumption may differ in a household. This study bridges this gap through investigation of the direct effect of health shocks on households' consumption in Nigeria.

Also, none of the studies conducted analysis along the lines of rural and urban areas. However, due to socio-economic imbalances between rural and urban areas, households tend to have different degrees of vulnerability to health shocks. In an attempt to insure consumption in the face of health shocks they employ different strategies at varying short and long terms costs depending on their resource endowments, access to formal insurance, and intra and inter communities network. In this regard, the consequences of health shocks on non-medical consumption between urban and rural households may differ in a country. This study attempts to fill this gap through a comparative analysis of rural and urban and educated and non-educated households.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND RESEARCH METHODOLOGY

4.0 Introduction

This chapter contains the methodology for the study, it consists of the theoretical framework, the estimated empirical model as well as the sources of data.

4.1 Theoretical Framework

The underlying theoretical framework for the work was based on theory of full insurance discussed in section 3.2.1 initiated by Arrow (1964) as used in Deaton (1992), Townsend (1995) and Sparrow et al.2012. It was developed as follows: assume a community planner, with T number of households strives to optimise the sum of lifetime satisfactions of society (equation 4.1) given the village endowment limits, ambiguity, and distinct weight (equations 4.2 and 4.3). The ambiguity factor defined as $H_{\tau t}$ assumes definite figure (H) at time t and satisfied requirement that the addition of the likelihood of realisation of all conditions (of nature or health status) will be one at a given time t. This implies $\sum_{\tau=1}^{H}\pi(\mathrm{H}_{\tau t})=1$ being $\pi(\mathrm{H}_{\tau t})=1,...H$. In addition, it was assumed the planner, optimises consumption of household j at time t and condition τ $(C_t^j(H_{\tau t}))$ and leisure $(l_t^j(s_{\tau t}))$ and given that consumption and leisure was separable. Therefore, the maximisation problem could be written as:

$$Max\sum_{j=1}^{T}\omega^j\sum_{t=1}^{\infty}(r^j)^t\sum_{\tau=1}^{H}\pi(\mathrm{H}_{\tau t})\left[U^j(C_t^j(\mathrm{H}_{\tau t}),\delta_t^j(\mathrm{H}_{\tau t}))+V^j(l_t^j(\mathrm{H}_{\tau t}),\delta_t^j(\mathrm{H}_{\tau t}))\right] \quad \ldots\ldots (4.1)$$

Equation (4.1) states that the community maximize a weighted sum of individual households' utilities by choosing consumption and leisure optimally subject to the constraints (4.2) and (4.3)

$$\sum_{j=}^{N}C_t^j(\mathrm{H}_{\tau t})\le \bar{C}_t(\mathrm{H}_{\tau t}), \qquad C_t^j(\mathrm{H}_{\tau t})\ge 0 \quad \text{and} \qquad (4.2)$$

$$\sum_{j=}^{N}l_t^j(\mathrm{H}_{\tau t})\le \bar{l}_t(\mathrm{H}_{\tau t}), \qquad 0\le 1_t^j(\mathrm{H}_{\tau t})\le T_t^j(\mathrm{H}_{\tau t}) \qquad (4.3)$$

Equations 4.2 and 4.3 were the feasibility constraints of maximization. Equation 4.2 implies overall consumption cannot be greater than community endowment in each time and at all condition. ω^j denote fixed optimum weight associated of j^{th} family which is assumed to be time invariant and fulfilling $0 \le \omega^j \le 1$ *and* $\sum_{j=1}^{T} \omega^j = 1$. It is the weight each household placed on the utility derivable from consumption. $\bar{C}_t$ is average village or community consumption overtime t and $\bar{l}_t$ is the average leisure in the community, $(r^j)^t$ *is* j^{th} household rate of time preference presumed to be constant for all households, $\pi(\mathrm{H}_{\tau t})$ is the likelihood that τ happens at time t. $\mathrm{U}^j(.)$ *and* $V^j(.)$ are preference equations of the j^{th} household for consumption and leisure correspondingly and assumed to be additive and at least twice differentiable over time and across conditions and δ_t^j is an predilection shock. The Lagrangian for the maximization problem is thus:

$$L = \sum_{j=1}^{T} \omega^j \sum_{t=1}^{\infty} (r^j)^t \sum_{\tau=1}^{S} \pi(\mathrm{H}_{\tau t}) \left[U^j(C_t^j(\mathrm{H}_{\tau t}), \delta_t^j(\mathrm{H}_{\tau t})) + V^j(l_t^j(s_{\tau t}), \delta_t^j(s_{\tau t})) \right] + \lambda_c \left[\bar{C}_t(\mathrm{H}_{\tau t}) - \sum_{j=1}^{T} C_t^j(s_{\tau t}) \right] + \lambda_l \left[\bar{l}_t(\mathrm{H}_{\tau t}) - \sum_{j=1}^{T} l_t^j(\mathrm{H}_{\tau t}) \right] \quad (4.4)$$

Taking the FOC with respect to consumption yielded

$$\omega^j (r^j)^t U_c \left[(C_t^j(\mathrm{H}_{\tau t}), \delta_t^j(\mathrm{H}_{\tau t}) \right] = \lambda_c^* (H_{\tau t}) \quad (4.5)$$

Where λ_c^* denote Lagrange multiplier correlated with endowment constraint in (4.2). Thus, $\lambda_c^*(s_{\tau t})$ is the endowment constraint correlated with consumption divided by $\pi(\mathrm{H}_{\tau t})$

Preferences Specification

Preferences were specified to a class of homothetic functions. The utility function could assume various forms. The exponential and power utility functions were specified.

Exponential Utility Function

If the preference (U) in Equation (4.1) was assumed, it could be presented as exponential preference equation:

$$U^j\left[(C_t^j(\mathrm{H}_{\tau t}),\delta_t^j(\mathrm{H}_{\tau t})\right]=-\frac{1}{\rho}\exp\left[-\rho(C_t^j(\mathrm{H}_{\tau t})-\delta_t^j(sH_{\tau t})\right] \quad (4.6)$$

ρ is the absolute risk aversion term, presumed to be the same for all households and time invariant. It could be shown (equation 4.8) that health shocks cannot impact the change or growth rate of consumption (outcome variable), once total consumption was accounted for. The exponential utility function brought out the implication of risk sharing within the community given that household were risk averse. This reveals that changes in consumption were equalized across households.

Substituting (4.6) in (4.4) for U^j gave the FOC for consumption optimization.

$$\omega^j\exp\left[-\rho(C_t^j(\mathrm{H}_{\tau t})-\delta_t^j(\mathrm{H}_{\tau t})\right]=\hat{\lambda}_C(H_{\tau t}) \quad (4.7)$$

Where: $\hat{\lambda}_C(H_{\tau t})$ is $\frac{\lambda_c(H_{\tau t})}{(r^j)^t\pi(\mathrm{H}_{\tau t})}$. Taking log of (4.7), and aggregating over T households, and solving for the consumption of household j gives:

$$C_t^j=\frac{1}{T}\sum_{j=1}^{T}C_t^j+\frac{1}{\rho}(\log\omega^j-\frac{1}{T}\sum_{j=1}^{T}\log\omega^j)+(\delta_t^j-\frac{1}{T}\sum_{j=1}^{T}\delta_t^j) \quad (4.8)$$

Equation (4.8) indicates that given the social (optima) weight (ω) and the alternative shock (δ) (a discount factor which redistribute income between household experiencing health shocks and household not experiencing health shocks) of families, individual consumption was a function of community level consumption but not a function of household resources. Equation (4.8) specifically shows that after accounting for overall consumption and pareto weight and alternative shifters remaining constant, health shocks would not affect individual consumption. Consumption of household j was below (above) the community average of consumption if the sign of $\log\omega^j-\frac{1}{T}\sum_{j=1}^{T}\log\omega^j$ was negative (positive). Therefore, consumption of family j in period t with condition H yields the village level overall consumption plus constant family unique factor. Equation (4.8) suggests the movement in consumption of household and the

movement in community consumption divided by the number of households must be equalize between two consecutive periods.

Household resources did not enter the model, hence cannot influence the consumption size. However, the optima weights can be associated with member capability and then with member consumption. According to Cochrane (1991), this problem could be solved by taking differences between two FOC (equation 4.8) at time $t+1$ *and* t , since the social weights is presumed to be constant over time. It yields:

$$C_{t+1}^{j} - C_{t}^{j} = \hat{C}_{t+1} - \hat{C}_{t} + \left[(\delta_{t+1}^{j} - \delta_{t}^{j}) - (\hat{\delta}_{t+1} - \hat{\delta}_{t} \right] \qquad (4.9)$$

Where $\hat{C} = \frac{1}{T}\sum_{j=1}^{T} C^{j}$ *and* $\hat{\delta} = \frac{1}{T}\sum_{j=1}^{T} \delta^{j}$ for two periods $t+1$ *and* t .

Consequently, the changes in consumption, net of preference shocks are equalized across individuals. The household fixed effect in equation 4.8 was removed with first difference. In equation (4.9) the social factor and the absolute risk aversion figure did not appear in the consumption equation between consecutive periods $t+1$ *and* t .

Power Utility Function

Risk-sharing assumption that household consumption varied positively with aggregate consumption also holds for an additional preference specification: power utility. This showed that the growth rates of consumption across households were equalized. If it is assume that the utility functions is now in power utility form

$$U^{j}\left[(C_{t}^{j}(\mathrm{H}_{\tau t}), \delta_{t}^{j}(\mathrm{H}_{\tau t}) \right] = \frac{1}{\rho}(C_{t}^{j}(\mathrm{H}_{\tau t}))^{\rho} \exp(\rho \delta_{t}^{j}(\mathrm{H}_{\tau t}) \qquad (4.10)$$

Where all variables were as defined before and $\rho < 1$assuming strict concavity.

Combining equations (4.10) and (4.4) for U^{j} Taking the first order condition

$$\omega^{j}(C_{t}^{j})^{\rho-1} \exp(\rho \delta_{t}^{j}) == \hat{\lambda}_{t} \qquad (4.11)$$

Where: $\hat{\lambda}_{t}$ is the Lagrange multiplier correlated with consumption (λ_{t}) divided by conditions

$(\pi(H_{\tau t}))$ and the preferences shifter $((r^j)^t)$

Again, taking log of equation (4.11), summing over T members, and subtracting at two consecutive periods, yields:

$$\log\left(\frac{C_{t+1}^{j}}{C_t^{j}}\right)=\log\left(\frac{\hat{C}_{t+1}}{\hat{C}_t}\right)+\frac{\rho}{1-\rho}\left((\delta_{t+1}^{j}-\delta_t^{j})-(\overset{\wedge}{\delta}_{\tau+1}-\overset{\wedge}{\delta}_t\right) \qquad (4.12)$$

Where $\hat{C}_t=\exp(\frac{1}{T}\sum_{j=1}^{T}\log C_t^{\,j})$ *and* $\overset{\wedge}{\delta}_t^{j}=\frac{1}{T}\sum_{j=1}^{T}\delta_t^{\,j}$

The fundamental implication of (4.9) and (4.12) is that the first expresses change in consumption as a linear function of the change in mean of overall community consumption. While equation 4.2 denotes growth rate of consumption as linear function of growth rate of the mean of overall consumption. Equations (4.9) and (4.12) imply, other things being equal, the change or growth rate of consumption is a function of mean of community level consumption and not determined by health shocks associated with household.

4.2 Research Methodology

Based on the theoretical framework presented in section 4.1, this subsection includes the specification of estimable model for this study.

4.2.1 Effect of health shocks on transmission channels of consumption

This section specifies a model to examine the impact of severe illness, disability and death on households' hours of work, earnings and medical spending. The effects of health shocks on current consumption and the ability of households to preserve consumption may be a misleading indicator of the economic impacts of such events, especially if consumption is maintained through incurring high-cost debt (Mohanan 2013), selling assets (Islam and Maitra, 2012) or foregoing human capital investments in children. Therefore, an examination of the effect of health shocks on the various consumption channels, in this research, as against focusing on the overall impact on consumption, provides insights on the channel through which health shocks affect households. The following equation is required to estimate the effects

$$\Delta Y_{it} = \delta_1 + \delta_2 d2_t \, \beta h_{it} + \sum_k \gamma_k X_{it} + \alpha_i + \varepsilon_{it} \qquad 4.13$$

This is a regression of the natural log of change in resources (hours of work, earnings) and medical expenses of household i at time t against household unobserved impact or fixed effect (α_i), vector of health shock (h_{it}), confounding variables (X_{it}) and a stochastic error term (ε_{it}). The confounding variables include sex of household's head, age, and the square of age, education, marital status and household size. The health shock variables are death, severe illness and disability. The household fixed effect captures all time invariant unobserved factors such as taste and choices, health status that has the potential of influencing hours of work, household's earnings and medical expenses. A round dummy (d_t) was included in the model to capture the component of outcome variation in period t and remained common to all households. The stochastic term represents random variation specific to a household at a particular point in time and assumed to be independently and identically distributed. It must be noted that equation 4.13 can suffer from correlation in the composite error term $(\alpha_i + \varepsilon_{it})$. For a nonbiased and efficient coefficient, the error term cannot be correlated with regressors. Whenever illness, disability or death is correlated with household specific effect, Ordinary Least Squares (OLS) would yield biased estimator, due to hidden or omitted variable. This study, therefore, used fixed effect model with robust standard error that removed omitted variable bias in estimating the effects of health shocks. It also employed random effect model for robustness.

Another issue with estimating equation (4.13) was error associated with measurement. There were many issues of concern with the assessment of self-reported illness (Gertler and Gruber, 2002; Strauss and Thomas, 1998). An assessment error could be associated with health variables because sickness has no universally acceptable definition; it is subjective and defined relative to the sick person. This was explained in section 3.3. In Nigeria, a greater proportion of the population were engaged in informal sector as evidenced in the General Household Survey data, hence, the possibility of this problem in this study is limited.

Misreporting is an issue connected to individual's earnings and education as the meaning of severe sickness varies among households hinged on resource endowment. Household definition

of health shocks is a function of human capital endowment. With the same or similar health challenges, wealthy or learned households would abstain from carrying out their routine, but low-income households might have to hustle for their living. Therefore, health issues are relatively defined, wealthy or knowledgeable households have higher likelihood of reporting health shocks. That is, health shocks were expected to be endogenous to household or individual hours of work decisions. Notably, socio-cultural context such as region (north or south), religious (Christian, Muslim or traditional), place of residence (rural or urban) or social status could influence what constitute health shocks for households.

Other problems, likely to be associated with the model are discussed in Section 3.3. Given that measurement errors were accounted for, the study used fixed effect model to account for different household specific effect and unobserved characteristic. This is strictly based on the assumption of exogenous regressors, hence the study estimates effect of health shocks on household's hour of work, earnings and medical expenditure.

4.2.2 Health Shocks and Consumption Smoothing

To investigate households' capabilities to smoothen food and non-food consumption when confronted with severe ailment, disability or demise of family member, equation 4.14 was specified. According to the model of consumption smoothening discussed in the theoretical framework, communities will allocate illness, disability or death or share shock in a manner that ensures the Pareto-efficient allocation of shock.This implies that health shocks are pooled at community or village level by risk sharing institutions which helps to equalize the extra satisfaction from consumption among existing households in a community. The specification below tests for the capability of families to smoothen consumption empirically against death, disability and severe illness:

$$\Delta C_{ijt} = \alpha_1 + \alpha_2 H_{ijt} + \alpha_3 X_{jlk} + \beta \Delta C_{vt}^{k} + \varepsilon_{jlt} \qquad (4.14)$$

Equation (4.14) entails regressing the natural log of change in household consumption (food and nonfood)for household j in community l, at time t against change in village level consumption ΔC_{vt}^{k} , health shocks (H_{jlt}) encountered by household j in period t and a vector of

covariates at the household level (X_{jvt}). The composite stochastic term ε_{jlt} entails preference shifters and capture omitted and unobservable households heterogeneity, the stochastic terms are identical, has zero mean and independently distributed. The full-insurance equation suggests thus $\beta = 1$ and $\alpha_2 = 0$, then death, disability and severe illness cannot influence growth in household consumption. It allowed the determination of whether households were vulnerable to against death, disability and severe illness. According to Ravallion and Chaudhuri (1997) the hypothesis $\beta = 1$ and $\alpha_2 = 0$ yields spurious result in the sense the estimates obtained would be too large hence the acceptance of the hypothesis when it should actually have been rejected, this is due to the presence of village round variable in household consumption changes.

Therefore, the following model is specified:

$$\Delta C_{jlt} = \alpha_1 + \alpha_2 H_{jlt} + \alpha_3 X_{jlt} + \delta + \mu_t + (\delta \times \mu_t) + \varepsilon_{jlt} \qquad (4.15)$$

Where: δ represents community specific effects; μ_t is the fixed time effect; $(\delta \times \mu_t)$ is the interaction term of village-time effects; ε_{jlt} denote family-characteristic stochastic term, the stochastic term accounts for the hidden or omitted household peculiarity. The study includes household level covariates (X_{jlt}) to control for cross-household heterogeneity.

The study captures changes in community consumption by including the village fixed effects (δ). The community fixed effects, prevent biased estimates that may emanates from correlation between neglected or hidden community level features and the stochastic term. The study accounted for common shocks experienced by all the families surveyed. Interaction of time effects and community specific dummy ensures the study control for changes in village level characteristics over a period of time. Covariate shocks were controlled for as well. If community is able to insure households' consumption through the informal coping mechanism , then household consumption would not respond to changes in H_{jlt} death , disability or severe sickness of a member, once total community endowment were accounted for, $\alpha_2 = 0$. That is, if death, disability or severe sickness were fully insured, the variation or growth of households' food and non-food expenses is pattern after variation or growth of overall community consumption and the coefficients of village level total food and non-food expenses variables must be approximately one.

4.2.3 Definition of Variables included in the Model

H_{jlt} denotes health shocks encountered by household j in community l at period t. Three measures of health shock were utilized in this work. These are severe illness, disability and death. Severe illness relates to households that reported illness to one or more household members that lasted for at least a period of 14 days. The illness should be so severe to prevent household from carrying out daily routines. Death to household member and disability owing to injury or accident were two other measures of health shocks in this study. Death to household member in the survey was reported by households whose member died not more than two years, prior the survey. Disability was captured with respect to difficulty in seeing, hearing, memory failures, walking, not able to care for one-self. Others are difficulty associated with concentrating and recalling. For these, to be classified as health shocks, it must had incapacitated the households for a period of two weeks. All the variables were measured at the household level.

Also, included were confounding variables designated as x_{jlt}. These were independent variables that vary with time. They are sometimes associated with dependent variables and with the key explanatory variables disability, severe illness and death. They were observable time varying household features, such as number of person per household and specific household characteristics. They served as covariates in the consumption model and comprise the following: household age, the square of household age, sex structure, marital status variables and household size were included to capture changes in household composition. Socioeconomic variables include educational level. The fixed effects dummy accounts for unobserved and omitted variables that constant over time. The analysis was done at household level, medical expenditure, earnings, food and non-food consumption were expressed in per capita unit. The description of the dependent and independent variables are discussed in tables 4.1 and 4.2

Table 4.1: Description of Dependent Variable

Variable	Description
Hours of work	The number of hours worked in the last seven days in a given household
Medical expenditure	Per capital health expenses in a month
Earnings	Per capital earnings in a month
Food consumption	Household's Per capital expenditure on food consumed in seven days
Nonfood consumption	Household's Per capital expenditure on nonfood items in a month

Source: Compiled by the Author

Table 4.2: Description of Explanatory Variables

Variable	Description
Age	Average of household member age
Age square	The square of average age of household member
Sex	Sex of household's head (Male=1)
Marital status	Marital status of household's head (Married=1)
Household size	Average of individuals in each household
Primary	At least a household member completed primary education (=1)
Secondary	At least a household member completed secondary education (=1)
Tertiary	At least a household member completed tertiary education (=1)
Number of nights	Number of nights spent in the hospital within 30 days.
Death	Death of any member of household in the past 2 years (=1)
Severe illness	Household that reports illness of minimum of 2 weeks duration (=1)
Disability	Disability that prevents member from carrying out normal activities (=1)
Asset depletion	Household that sold asset to insure consumption (=1)
Borrowing	Household borrowed money to finance consumption (=1)
Other strategies	Based outcome
Asset-death	The interaction of the probability of selling assets as coping strategy and death of any member of the household
Borrowing_death	The interaction of the probability of borrowing as coping strategy in the face of death and death of any member of the household
Asset_disability	The interaction of the probability of depleting asset as coping strategy and disability to any member of the household
Borrowing_disability	The interaction of the probability of borrowing when faced with disability and disability to any member of the household
Asset_Illness	The interaction of predicted probability of selling asset and any household that reports illness
Borrowing_Illness	The interaction of predicted probability of borrowing and any household that reports illness.

Source: Compiled by the Author

4.2.4 A-Priori Expectation

A prior, severe illness, disability and death would be expected to have inverse adverse effects on the households' consumption to reflect a drop in the working hours, earnings. However, severe illness and disability should be associated with rise in medical expenditure, other things equal. Meanwhile, the relationship between death and the outcome variable (change in food and nonfood consumption) cannot be readily predicted, it depends on whether the dead member of the household is a net contributor or net consumer. The death of a net contributor would bring about reduction in household's consumption and vice-versa. Therefore, the relationship is ambiguous.

4.2.5 Likelihood of using Coping Mechanism

This subsection focused on the chances of utilizing any of the coping strategies by households when they encountered severe sickness, disability and death. Coping strategies were categorized into three groups: sales of assets, borrowing and "other strategies" to weather the outcomes of sickness, disability and death. A multinomial Logit (equation 4.16), was used to explore them:

$$Cop_{it} = \alpha_1 + \alpha_2 d2 + \alpha_3 d3 + \beta S_{ijt} + \sum_{\tau} \gamma_t X_{ijt} + \varepsilon_{ijt} \qquad \ldots\ldots\ldots \quad (4.16)$$

Where: Cop_i denote a categorical dependent variable, representing either sales of assets or borrowing used in financing costs of health care for household j. The variables were defined relative to the base outcome variable (other strategies). The dependent variable representing coping measure was presumed equal to 1, if a particular strategy is chosen and 0, otherwise. H_{jlt} indicates any of the measure of health shocks encountered by households. The model has X_{jlt}, a set of unobservable household specific preference. ε_{ijt} is the disturbance terms representing omitted and unobservable household specific preference.

Equation 4.16 is assumed to be the outcome of subtraction between two consecutive years. Therefore, revealed and unperceived time-invariant variables that affected the outcome variables are differenced out.

4.2.6 Effect of Coping on Household Consumption

Apart from investigating the probability of choosing coping strategy, the study employs consumption equation (4.15) to investigate the impact of chosen coping measure on food and non-food consumption. To investigate the impacts of coping strategy on the consumption of household, the predicted probability of using a coping strategy (from equation 4.16) and their interactions with health shocks were introduced in the equation to yield equation(4.17).

$$\Delta C_{ijt} = \alpha_1 + \phi(h_{jit} * COP) + \alpha_3 X_{ijk} + \delta + \mu_t + (\delta \times \mu_t) + \varepsilon_{ijt} \qquad (4.17)$$

Equation 4.17 is the regression of the interaction term of predicted probability and measure of health shocks on household consumption.

4.3 Data Descriptions and Source

The study utilized survey data obtained from the Nigerian General Household Survey (GHS) developed by the National Bureau of Statistics (NBS) in collaboration with World Bank. GHS survey started in 2010 with development of the first wave. It surveys about 5000 Nigerian households that span rural and urban areas. The second wave was conducted in 2013, with the sampled households. The GHS data combine the components of the poverty survey instruments; this includes the Core Welfare Indicator Questionnaire (CWIQ) called the Harmonized Nigeria Living Standard Survey (HNLSS) and the Nigerian Living Standard survey (NLSS) known as the HNLSS. The GHS data covered socioeconomic indicators such as demographics, education, health labour and hours of work, expenditure on food and non-food consumption, family earning activities, other sources of household income, shocks, informal coping mechanism and assets.

The same sampling frame was used for GHS-panel, it comprised 774 LGAs each. The sample frame was constructed into replicates, each state in Nigeria and FCT had 60 Primary Sampling Units (PSUs). A total of 2,220 Enumeration Areas (EA) was surveyed. Ten households were drawn from each EA, hence a sample size of 22,200 households across the federation. The 5,000 households were randomly selected from 500 EAs to form the panel component. Meanwhile, 4,916 households completed the interviews in the first Wave. Given the panel nature of the survey, some households had relocated from their place of residence as at the time the Wave 2

was conducted. This gives rise to discrepancy in the number of households between the two waves. Precisely, 4716 households completed the interview during the Wave 2.

General population distribution revealed that the survey comprised 50.62% males and 49.38% females. Information on age distribution showed that the population comprised more of those in the working age. Persons aged 0 to14 years accounted for 42.2% of the population. Individuals aged 15 to 64years (working age population) comprised 52.5% of the populace and those aged 65 and above made up 5.1%. Area distribution of persons shows that the Nigerian population was predominantly made up of rural dwellers (74.88%). Urban residents accounted for 25.12% of the population. In terms of education, individuals were asked to state their highest form of educational attainment. The survey revealed highest literacy rates were reported for those whose age was between 15 to 19 years. 86 percent of the male headed households were educated, while 85 percent of the female population was literate.

The school enrolment rate shows that 71% of boys were in school, 32% of girls were neither enlisted in primary nor secondary school. Health data provides information on the household health history that lasted minimum of 14 days. They investigative if households had illness that lasted at least for 14 days, if they were incapacitated as a result of the illness, cost of medication and total health bills. For all age groups, the GHS had an overall of 332,937 individuals. A total of 24,849 (7.46%) individuals reported one form of the 21 illness types recorded during the survey. Persons with disability accounted for 3.07% (10,221). Households were questioned with respect to their ability to see, hear, memories and concentrate, walking, caring for oneself as well as assimilation. Only those that were incapacitated by the deteriorated condition were included. Therefore, disabilities associated with walking, seeing and hearings were included. Overall, 11.45% of households were incapacitated by over the study period. Household' s head were asked about the where about of those that were present in the visit but no longer in the household as at the second visit. Overall, over a two-year period, 1323 of sampled households had to deal with death.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

The chapter provides information on distribution and descriptive statistics of variables used in the study. Estimates of fixed and random effects model of health shocks on household resources, empirical results on test of the full insurance theory, estimates of multinomial logit regression analysis of coping mechanism and subsequently, its impacts on consumption are also presented in this chapter.

5.2 Incidence of Reported Shocks by Household and Location Characteristics

The distribution of households in the two waves of the General Household Survey (GHS) is presented in Table 5.1. The prevalent health shocks are death of the household head, death of someone who sends remittance home, severely ill household member. The shock with the lowest incidence according to findings is disability of any household member. The reported figures show that a high number of households residing in the rural area for wave 1 experienced health shocks. About 72% of the surveyed households were from the rural areas while urban constituted about 28%. This result could be attributed to the high rate of poverty in the rural areas, which increased rural household vulnerability to health shocks. This implies that the rural households were worse off in terms of health and life cycle than urban households. There was no gender differential in reported cases of health shocks, the gender distribution of health shocks among household shows that about 50.5% were female, while 49.5% were male. This shows that male headed households were a little less vulnerable to health shocks relative to female headed households.

Table 5.1: Household Level Descriptive Statistics: Demographic Variables

Variable	Mean	Standard Deviation
Age	24.03903	10.74768
Log of age_square	6.201718	0.764395
Households size	8.076836	3.573091
Male	0.495187	0.499985
Female	0.504813	0.499985
Married	0.361922	0.174996
Single	0.638078	0.174996
No education	0.002607	0.043049
Primary	0.422547	0.401883
Secondary	0.232988	0.310244
Tertiary	0.341858	0.421497
Urban	0.276869	0.447459
Rural	0.723131	0.447459
North Central	0.173955	0.379077
North East	0.197902	0.398424
North West	0.21652	0.411879
South East	0.13552	0.342284
South South	0.152273	0.359291
South West	0.12383	0.329393

Author's computation from GHS, 2011, 2013

As regards household size, the average was eight persons per household, the minimum number of person per household was 1, while households with the highest size, had 31 persons. More revealing was the distribution of incidence of health shocks by educational level of household head; it shows the proportion of health shocks were higher among the households whose head only attained primary education. Households whose heads were with only primary education recorded the highest incidence of health shocks, about 42%. Reported cases of health shocks were lowest among those whose heads were without formal education. This shows that households without education reported less cases of health shock in the period studied. The distribution of health shocks among married and single shows that the unmarried individuals were more vulnerable to health shocks. About 64% of those reporting health shocks were "never married" while the remaining proportions were married.

The geographical distribution of the households reporting health shocks reveals highest proportion in the North-West zone of the country. Approximately 22% of the households reported health shocks. This was closely followed by households in North-East (20%). Households in the South-West had the lowest cases of health shocks. Overall, northern households recorded more cases of health shocks than households in the south. Similar results were obtained when the data were stratified by waves. In summary, household location and characteristics explained the relative incidence of health shocks within the study. The relative incidence of shock results revealed that female headed household reported more of shocks than their male counterparts. More so, the rural households experienced more of health shocks than the poor households.

When stratified along regions, the characteristics of the households differ depending on region. The proportion of urban household members educated was greater compare to rural households. While the urban households tended to have smaller family relative to rural counterpart, they recorded lower proportion of married persons relative to the rural population. Table 5.2 reveals that 35.8% of the urban households who reported health shocks were married, while the remaining (64.2%) of the population were not married. Also, about 50.9% female members of the urban households were vulnerable to health shocks, while 49.1% were male. Table 5.2 further shows that the main educational qualification of the urban households' member with health shocks was tertiary education at about 45.2%. Only 30.2% of the households that reported

health shocks had primary education and about 24.4% of the households had secondary education. Those that reported health shocks in the urban area were educated (see Table 5.2)

Table 5.2: Urban Household Level Descriptive Statistics

Variable	Mean	Std. Dev.
Age	25.2417	11.22762
Log of age square	6.297936	0.773414
Households size	7.42608	3.621978
Male	0.4912787	0.499954
Female	0.5087213	0.499954
Married	0.3582187	0.191085
Single	0.6417813	0.191085
No education	0.0023377	0.041807
Primary	0.3017184	0.3648
Secondary	0.2443266	0.316113
Tertiary	0.4516172	0.435863
North Central	0.1531336	0.360138
North East	0.1092265	0.311942
North West	0.1453146	0.352439
South East	0.1202935	0.325324
South South	0.1613136	0.367842
South West	0.3107182	0.462816

Source: Author's computation

The demographic characteristics of the rural households were presented below. The proportion of rural households educated who reported health shocks was lower than that of the urban households. However, the rural households had higher proportion of married persons who reported health shocks relative to the urban households. Statistics suggests that 36.33% of the rural households who reported health shocks were married, while the remaining 63.37% of the vulnerable households were single. For the rural households, about 50.3 per cent of families who reported health shocks were female, while the remaining 49.7% were male.

An examination of households in rural areas across education levels, show more cases of health shocks among households with primary education (46.9%), follow by those with tertiary education (30.0%). Only 22.9% of the households that reported health shock had secondary education.

Generally, education attainment was lower in rural than in urban areas. Hence, the maximum education attained was higher for urban dwellers. It was clear from Tables 5.2 and 5.3 that household marital status differs across regions. While urban and rural areas have about the same proportion of male and female households reporting shocks. Meanwhile, rural households had eight people who reported health shocks, the urban region had seven household members. Therefore, there was no glaring gender gap between urban and rural areas distribution of health shocks.

Table 5.3: Rural Household Level Descriptive statistics (Demographic)

Variable	Mean	Std. Dev.
Age	23.57855	10.52209
Log of age_square	6.164878	0.757703
Household size	8.325995	3.522594
Male	0.4966839	0.5000005
Female	0.5033161	0.5000005
Married	0.3633397	0.1684121
Single	0.6366603	0.1684121
No education	0.0027103	0.0435158
Primary	0.4688088	0.4057972
Secondary	0.2286465	0.3078638
Tertiary	0.2998345	0.4081339
North Central	0.181927	0.3857933
North East	0.2318534	0.4220256
North West	0.2437822	0.4293727
South East	0.1413504	0.3483907
South South	0.1488117	0.355911
South West	0.0522752	0.2225867

Source: Author's computation from GHS

5. 3 Distribution of Health Shocks in Nigeria

Table 5.4 shows the distribution of health shocks among affected households in Nigeria. About 20% of the households responded positively to have had severe illness. The remaining 80% did not have any illness during the four weeks. The small proportion could be attributed to the short period the respondents were asked to indicate whether they were ill or not.

Table 5.4: Household reporting Health shocks in Nigeria 2011

VARIABLES	Mean	SD
Number of nights	7.327	8.906
Medical Expenditure	2,450	6,943
Out-of-Pocket	1,081	11,922
Severe illness	0.200	0.400
Not ill	0.800	0.400
Stop daily activities	0.463	0.499
Did not stop_activities	0.537	0.499
Admitted	0.0334	0.180
Not_admitted	0.967	0.180
Disability	0.792	0.406
No_disabiliti	0.208	0\.406
Death of household member	0.0849	0.279
No death incidence	0.915	0.279

Source: Computation from GHS 2011 Data

About 79% of households that reported one form of disabilities indicated that the disability kept them from doing normal activities during the study period. Besides, about 8% of the households reported death in a year. Similarly, persons who were admitted spent at least seven nights in the hospital. The average medical expenditure was 2450 naira weekly, this implies many of the households did not allocate a large proportion of the household budget to healthcare expenditures. This may be due to high number of people who did not patronize formal healthcare unit.

Descriptive statistics on health shocks among households reveal 15% of households from the 2012/ 2013 survey reported that some members were sick in the past four weeks as against 20% in the 2010/ 2011 survey. About 53% of the households lost some days due to illness in the past 28 days. On the average, the figures show that total medical expenditure increased from 2, 450 naira in 2010/11 to a substantial 3, 310 naira in 2012/13. On the contrary, out-of –pocket (OOP) expenditure varied from 1,080 in the 2010/11 survey down to 730.3 naira in the 2012/13 survey. Findings further revealed that OOP was a major component of medical expenditure in Nigeria.

Table 5.5: Distribution of Health Shocks among Households in 2013

VARIABLES	Mean	SD
Number of days	9.433	11.67
Number of nights in the last one month	9.139	13.76
Medical expenditure	3,310	19,236
Out-of-pocket	730.3	3,695
Severe_illness	0.150	0.357
Absence of illness	0.850	0.357
Stop activities	0.525	0.500
Stop activities(NO)	0.475	0.500
Disability	0.496	0.502
No_disability	0.504	0.502
Deaths	0.0727	0.260
No_death	0.927	0.260
Admitted	0.0261	0.159
Not_admitted	0.974	0.159

Author's computation from GHS 2013

The major causes of death in Nigeria were identified in this study. Illness accounted for 87.30% of death among sampled households. Accident or injury to household member accounted for about 4.69% of this health shock (death) and murder accounted for 2.27%. Overall, over a two year period, 1323 of sampled households had to deal with mortality. The number of dead tends to be on the high side, probably due to the nature of job Nigerian households engaged that is often physically demanding.

Table 5.6: Causes of Death in Nigeria

	Freq.	Per cent
Illness	1,155	87.30
accident/injury	62	4.69
Murder	30	2.27
Suicide	1	0.08
Those that died while sleeping	26	1.97
other	49	3.70
Total	1,323	100.00

Author's computation from GHS

Households were questioned with respect to their ability to see, hear, memorise and concentrate, walk, caring for oneself as well as assimilation. Only those that were incapacitated by the deteriorated condition were included. Therefore, disabilities associated with walking, seeing and hearings were included. Overall, 11.45% of households were incapacitated over the study period.

Table 5.7 Mean and Standard deviations of some of the Disability faced by Households

Variable	Mean	SD
Walking Disablity	.9158781	.2775719
Difficulty in seeing	.9792635	.1425016
Poor hearing condition	.9902813	.0981035

Author's computation from GHS

5.4 Households Coping Strategies in Nigeria

This subsection of the work reveals informal strategies employed by households in response to health shocks in Nigeria, whenever households incurred substantial medical expenditure, experienced fall in earning due to reduced hours of work. Coping strategies were categorized into three broad groups; assets depletion, borrowing and other strategies. Borrowing could be from friends, relations, obtaining salary advance, buying goods in advance. Asset depletion comprises sales of land, sales of livestock, sales of other properties and falling back on savings. The other coping strategies were grouped together as other strategies.

Nigerian households generally adopt mechanisms such as borrowing from friends and families, dissaving as well as sale of assets to combat health shock effects. Approximately 7.77% households borrowed from family and friends in the advent of health shock as a coping mechanism. About 4% of households purchased goods on credit and another 1.25% delayed payment obligations. Meanwhile, 7.53% of households reduced food consumption and 1.39% reduced the consumption of non-food items.

Table 5.8 Coping Strategies of Households affected by Health Shocks in Nigeria

Depletion of Assets	Freq.	Per cent
Sale of livestock	456	15.82
Sale of land	81	2.81
Sale of other properties	122	4.23
Sent children to live with friends	56	1.94
Withdrew children from school	59	2.05
Relied on savings	35	1.21
Borrowing		
Borrowed from friends & family	224	7.77
Took a loan from a financial institution	16	0.56
Credited purchases	104	3.61
Delayed payment obligations	36	1.25
Sold harvest in advance	28	0.97
Took advanced payment from employer	3	0.1
Reduced food consumption	217	7.53
Reduced non-food consumption	40	1.39
Received assistance from NGO(s)	2	0.07
Change of residential area for work	29	1.01
Received assistance from government	26	0.9
Covered by insurance policy	2	0.07
Did nothing	848	29.42
Others	41	1.42

Author's computation from GHS

As shown, the most prominent response was “did nothing”. Since the measure of health shocks included severe illness and disability that prevents households from doing their daily routine. The most common strategy was depleting assets or savings, followed by borrowing and relying on family network. Other coping measures were receipt of assistance from NGOs, government and insurance coverage (1.98%), reduction in food consumption (7.53%). Depletion of assets was the most used strategy, followed by borrowing. The mean and standard deviation of food and non-food consumption were presented in Table 5.9. Average individual food consumption increased from 400 naira in 2010/11 to 530 naira in 2012/13. This figure was as expected, in line with rising prices of food items over the period. There was significant variation in non-food consumption, on average; it increased from 372.2 naira in 2010/11 to 577.4 in 2012/13.

Table 5.9: Descriptive Statistics (Consumption and Coping Mechanism)

Variables	2012/2013		2010/2011	
	Mean	SD	Mean	SD
Food consumption	530.1	849.5	400.6	683.7
Non-food consumption	577.4	1,332	372.2	706.5
Asset depletion	0.232	0.423	0.198	0.399
Borrowing	0.167	0.374	0.184	0.388
Other strategies	0.601	0.491	0.617	0.486

Author's computation from GHS

Table 5.9 further shows about 19.8% of households on the average depleted assets to mitigate the costs of shocks in 2010/11, while about 18% of the households borrow to finance consumption. The most commonly used strategies were those classified as others. This indicates that credit markets in Nigeria were not well-developed or not readily accessible to poor households. Also, households had little assets to sell when faced with health shocks.

5.4.1 Mean and standard deviation of key variables

Average and deviation from the mean for the main outcome variables and socioeconomic variables are shown in Table 5.10. Statistics show that, the average work hours for seven days were about 18 hours. The mean per capita household earned income was 5474 naira. Given the poverty level, households seem to commit a greater per cent of income on consumption. The per capita household expenditure on food consumption for a period of seven days was 1471naira on the average with a wide range among households (N2628). While the mean expenditure on non-food items for a period of seven days was N1995. Approximately 49 percent of sampled households were headed by man and 33 per cent were married.

Table 5.10: Descriptive Statistics of Analysis Variables

Variable	Average	Std. Dev.
Age	27.87127	19.70011
HH head is male	0.4928204	0.2165835
Hh head is married	0.3339153	0.2375333
Hh_size	7.083028	3.62789
Head never attended school	0.002021	0.0408128
Head completed primary	0.3437624	0.4066806
Head attended secondary	0.2392448	0.338429
Head attained tertiary	0.4149719	0.4540395
Severe illness	0.1619531	0.2659048
Disability	0.4997384	0.4960603
Hh_died	0.0401201	0.196262
Number of days sick	3.515918	10.04673
Number of days lost to illness	3.407818	10.08391
Medical expenditure	1520.242	6943.991
Per capital earnings	5474.903	36220.09
Per capitaFood expenditure	1471.196	2628.027
Hours of work	18.19584	14.66983
Per capita nonfood expenditure	1995.368	85525.67
Illness_asset	0.0417674	0.1346726
Illness_borrow	0.0341212	0.1295753
Illness_other	0.1069119	0.2090612

Tabulated by author from survey data

5 .5 Effect of Health Shocks on Household Resources

Health shocks has two economic consequences, namely increased medical expenses and loss of worked hours and corresponding loss of earned income leading to a fall in consumption. In section 5.5, results showing costs in terms of worked hours, income and medical expenditure were presented. Section 5.6 discussed the findings of influence of health shocks on household resources and tests the hypothesis of full consumption insurance. Finally, section 5.6, shows the result of the coping measures employed and investigated influence of chosen mechanism on consumption.

5.5.1 Effects on Worked Hours

The regression for hours worked included controls for working-age, age-square, gender, educational level attained, and marital status. The result from the random model estimations were shown in columns 4 to 6 for disability, severe illness and death of any household member. The last column reveals households that reported severe illness had an inverse impact on hours of work. Worked hours reduced owing to severe illness of any household member. Similarly, column 5 shows that, death was negatively associated with hours of work. Death reduced worked hours in seven days declined by 180minutes. Meanwhile, only severe illness was statistically significant. This result was consistent with the findings of Bales (2014) which used adult's illness and demise of any aged person in the family. This result implies intra-network of family support tended to make up, working extra hours when confronted with severe illness, disability and death of income earners.

Table 5.11a: Impact of Shocks on Household's Hours of Work

VARIABLES	FE	FE	FE	RE	RE	RE
Disability	0.754**			0.0807		
	(0.310)			(0.0644)		
Death		-0.154			-0.00312	
		(0.214)			(0.0715)	
Severe illness			-0.939**			-0.252***
			(0.469)			(0.0861)
Observations	717	1,917	1,967	717	1,917	1,967
Number of hhid	683	1,794	1,839	683	1,794	1,839

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
The coefficient in the table emanates from different regression equation. All covariate are shown in Appendix A-4 .
Source: Author's computation.

The coefficients from fixed effect equation confirmed the findings of the random effect model. Severe illness and death were inversely correlated with hours of work but only severe illness was statistically accepted. This implies severe illness was characterized by reduced number of hours of work among families.

Columns 1 and 4 present the estimated coefficients and standard errors when health shock was measured as deteriorations in the ability to perform daily activities. Findings show positive relationship between worked hours and deterioration in the activities of daily living, and the result was significant for the fixed effect model. This suggests disability increases hours of work. Meanwhile, the estimated coefficient for the random effect was positive but not significant. These results show that disability might not necessarily reduce the households' worked hours. For instance, children, women and relatives will have to modify pattern of work to forestall the potential decline in earnings of the member incapacitated, there may also be an increase in the number of hours required to complete a given task.

Among the covariates, the mean age of family's head had a direct and acceptable impact on hours of work– at infant age, hour of work was low, but as household member advanced in age, the contribution to labour hours increased, it rises up to a given age, and begin to decline thereafter, as evidenced by the negative relationship between hours of work and the square of age. Married households head had a negative, but meaningful effect on the hours of work compared to households whose head were not married. In the event that a married household head experienced severe illness, the hours of work per week declined by 26% compared to when the head of the household never married.

In the event of death of a married household head, the result was also negative. One percent change in the number of death was significantly associated with 29% reduction of work hours of the household. This shows that remaining household members were either not working or working lesser hours. All educational qualification of the family's head show an inverse association with the hours of work relative to those with noeducation, although households whose head attained tertiary education only has significant impact on worked hours. Overall, heads that attained formal education worked less hours than the heads with no education. Findings from the study further suggest that having higher educational attainment reduced the

number of work hours when faced with health shocks.

5.5.2 Effects on Household Earnings

Table 5.11b shows the effect of health shocks on households' earnings. The estimation for the random and fixed specification for changes in household income was reported. The table reported coefficients for the three measures of health shocks: disability, death and severe illness. The coefficient emanates from different regression estimation, although from similar equation.

Table 5.11b: Effect of Severe-illness, Disability and Death on Household's Earnings in Nigeria

VARIABLES	FE	FE	FE	RE	RE	RE
Disability	-0.233			-0.161		
	(0.445)			(0.114)		
Death		-0.412*			-0.200*	
		(0.218)			(0.122)	
Severe illness			-0.191			-0.660***
			(0.234)			(0.142)
Observations	748	2,302	2,320	748	2,302	2,320
Number of hhid	699	2,030	2,047	699	2,030	2,047

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All covariate shown in Appendix A-3.
Source: Author's computation.

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Row 1 shows that disability was negatively associated with income despite showing a positive relationship with work hours. Findings show no meaningful impact on household's earnings due to disability. The result from the fourth row (random effect) further suggests an effect of disability was not significant in explaining the change in the income of household. The second row shows the results for change in household's earnings as a result of the death of any household member. The findings show that death was negatively associated with households' earning for the random and the fixed effect models, and both coefficients were statistically significant in reducing households' income[6]. According to the fixed effect estimates, monthly household income declined by 41% by way of death of any family member.

The findings in row 3 were similar in terms of sign- both estimates of the random and fixed effect models had negative effects on household 'earnings. However, only the random effect model estimate was statistically significant in reducing households' income in the face of severe illness. This suggests that other individuals in the family were unable to perfectly adjust labour income in the face of acute illness. The findings show that severe illness of any household members substantially and significantly reduced household income by 66% per month. The negative and statistically significant effect of death and severe illness on households' income indicates that household faced with health shocks could not fully adjust income.

5.5.3 Effects of Health Shocks on Medical Spending

As expected, medical spending increases during health shocks. Table 5.12 shows the influence of health shocks on household medical spending. The result of the RE model shows death positively associated with healthcare, but did not have statistical significant effect on medical spending. The result confirmed that the dataset did not fully capture expenditure on medication and other related cost of a dead member prior the demise, only the medical care of household member alive was recorded. Meanwhile, fixed effect model shows that death was positively associated with medical spending and statistically significant. The result seems to suggests an increase in medical expenses for the households due to death, this makes sense because such

[6] We multiplied the coefficient by 100 as income is in logarithm form (log - lin) and health shock measure was in absolute value (Gujarati, 2003).

households might have incurred medical expenses before death of the household member and might include funeral costs.

Table 5.12: Effect of Health Shocks on Household's Medical Expense

VARIABLES	FE	FE	FE	RE	RE	RE
Disability	0.430*			0.301***		
	(0.235)			(0.0825)		
Death		0.782***			0.114	
		(0.223)			(0.0917)	
Severe illness			0.902***			1.181***
			(0.282)			(0.124)
Observations	1,061	2,899	2,946	1,061	2,899	2,946
Number of hhid	973	2,507	2,547	973	2,507	2,547

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly. Individual coefficient in the table emanates from different regression equation. All covariate shown in Appendix A-5.
Source: Author's computation.

On the contrary, the effect was sizable and significant for households experiencing severe illness that increased medical expenditure in 30 days. The effect was highly consistent with RE model. The significant and direct effect of severe illness on medical spending indicates that other members of the household accounted for a given fraction of the medical expenditure. The finding was in line with the work of Wagstaff (2007) for households in Vietnam using death of a household member. Similarly, disability had a direct relationship with medical spending and highly statistically significant for both coefficients' estimates, translating to about 43% and 30% increase in medical expenditure for fixed and random affects methods, respectively

5.6 Effects of Health Shocks on Household Resources (Education and Regions)

The small resource responses could be attributed to the fact that the study considered a large sample with different characteristics. The analysis as presented did not account for the disparity or dichotomy among households with varying levels of exposure to health shocks. The following subsection, therefore, presents stratified results across regions (urban-rural) and by educational attainment (primary, secondary and tertiary). A household was certified educated if at least a member attained primary education.

5.6.1 Effects of Health Shocks on Household Resources (Urban and Rural areas)

The effects of disability for urban and rural households were shown in Table 5.13. It reveals the influence of health shocks on worked hours of rural dwellers was significant. Rural households mainly engage in informal sector of economy. Finding shows disability was positively associated with hours allocated to work in seven days in the rural area, this might be due to intra-household network or increase in the number of hours required to complete a given task.

Table 5.13: Effect of Disability on Household's Resources

	Urban area			Rural area		
VARIABLES	**hour_work**	**Earnings**	**med_exp**	**hour_work**	**earnings**	**med_exp**
Disability	0.175	-0.475	0.910	0.892**	-0.369	0.394
	(0.162)	(0.612)	(0.899)	(0.358)	(0.502)	(0.279)
Observations	178	246	288	539	502	773
Number of hhid	170	230	269	513	469	704

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All covariate shown in Appendix A-6.
Source: Author's computation.

The result suggests intra-household labour adjustment was able to compensate lost worked hours for the rural sample. Meanwhile, disability was not significant in explaining changes in hours devoted to work in the urban areas, though it was positively associated. The result also shows that household's income was negatively associated for both sub-samples, but the effect was not significant due to disability. Besides, household's health expenses were positively associated for urban and rural samples but the effect was not significant for both samples.

Table 5.14: Effect of Death and Severe illness on Household's Resources

		Urban Area		Rural area		
VARIABLES	Hour_work	Earnings	med_exp	Hour-work	earning	med_exp
Death	-0.327	-0.135	0.545	-0.0621	-0.510*	0.861***
	(0.603)	(0.468)	(0.458)	(0.324)	(0.293)	(0.254)
Severe_illness	-2.113**	0.0796	1.187**	-0.770	-0.325	0.917***
	(0.923)	(0.466)	(0.594)	(0.493)	(0.394)	(0.315)
Observations	557	881	937	1,360	1,421	1,962
ber of hhid	524	782	824	1,270	1,250	1,686

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-2; A-4 & A-6
Source: Author's computation.

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Column 5 in Table 5.14 reveals the influence of demise of household member on the variation in household incomes for the sampled households in rural area. The findings show significant reductions in earnings for death. This might be associated with fall in hours of work or returns to workers, probably from both. The growth rate in earnings was 51%, lower in response to death of household member. It is sensible in a situation where main income earner of the household died. Also, death importantly increased the households' medical expenses in the rural area. This suggests death increased the households' medical expenditure by about 86%. This result further established the findings for the general sample. The results further show death was negatively associated with worked hours, but statistically insignificant for both samples.

The significant health cost for the urban and rural households makes sense because illness was more concentrated among the two groups of people. The results show a rise in medical expenditure for the rural sample by about 92% in the face of severe illness and over 100 percentage point rise in the medical expenses of poor households. On the other hand, urban and rural households recorded insignificant effects of severe illness on households' income, though with varying signs. Therefore, the findings reveal heterogeneous pattern in effects of severe sickness among subsamples.

In general, the findings were in line with the initial results when the overall sample was used, however, death seems to have more effect on rural households. It decreases earnings with about 51%, which could not wholly be compensated for by the intra-household labour adjustment. Households in the rural area were significantly affected by health shocks. The result further shows deaths had no statistical influence on households worked hours, but its effect on households facing serious illness was sizable and significant for income. Similarly, severe illness, death and disability increased medical expenses by per annum.

5.6.2 Effects of health shocks on sub–sample (Education)

The highest educational qualification attained by the household member define family's perpetual inventory of human wealth and aggregate wellbeing. Findings from the study suggest that having higher educational attainment did not necessarily reduce the exposure of households to risk associated with illness, disability and death in Nigeria as the results vary with the nature of health shocks. Results based on household highest educational qualification were presented in

Table 5.15. Households' head whose highest education attainment was tertiary were compared with households' head education without formal education.

Table 5.15: Effects of Health Shocks on Household's Resources (by education)

VARIABLES	Hour_work	No_education earnings	Med_exp	Hour_work	Tertiary earnings	Med_exp
Severe_Illness	-0.414***	-0.490***	0.640**	-0.0887	-0.799***	0.318*
	(0.0976)	(0.183)	(0.274)	(0.144)	(0.223)	(0.182)
Death	0.324***	0.0172	0.264	0.299**	0.0801	0.238
	(0.120)	(0.243)	(0.263)	(0.152)	(0.248)	(0.182)
Disability			0.509***	0.0113	-0.112	0.481***
			(0.136)	(0.0755)	(0.123)	(0.0952)
Observations	824	737	363	554	632	853
Number_ofhhid	806	692	351	542	596	807

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-7
Source: Author's computation.

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Findings show significant reduction in household hours of work in response to severe illness of none educated family. The estimated coefficients suggest a 41.4% reduction in number of hours worked for the none educated. Educated households who reported severe illness show a negative relationship with the number of hours worked but was not statistically significant. For households reporting severe illness, results show a negative relationship with income for both samples. Both results were significant at 1% level. The coefficient suggests 49% decrease in income of the households with no education and substantial reduction of about 80% for the well-educated. Households without formal education have a higher likelihood of being involved in self-employment occupation and might still be working when faced with illness. Even for those working in the formal sector, if allowed to be absence from work and still be paid, it is possible they engaged in other jobs to earn income or utilize the time for other profitable ventures. In this situation workers still get paid as at when due. As expected, severe illness was positively associated with increased medical expenditure for both samples. Severe illness increases medical expenditure irrespective of the education status, but the magnitude was higher for the none educated. Findings reveal per annual growth of about 32%t and 64% in medical spending for household with higher education and the none educated, respectively.

Death was positively associated with medical spending, households' worked hours and income. The findings show significant increase in household working hours of educated and non-educated households. The effects were relatively higher for households with less or no formal education (approximately32% higher annual growth in hours of work). Yet, findings show no significant effects on households' earnings and medical expenditure. For medical expenditure, the results suggest a 26% increase in the size of medical expenses for the none educated and about 23% for those with tertiary education. The estimated effects for households' earning were comparatively small and insignificant. For households with tertiary educational qualification and those with non-formal education, the results reveal positive relationship, pointing to increase in household earnings when they encountered health shocks.

The disability of family member had a negative relationship with households' earnings, yielding about 12% decline for the higher educated households. The result was not statistically significant for the educated households. Similarly, disability for both groups was positively associated with medical expenditure and statistically significant. Medical expenses increased by 50% owing to

disability among member of a family for the none educated sample and 48% for the educated sample. Although, the expectation was that less educated people should be more expose to health shocks, the results show no significant variation between those with tertiary education, secondary education and primary education. Generally, the findings were in accordance with previous estimates for the overall sample. Also, the qualitative finding suggests that educated household tended to be more vulnerable to health shock.

5.7 Health Shocks and Consumption (Long-term and Short-term Analysis)

The estimated result for the effect of health shocks (short duration and protracted cases) on changes in households' consumption is presented in Table 5.16. The covariates an included household characteristic such as age, household's head are married, age-square and gender.

Table 5.16: Effect of Health Shocks on Changes in Food Consumption

Variable					
Shock variable (past 30 days)					
Severe illness	0.568**				
	(0.221)				
days of sickness		0.00742			
		(0.00496)			
Lost days			0.0165*		
			(0.00955)		
Shock variable (past 12 months)					
Medical exp				0.387***	
				(0.134)	
Death					0.0605
					(0.186)
Observations	2,911	2,914	2,914	811	2,865
Number of hhid	2,439	2,440	2,440	766	2,398

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-7
Source: Author's computation.

Estimated coefficients (Table 5.16) corresponded to the complete specification. The findings suggested that the health shocks to any member of the household over a short period of time had positive effect on food consumption and statistically significant. When health shock was measured by household member that reported severe illness that lasted at least 30 days and the period household member stayed away from job on medical ground, estimated coefficients recorded positive signs, and were statistically significant. The estimated coefficient suggests about 56% higher growth rate in food consumption for households reported illness that lasted for a minimum period of 30 days. While the estimated coefficient for households that had to refrain from work suggests a 1.6% higher growth rate in food consumption. These results suggest household food consumption was largely smoothened across aforementioned health shocks. In fact, illness of household member and those that refrained from work led to increases in household food spending. The result indicates that transient health shock measured as period of illness to any member of the household had no important impact on variation in households' consumption.

The impacts of perpetual health shocks on households' nonmedical consumption were puzzling. The findings were statistically important, though had the coefficients were wrongly signed for household that incurred a big expenditure due to illness; it increased its food consumption from one period to the next by about 38.7%. This might be due to the fact that household members could not fully be compensated by supplementing the household's earnings when confronted with health shock of the earning members. The estimated coefficient for the remaining long-term measures was not statistically significant in explaining changes in households' food consumption. Therefore, health shocks had significant positive impact on household welfare.
This tended to suggest that intra family network arrangement could sustain consumption (food) in the face of severe illness, disability and death. The findings for transient health shocks on non-food consumption spending were ambiguous. The estimated parameter for illness was positively signed and empirically significant.The nonfood consumption effects pointed to some ability to smoothen consumption due to illness on average. One possible explanation given the data was that the duration of measurement of non-food items was yearly, as such the variation in consumption might not be observable. Households might also have prior knowledge of health

shock given the long time duration and put in place measures to counter its effect, thereby giving a false evidence of consumption smoothen.

Table 5.17: Effect of Short and Long Terms Health Shocks on Variation in Non-food expenditure

Variable					
Severe illness	0.844**				
	(0.406)				
Number of days hospitalize		0.00537			
		(0.00898)			
Number of night			0.0102		
			(0.0176)		
Medical _expenditure				-0.238	
				(0.251)	
Death					-0.626*
					(0.329)
Constant	4.328	0.671	1.051	5.158	0.897
	(18.86)	(12.36)	(12.37)	(5.525)	(12.19)
Observations	3,206	3,210	3,210	880	3,146
R-squared	0.042	0.036	0.036	0.094	0.039
Number of hhid	2,683	2,684	2,684	829	2,628

***, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-8
Source: Author's computation.

The influence of adverse health conditions on households' nonfood expenditure over a long duration varied according to measure of shocks in question. Overall, results show when households incurred substantial bill when faced with severe illness, they would reduce their non-food consumption from one period to the next by about 23.8%. The death of a household member on the average was negatively associated with non-food consumption but statistically significant in the long run. The result reveals that, the demise of family member reduces household expenses on non-food items by 62.6 percentage points in the long run. The results of variations in expenditure on nonfood consumption seemed to imply that on the whole long-term health shocks were not fully insured by households. Therefore, a rejection of the full-insurance hypothesis with respect to protracted health shocks.

5.8 Health Shocks and Consumption Smoothing

The main interest of this subsection is to see whether families when confronted with health shocks can maintained their level of food consumption. The consumption of household could be food or non-food consumption (non-medical). Empirical results were presented separately for food and non-food.

5.8.1 Effects of Health Shocks on Household Non-food Consumption

The findings from consumption equation (4.15) are presented in Table 5.18; estimates were presented for three specifications. The dependent variable was the log of change in non-food consumption expenditure.

Table 5.18: Effect of Health Shocks on Variation in Nonfood Consumption

VARIABLES	(RE) Overall	(RE) Urban	(RE) Rural	(FE) Overall	(FE) Urban	(FE) Rural
Severe illness	0.791***	0.425	1.086***	0.1392**	0.978	0.839*
	(0.211)	(0.357)	(0.254)	(0.0511)	(0.767)	(0.485)
Death	-0.498***	-0.446	-0.491***	-0.1304*	0.264	-1.080***
	(0.163)	(0.301)	(0.189)	(0.0602)	(0.674)	(0.377)
Disability	-0.168	0.144	-0.198	-0.203***	0.537	-0.154
	(0.153)	(0.292)	(0.177)	(0.0371)	(1.581)	(0.447)

****, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.*
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-9 – A-11
Source: Author's computation.

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In specification 1, the study specified the consumption function without stratifying along regions. For specification 1, results show nonfood expenditure was negatively related with the demise of a family member. Death significantly reduced non-food consumption by 13% for the overall model. The result was consistent with the random effect method. The fixed effect model shows that demise of a family member had an inverse association with nonfood expenditure but statistically significant. It shows that death reduced non-food consumption by approximately 13%. The results further show that death was negatively related to household nonfood consumption in the rural region and statistically significant. The estimated coefficient for rural nonfood consumption changes were more than that of the overall sample, suggesting about 49.1% reductions in total (non-food) consumption. Similarly, the estimated coefficient for the fixed effect model indicates the demise of member of a household importantly diminished consumption or expenditure on nonfood items in the rural area. Estimated coefficients for the urban sample had negative sign; suggesting it reduced food consumption by 44 percentage points though not precise.

Severe illness was positively associated with non-food consumption for the overall sample, and the effect was statistically significant. Findings reveal that household non-food consumption increased by about 79% for households that reported severe illness at 1% significant level. This result was consistent with fixed effect method, where illness shows a significant effect on nonfood consumption. Also, severe illness posed a positive association with non-food expenses, result was statistically important at 5% critical point for the rural households. This suggests severe illness increased rural households' non-food consumption by over 100%. On the contrary, the results for the urban sample had no significant effect on household non-food consumption. That households were still capable of preserving consumption that prevailed in previous period in the case of rising health need and medical spending as a result of illness, suggests there must be coping measures through which household financed medical expenditure and smoothen consumption.

Disability of any member of the household is negatively associated with non-food consumption. The result shows 20% reduction in non-food consumption. Meanwhile, disability of any urban household member shows a positive relationship with non-food consumption, but the estimated coefficients are statistically insignificant. This suggests disability was associated with increased

non-food consumption. The results suggest acceptance of the hypothesis of households' capability to smoothen non-food consumption when confronted with severe illness in the urban area given that the impact on non-food consumption was statistically insignificant. In addition, the results rejected the hypothesis of perfect consumption smoothen of non-food when a household member died. This implies consumption smoothen in the face of severe illness, but not when a family reported death of any member.

Findings further reveal household can smoothen consumption against disabilities for the subsamples, similar to result of overall sample, as effect on non-food consumption was statistically not significant. Therefore, findings suggest disability in the households increased household non-food consumption, which virtually reiterated the findings that serious illness increased household's non-food consumption for urban households. The finding was compatible with work of Gertler and Gruber (2002) which measured illness shocks as ADL index. The cost of health shocks on family resources should be higher given that only fraction of the households were gainfully employed hence low household's earnings. The illness of an adult member implies limited or no response from the immediate household.

However, urban households, tend to have more resources to cope with shocks given high earnings. Table 5.19 shows that rural dwellers experienced significant declined in non-food consumption as a result of death and also negatively associated with disability. The variation in non-food consumption in rural area was bigger than that of changes in urban non-food consumption. This suggests greater ability to maintain consumption (non-food) in the urban regions relatives to the rural households. Generally, the findings indicate discrepancy in household's ability to smoothen consumption across subsamples. Given that there was a significant declined in earnings in response to disability and severe sickness within the rural and urban households, the ability to preserve consumption suggested some measures of consumption smoothen.

5.8.2 Health Shocks and Household Food Consumption

Earlier results show severe illness, disabilities and demise of family member have mixed effects on household's non-food consumption. This subsection focuses attention on the influence of

severe illness, disabilities and death on family's food expenses. The objective here is to investigate household ability to maintain consumption of food items overtime when faced with health shocks. Equation 4.15 was estimated for food consumption of households. The regressand was the logarithm of change in household per capita food consumed.

Table 5.19: Effect of Health Shocks on Variation in Food Consumption

	Random Effect			Fixed Effect		
VARIABLES	overall	urban	rural	overall	urban	rural
Disability	-0.0262	0.0288	-0.0192	-0.0763***	0.604	-0.403
	(0.0732)	(0.131)	(0.0878)	(0.0183)	(0.611)	(0.297)
Death	0.101	0.210	0.104	-0.1305***	0.643**	-0.229
	(0.0843)	(0.159)	(0.0980)	(0.0602)	(0.312)	(0.229)
Severe_illness	0.261**	0.0929	0.429***	0.568**	-0.0498	0.841***
	(0.103)	(0.174)	(0.126)	(0.221)	(0.368)	(0.279)

****, **, * imply acceptance at 1%, 5% and 10% critical levels correspondingly.*
Individual coefficient in the table emanates from different regression equation. All control variables are reported in Appendices A-12 – A-14
Source: Author's computation.

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The findings reveal food consumption was negatively related with death of household member using the fixed effect model. The demise of family member shows a negative and significant relationship with food consumption. It indicates about 13 per cent decrease in consumption of food items when a household report death. The indicated, might be the case if the dead member of the household was a net contributor or the main earner of the family. Meanwhile, the finding is not in agreements with the results of the random model. Also, the estimated coefficient for the fixed effect model was negatively associated with food consumption in the rural area and not significant.

Similarly, severe illness was positively associated with food consumption and the effect was statistically significant for the overall specification and rural sample. The results reveal that severe illness significantly increased household food consumption by 26.1% and 42.9% at 5% significant level for the overall sample and rural group respectively using the random effect model. The findings were further affirmed using the fixed effect model. It shows severe illness significantly increased food consumption for the overall and rural samples. The annual growth rate in food consumption was about 56.8% higher for the overall sample and 84.1% higher for the rural households. These results show that severe illness importantly increase the households' food consumption either through intra-household support or borrowing, or through the use of other coping strategies.

This suggests households were able to smoothen consumption against severe illness. However, the estimated coefficients for the urban household had no statistical effect on food consumption. Retaining or using the same specifications for food consumption, this study examined the effects of disability of any household member. The effects are presented in row 1 of Table 5.19. The disability of any household member was negatively associated with food consumption for the overall sample and the rural sample, but the estimated coefficient was only significant for the overall sample. On the contrary, the estimated coefficient suggests a positive relationship for the urban households. Hence, the claim of perfect consumption smoothening when confronted with disability cannot be accepted.

These results suggest the rejection of the hypothesis that households could smoothen food consumption against disability and death of any household member. Therefore, overall, the results suggest that the hypothesis that household can smoothen food consumption against health

shocks depend on the measure of health shocks. In other words, urban, rural and the general households could smoothen their consumption after facing severe illness of any household member but not in the face of disability and death. This result makes sense in a setting where there was heavy dependence upon a member or main earner of the household and where intra-households network could not pool risk. The result was in harmony with Khan, 2015 that used mortality and sickness to measure health shocks. However, this result contradicts the findings of Genoni, 2012 and Bales, 2014 who found the evidence of perfect consumption smoothen in the case of illness.

5.9 Coping Strategies for Health Shocks

The last two sections of the work analysed the consequences of death, disability and severe illness on household's resources and consumption for Nigeria sample. Findings show that household facing health shocks experienced reduction in earnings and increased medical cost but without significant reduction in consumption expenditure when confronted with severe sickness and disability. Therefore, it was imperative to identify the coping mechanism used by households that experienced health shocks as well as estimate their effects on consumption. This subsection explores the likelihood of using different informal insurance strategies among Nigerian households when confronted by health shocks coupled with the impacts of the strategies on household's well-being.

5.9.1 Likelihood of coping strategies among Nigerian households

The study employs Multinomial Logit Model to determine the probability of using any of the available coping measures when faced with health shocks. These coping mechanism were categorised into three groups namely; depletion of assets, borrowing and other strategies.

Table 5.20 shows the different coping mechanism used by households in response to adverse health condition. The base outcome is "other strategies". The results reported were the log of odds of multinomial logit regression. Reporting log of odds enables the interpretation of the results in terms of the relative probability of the parameter estimates. The result also shows the

likelihood ratio (LR) statistics[7] and the predicted probability of positive outcome for each level of analysis. The predicted probability was the predicted outcome for binary variables defined as 0 to 1. The difference between the predicted outcome and actual outcome was used to explain the overall model performance[8]. This difference was related to the concept of goodness of fit of a model such that models with good fit indicate smaller differences between the predicted and observed outcomes.

The effects of health shocks on coping mechanism across sub-sampled households are presented in Table 5.21. It also shows the extent to which socioeconomic variables included in the regression analysis affect the probability of employing a coping strategy. The findings reveal households that experienced death were significantly less likely to borrow by seven percentage points to cope with the effects than to use other strategies. Similarly, households were more likely to deplete assets by 6% for the overall sample in the event of demise of household member relative to other strategies. The findings reveal households are not likely to borrow to finance severe illness by five per cent relative to using other coping strategies. Disability as well as death of household member had significant $(t = -5.47 \; and \; -3.48)$ impact on non-food consumption. Sales of assets and borrowing significantly affected the ability of households to maintain consumption with probabilities of 0.67 and 0.54, respectively. This implies that probability of household selling assets and borrowing increased relative to other strategies by 67% and 54%, respectively.

Households facing severe illness of any household member were neither associated with sales of assets nor borrowing, though borrowing shows the chances of helping to smoothen consumption given the positive coefficient of likelihood. The results suggest that coping through assets depletion was more common to finance healthcare among households in Nigeria in the face of disability, while they tended to borrow while confronted with demise of family member. The result was consistent with the outcome of some studies in the literature, such as Khan (2010) and Bales (2014) who found that households in Bangladesh and Vietnam were capable of preserving

[7]The LR statistics is the equivalence of the F-test in linear regression models which investigate the assertions of equal slope coefficients simultaneously. It follows Chi^2 normal standard with independent values equivalent to size of explanatory variables within sample excluding the intercept (Gujarati D.N. 2004, pg 613)

[8]See Steyerberg et al 2010 for more explanation on the predicted outcome of a variable whether for a continuous or categorical variable. Allison (2013) further reiterates the usefulness of the predicted outcome on the suitability of the model.

food and nonfood against disability and death by depleting assets plus borrowing. However, Islam and Maitra (2013) conclude that households that possess credit facilities would not dispose valuables in response to health challenges and maintain consumption level.

Table 5.20: Coping Strategies against Death, Disability and Severe illness

Dependent Variable: Coping Strategies		
VARIABLES	Asset Depletion	Borrowing
Age	0.997	0.993*
	(0.00434)	(0.00434)
Agesq	1.023	1.098**
	(0.0376)	(0.0425)
Hhsize	1.438***	0.875*
	(0.112)	(0.0666)
Deaths	0.902	0.552***
	(0.110)	(0.0834)
Severe illness	0.949	1.183
	(0.110)	(0.133)
Disability	0.697**	0.677**
	(0.121)	(0.113)
Male	0.955	1.065
	(0.0671)	(0.0764)
Married	1.039	0.934
	(0.108)	(0.0969)
Primary	0.876	1.078
	(0.574)	(0.634)
Secondary	0.671	1.946
	(0.521)	(1.014)
Tertiary	0.523	0.287
	(0.401)	(0.299)
Constant	0.158***	0.289***
	(0.0332)	(0.0615)

***, **, * represent acceptability at 1%, 5% and 10% critical values correspondingly.
Source: Author's computation.

5.9.2 Likelihood of coping strategies among Nigerian households (sub-sample)

The results of the multinomial model with other strategies as base outcome for rural sample and urban households are presented in Table 5.21. The result indicates that reported sales of assets were not an important source of insuring consumption against illness in the urban area. Sales of assets were important sources of funds for households with disability and death of a member. Borrowing by household was importantly associated with severe illness, disability and death. Sales of assets and borrowing were not important sources of funds for rural households when faced with severe illness and disability. However, the role of borrowing as coping strategy among rural dwellers in the event of death of household member was significant.

Table5.21: Households Coping Strategies in the Face of Health Shocks

	Urban		Rural	
VARIABLES	Asset Depletion	Borrowing	Asset Depletion	Borrowing
Age	0.992	0.990	0.999	0.993
	(0.00832)	(0.00812)	(0.00511)	(0.00516)
Log of agesq	1.077	1.104	0.999	1.100**
	(0.0812)	(0.0840)	(0.0423)	(0.0497)
Log of hh size	0.859	0.564***	1.684***	1.001
	(0.135)	(0.0863)	(0.152)	(0.0888)
Male	0.987	0.925	0.940	1.121
	(0.138)	(0.129)	(0.0768)	(0.0943)
Married	1.030	1.006	1.050	0.922
	(0.212)	(0.201)	(0.128)	(0.113)
Tertiary	4.86e-07	4.86e-07	1.001	0.556
	(0.000480)	(0.000464)	(0.807)	(0.596)
Severe-illness	1.328	-1.436*	0.805	1.065
	(0.274)	(0.287)	(0.114)	(0.146)
Disability	0.673	0.298***	0.703	0.912
	(0.201)	(0.105)	(0.151)	(0.177)
Deaths	0.427***	-0.300***	1.091	0.666**
	(0.127)	(0.103)	(0.149)	(0.113)
Constant	0.408**	0.916	0.121***	0.200***
	(0.177)	(0.390)	(0.0293)	(0.0496)
Observations	1,390	1,390	4,150	4,150

***, **, * denote acceptance at 1%, 5% and 10% critical values correspondingly.

.

*Source: Author's computation***.**

Borrowing actually increased in the case of severe sickness and death in urban households. There was evidence of increased borrowing in the case of death and increased asset depletion among the urban households. Also, households reported an increase in the use of borrowing strategy when faced with severe illness. Findings show severe illness and death of any household member were negatively and significantly associated with borrowing. Asset depletion and borrowing were strategies mostly employed by households in the case of death and disability. It shows urban households were significantly more likely to borrow by 14.5 and 13.4 percentage points in Nigeria to cope with the effects of death and severe illness, respectively.

Households in urban area borrowed and sold properties more than rural households. Death of a household member was associated with borrowing among the rural households. The findings suggest better access to credit facilities in urban region relative to rural areas. Sales of assets, such as, falling back on savings, sale of property and livestock was only statistically significant for households who reported death in the urban area. This implies urban households are also more like to resolve to assets depletion when confronted with adverse health condition than rural households. Severe illness among rural household member was neither associated with assets depletion nor borrowing, an indication of the inability of rural households in Nigeria to cope with health shocks. Meanwhile, death of any household member in the rural area was significantly associated with borrowing. Similarly, households that recorded disability tend more to borrow by 29.8 per cent to mitigate the impact of death of a member than to use other coping strategies. Contrarily, disability in a family or death of households' member and severe illness in rural area were not significantly associated with asset depletion.

Rural households were more likely to obtain credit by patronizing cooperatives and intra society network; this increased their option in response to death of a member. Findings for the rural sample suggest that on the average, disability and severe illness of any household member were not significantly associated with assets depletion and borrowing. This is an indication that the rural households in Nigeria did not have the resources to cope in the face of health shocks. These results suggest sales of assets and obtaining credit were important informal mechanism for the Nigerian households to knock down the impacts of health shocks.

To conclude, severe illness episode within urban families increased the chances of utilizing credit facilities by 14%. Households decreased assets by 42% in the event of death of a household member and raised the probability of borrowing by 30% relative to other coping strategies in the urban area. There was a clear evidence of assets depletion and borrowing as coping mechanisms. Disability in a family raised the likelihood of turning to borrowing and reduces the chances of using other approaches in the rural area. The results further reveal urban households that faced disabilities were significantly more likely to borrow than using other coping strategies.

5.9.3 Effects of coping mechanism on household's consumption

The likelihood of using different coping strategies for insuring consumption was not only investigated in this study, but the study further examined how those coping mechanisms impacted households' consumption. Table 5.22 reveals findings of impacts of informal mechanism on household's nonfood consumption items. It reveals coping strategies had different impacts on family's consumption. Findings suggest households that sold assets to survive negative outcomes of severe illness, experienced declined in consumption by 50.30% compare to when other measures were utilized. Meanwhile, if families borrowed to finance food consumption in the face of illness, their food consumption would reduce by 86.3% than using the other coping strategies. Similarly, households using borrowing strategy and asset depletion to cope with the disability effects were consuming food less by 18.1% and 14% respectively, than those who were using other strategies.

The result indicates that death and illness had negative effects on food consumption, but turns into positive when a household faced with health shocks borrowed and depleted assets to smoothen consumption. Meanwhile, the sales of assets to meet or raise consumption today might come at a higher future cost, such as greater distress, exposure to hazard and reduction in wellbeing in the long-run. The sales of assets to optimize consumption today might make it difficult for households to optimize consumption in the future. For instance, disposing of properties and livestock would raise current consumption of food items but might involve lower satisfaction in the long run and reduce the ability to face future health shocks.

Households that used asset depletion to cope with the consequences of death to any household member were consuming food less than those households using other strategies. Households using borrowing and asset depletion to cope with the consequences of disability were consuming food less than those households using other coping mechanisms. It also indicates that illness had negative effects on food consumption, but it turned into positive when a household faced with severe illness borrowed or depleted assets to finance it. This result was consistent with Khan (2010) which used serious illness and death to measure health shocks.

Table 5.22: Effect of Coping Mechanism on Household Consumption

VARIABLES	Food consumption	Nonfood consumption
Agesq	0.0789***	0.0273*
	(0.00436)	(0.0141)
hh size	0.277***	0.646***
	(0.0845)	(0.197)
Primary	-0.158	-0.00552
	(0.150)	(0.465)
Secondary	-0.0931	-1.078**
	(0.184)	(0.534)
Tertiary	-0.687***	0.543
	(0.191)	(0.596)
Severe-illness	-0.0962	-1.983
	(0.457)	(1.387)
Death	-0.655***	0.211
	(0.179)	(0.443)
Disability	-0.436	3.412*
	(0.592)	(1.825)
Asset_illness	-0.503	9.016**
	(1.392)	(3.906)
Borrow_illness	0.863	2.156
	(1.388)	(4.261)
Asset_disability	1.475	-12.65**
	(1.841)	(5.353)
Borrow_disability	0.513	-7.192
	(1.832)	(5.656)
Asset_death	-1.811***	-0.687
	(0.615)	(1.653)
Borrow_death	-1.370***	2.219**
	(0.345)	(1.075)

***, **, * represent acceptability at 1%, 5% and 10% critical values correspondingly.
Source: Author's computation.

5.9.4 Effects of coping strategies on Household Consumption (sub-samples)

Further, the study examined how the coping mechanisms affect households' consumption for the subsamples. Table 5.23 presents result of impacts of chosen informal mechanism on households' expenses on food and nonfood items for rural and urban households. It further affirms that coping strategies had different impacts on family's expenditure on food and nonfood consumption. Also, if urban households dispose valuables to cushion the influence of severe sickness, consumption expenditure on nonfood increased by 21.6% relative to those families that employs other informal mechanism. Households that borrow to smoothen consumption against the negative impacts of severe illness were consuming food more by 13.08% than those who are using other strategies. Households that used borrowing and assets depletion strategies were consuming food less by 38.80% and 29.70% respectively than those who were using other strategies in the case of disability.

Table 5.23: Effect of Coping Mechanism on Household Consumption

VARIABLES	Urban		Rural	
	Per-capia non-food consumption	Per-capia food consumption	Per-capia non-food consumption	Per-capia food consumption
Severe-illness	-7.109***	-3.857***	0.351	1.441*
	(2.501)	(1.280)	(1.688)	(0.857)
Death	-0.160	0.415	0.217	0.103
	(0.780)	(0.399)	(0.543)	(0.276)
Disability	12.72***	1.627	0.387	-1.296
	(4.361)	(2.232)	(2.109)	(1.070)
Asset_illness	21.61***	13.08***	3.959	-4.572**
	(7.809)	(3.998)	(4.561)	(2.314)
Borrow_illness	16.95**	9.268**	-5.419	-2.806
	(7.256)	(3.714)	(5.310)	(2.694)
Asset_disability	-38.80***	-5.188	-4.221	5.095
	(11.78)	(6.027)	(6.214)	(3.152)
Borrow_disability	-29.70**	-5.414	0.284	2.374
	(13.55)	(6.938)	(6.590)	(3.344)
Asset_death	-2.719	0.435	-0.598	1.962**
	(3.150)	(1.612)	(1.970)	(1.000)
Borrow_death	2.552	0.943	2.151	-0.681
	(1.890)	(0.968)	(1.315)	(0.668)
Constant	2.644**	4.811***	2.217***	4.344***
	(1.138)	(0.583)	(0.824)	(0.419)
Observations	1,518	1,515	4,629	4,627
R-squared	0.019	0.048	0.019	0.041

****, **, *represent acceptance at 1%, 5% and 10% critical values accordingly.*

Source: *Author's computation.*

The findings further reveals that illness had negative effect on non-food consumption but turned positive when a household faced by severe illness borrowed or depleted assets. Surprisingly, disability was positively associated with consumption of non-food, but changes sign when a family experiencing it, depleted asset or borrowed. Column 3 reveals households' that sold valuables in confronting the challenges of protracted sickness, had their food consumption increase by 13.08% while those that borrowed increased food consumption by 9.27% relative to the other coping strategies. The result further reveals that severe illness had negative effects on food consumption but it turned into positive when a household faced with it, depleted assets or borrowed. Finally, the result indicates that rural families that disposed properties in order to cushion the effect of death experienced increased food consumption by 1.96% relative to other strategies. Meanwhile, households that employ borrowing as strategy against consequences of severe illness were consuming food less by 4.57% than those who were using other strategies.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary and Conclusion

Severe illness, disability and death are associated with unfavorable economic consequence for households via substantial medical spending, reduction in hours of work and loss of earnings. These consequences depended on factors such as kind of disease, degree of sickness, access to affordable formal and informal insurance. In Nigeria, low-income and inadequate formal and informal risk-sharing and risk-mitigating institutions ensure issue of consumption smoothening is vital. The core of this argument was that rising medical spending, declining income, penury and absence of formal health insurance schemes were major determinants of households' consumption.

To cope with economic consequences of health shocks, in a context where former safety nets were limited, households employed dissavings, depletion of assets and increased child labour. The informal mechanisms compromised households' future well-being. Therefore, it was imperative to understand the coping behaviour of households along with its effect on welfare. Using the General Household Panel survey, this work examined the impact of health shocks on consumption of households in Nigeria and ability of the informal coping mechanisms in preserving consumption against health shocks. Three measures of health shocks were employed in this study: death, severe illness of any household member and deterioration in ability to carry out daily activities.

The results reveal that the impacts of health shock on earnings, worked hours, and medical expenditure differ. Earning was negatively associated with severe illness of any household member implying households could not fully compensate lost earnings with intra-family network of adjustment though they could adjust for lost worked hours in the event of severe illness of a family member. It implies that child or other workers in the household may be low paid and does not earn much as the lost incomes of the sick member. Further, health shocks when measured by death of any household member, significantly lowered income and increased medical spending. This might have happened if household member engaged in activities or job that could not fully complement the lost in income of the dead member given that death does not reduce hours of

work. The results show that disability increased household earnings for the overall sample. The result does not only hold on average but also across subsample when stratified by place of residence and level of education of household's head.

Findings show a positive relation between health shocks and households food consumption. Food consumption was affected positively by severe illness of a household member; this implies intra-family network helped compensate for food consumption expenditure. The findings provide evidence of household ability to smoothen away the effects of health shocks on food consumption in the short and long-terms. Findings further suggest that the hypothesis that household could smoothen non-food consumption against short-term health shocks could not be rejected as the effect on non-food consumption was not different from zero statistically. Meanwhile, changes in non-food consumption suggest that health shocks in the long-term were important as the findings rejected the hypothesis of full insurance among households.

Further, severe illness significantly increased non-food consumption, but death of any household member was not statistically significant. The results rejected the hypothesis of consumption smoothening in the event of death. Non-food consumption responded negatively to death and disability. Disability and death were associated with decreasing food consumption. The hypothesis of consumption smoothening in face of disability and death was rejected. Food consumption responded positively to severe illness and statistically significant for severe illness. Hence, the results accept the hypothesis that household can smoothen food consumption against health shocks.

Despite adverse impacts on income, worked hours and health spending, rural and urban households seemed to effectively insure consumption against severe illness and disability, with no significant decline in food consumption, and were able to increased non-food consumption in relation to some health shocks. Full consumption smoothening had been found in some studies**(**Mitra et al. 2016; Lim, 2016)as well, but as Genoni (2012) and Bales (2014) noted, the consumption effects might be hiding substantial amount of heterogeneity that could be unfolded with different disaggregation, for instance the possibility of rural households to possess greater smoothen consumption ability than urban (Wagstaff, 2007).

The results reveal households experiencing severe illness were more likely to borrow relative to employing other coping strategies to finance sustain consumption. Also, death of a household member was positively associated with borrowing, while coping through assets depletion was more pronounced in financing healthcare associated with disability. However, sales of productive assets and borrowing money involve a high opportunity cost. Although, the results suggested consumption smoothening in the short-term, there is a longer-term consequence of illness, disability and death through borrowings and assets depletion on household future welfare.

6.2 Recommendations

Understanding the varied nature of health shocks were central to understanding the coping strategies that households undertake and their ability to develop effective social and economic policies that would reduce vulnerability to health risks and perpetual poverty. This implies that health shocks faced by urban and rural households, particularly severe illness, disability and death have to be given attention.

The finding that households can cope with short-term health challenges, informs the need for formal insurance, there is a need to insure households against other types of shocks such as disability and death that might bring about fall in consumption. A more detailed analysis would be required, possibly supported by an assessment of efficacy of the strategy, which would consider different shocks at the same time, in order to draw inferences on such ordering.

The result of this study was suggestive of the importance of institutional developments to ensure health needs are adequately finance and to address coping with health shocks. Without formal safety nets, access to borrowing and disavings might be an efficient coping mechanism in the face of health shocks. This is in agreement with findings of Islam and Maitra (2013) that microfinance and lending organizations could aid households to deal with health shocks. Hence, it is necessary to develop formal credit markets accessible to low-income households in Nigeria.

It is imperative to strengthen the degree of financial assistance that social insurance offers to the households in Nigeria. This could help avoid obtaining loans to cover healthcare expenses not insured by health insurance. Alternatives to growing formal health insurance to the informal sector can be studied, including how to increase access to affordable credit. This would reduce vulnerability of rural and urban households to health shocks. On the other hand, a major concern is that, developing formal credit markets in Nigeria setting, could be difficult because of pervasive risks and the fact that rural and poor households are without the requisite collateral.

The results for urban and rural areas show that households incurred substantial medical expenditure and they were unable to preserve consumption. The study, therefore, indicates a strong rationale for subsidized formal insurance targeted at rural households that always incur out-of-pocket (OOP) health payment. Some low-income countries established social safety net for low-income households and those in the non-formal economy (Sparrow et al.2012). Thus,

government role in health shocks management is key to supporting poor households in Nigeria, for sustainable poverty reduction.

Further, this analysis suggests the need to introduce formal disability insurance in conjunction with the conventional formal health insurance given that disability is statistically significant in reducing food consumption and the inability of households to fully insure consumption against it. Similarly, attention needs to be focused on severe illness to encourage charities to assist households whose members are sick, not only financially, but also in terms of care giving to free up family time for income generation, adversely affected by time spent in care giving. There is also need to review social insurance benefit processing to include the payment of death benefits, this could be improved and expanded to the informal sector.

6.3 Limitation of the Study and Future Research Suggestions

There is no clear framework with which to distinguish between expected and unexpected health shock episodes. Certain households may possess the right information and able to predict changes in health status. If households make provision in anticipation of unforeseen health contingencies, the estimates may overstate the capability of households to smoothen consumption against health shocks. Therefore, the knowledge of households' expectations with regards to health is important in the determination of household consumption smoothening ability. Besides, the panel dataset used in this study contains two consecutive rounds surveyed within two years. This time frame is relatively short for examining long-term influence of health shocks on household welfare. Studies with longer panel data would go a long way in addressing the issues of expectation and endogeneity.

The study investigated effects of health shocks on variation in household consumption using prices of food and nonfood items, meanwhile, it may failed to reveal the welfare implication of health shocks. Expenditure data are adjusted to prices and quantities, over time, households might also substitute expensive items in favour of necessity. The aforementioned climax some challenges that undermined the establishment of the consequences of health shocks and the interpretation of results. Focusing on expenditures does not guarantee adequate information about the motive of substitution and real feedback to health shocks might not be captured. Further research on health shocks considering these issues would explore effects of health shocks on household welfare more specifically and would be invaluable in addressing these shortcomings.

REFERENCES

Abdulaziz, S. and Sidique, F. 2014. The Effect of Shocks on Household Consumption in Rural Nigeria. *Proceedings of the Australian Academy of Business and Social Sciences Conference, 2014* (in partnership with *The Journal of Developing Areas*) ISBN 978-0-9925622-0-5

Acharya, V., Christian, B., Robert, E., Farhangderman, F. and Matthew, R. 2010.Measuring Systemic Risk.*Regulating Wall Street: The Dodd-Frank act and the new architecture of global finance.* Chapter 4

Adepoju, A.A., Oni, O.A., Omonona, B.T. and Oyekale, A.S. 2011. Social capital and rural farming household welfare in South-West Nigeria. *World Rural Observations*3.3:150-161.

Alam, K. and Mahal, A. 2014.Economic impacts of health shocks on households in low and middle income countries: a review of the literature. *Globalisation and Health* 10.21

Alayande, B. A. 2003. Determinants of vulnerability to poverty in Nigeria: a probit analysis. Consultant Report for the World Bank/NPC social Risk Assessment Exercise.

Alayande, B. and Alayande, O. 2004. A quantitative and qualitative assessment of poverty in Nigeria. *Proceedings of the Centre for the study of Africa Economy conference on poverty reduction, growth and human development in Africa.*

Alderman, H. and Paxson, C. 1992. Do the poor insured? A synthesis of the literature on risk and consumption in developing countries. *The World Bank, Policy Research Working Paper Series*No.1008

Alderman, H., Hodditnott, J. and Kinsey, B. 2006.Long-term consequences of early childhood malnutrition. *Oxford Economic Papers* 58.3: 450-474

Allison, P. D. 2009. Fixed effects regression models.*Thousand Oaks, Sage Publications, Inc*.

Alwang, J., Siegel, P. and Jorgensen S.L. 2001. Vulnerability: A view from different disciplines. *Social Protection discussion paper series* SP 0115. The World Bank: Washington, D.C. The World Bank.

Arrow, K,.J. 1964.The Role of Securities in the Optimal Allocation of Risk Bearing. *Review of Economic Studies* 31: 91–96.

Asfaw, A. and Braun, J.V. 2004. Is consumption insured against illness? Evidence on vulnerability of households to health shocks in rural Ethiopia. *Economic Development and Cultural Change*53. 1: 115-129.

Aseffa, Y. 2010. Micro insurance: a tool for growth and development of the African Insurance Industry. A paper presented at Nigerian Insurance Association, International Insurance Conference, held at ILO Regional Office for Africa, Lagos, 5th May.

Bales, S. 2014. Impact of health shocks on household welfare in Vietnam: estimates using fixed effects estimation. *In HEFPA Working Paper* No 18. Rotterdam: Institute of Health Policy and Management, Erasmus Universiteit Rotterdam; 2013:1–36.

Balkenhol, B. and Churchill, C. 2002. From microfinance to micro health insurance. *Social reinsurance: a new approach to sustainable community health financing*. D. M. Dror and A. S. Preker Eds. Washington: The World Bank. 75-102.

Baeza, C. 2000. Community Risk Sharing Arrangements in Latin America" Paper presented at World Bank Workshop on "Risks, Poverty and Insurance: Innovations for the Informal Economy" Workshop Proceedings.

Bardhan, P. and Udry, C.1999. *Development Microeconomics*. Chapter 8: 94-109.Oxford: University Press. Oxford.

Bardhan, P. and Udry, C.2016. Risk and Insurance in an Agricultural Economy

Barro, R. J. 2006. Rare disasters and asset markets in the twentieth century.*The Quarter Journal ofEconomics* 121.3: 823- 866.

Beegle, K. 2005. Labor effects of adult mortality in Tanzanian households. *Econ. Dev. Cult. Chang*e 53: 655–683.

Beegle, K., Dehejia, R. and Gatti, R. 2006. Child labour, crop shocks, and credit constraints. *Journal of Development Economics* 81.1: 80-96

Beegle, K., Weerdt, J.D. and Dercon, S. 2008. Adult mortality and consumption growth in the age of HIV/AIDS. *Economic Development and Cultural Change* 56: 299–326

Boubacar-Sid, B., Creppy, E., Gacitua-Mario, G.E.and Wodon, Q. 2007. Conflict, livelihoods, and poverty in Guinea-Bissau. *World Bank Working Paper* No. 88. Washington, DC: World Bank.

Bound, J., Schoenbaum, M., Stinebrickner, T. R. and Waidmann, T. 1999. The dynamic effects of health on the labour force transitions of older workers. *Labour Economics*6.2:179-202.

Bridges, S. and Lawson, D. 2008.Health and labour market participation in Uganda. *World Institute for Development Economic Research Discussion Paper* 2008/07

Brown, W. and Churchill, C. 2000.Concept paper on documenting the development of risk managing financial services. Calmeadow. Washington, DC. www.mip.org

Brown, W. and Churchill, C. 2000. Insurance provision in low-income communities: Part II: initial lessons from micro-insurance experiments for the poor. Calmeadow. See www.mip.org

Brown, W. and McCord, M. 2001. Summary of Discussions: USAID MBP Virtual Conference on micro insurance October 9-27, 2000. USAID: Washington, DC.

Buera F. J. and Shin Y. 2011. Self-insurance vs self-financing: a welfare analysis of the persistence of shocks. *Journal of Economic Theory* 146: 845–862

Cafiero, C. and Renos, V. 2006. Risk and vulnerability considerations in poverty analysis: recent advances and future directions. *SP Discussion Papers* 0610. World Bank Washington DC

Cashdan, E.A. 1985. Coping with risk: reciprocity among the Basarwa of Northern Botswana. *Man* 20.3: 454-474

Chapoto, A. and Jayne.T.S. 2005. Impact of HIV/AIDS-related mortality on rural farm households in Zambia: implications for poverty reduction strategies. *Proceedings of the IUSSP seminar on "Interactions between Poverty and HIV/AIDS.* 12-13

Chatterjee, S., Corbae, D. and Rios-Rull, J.V. 2004. A competitive theory of credit scoring. *Mimeo, University of Pennsylvania, CAERP*.

Chetty, R. and Looney, A. 2006.Consumption smoothing and the welfare consequences of social insurance in developing countries. *Journal of Public Economics, Elsevier*90.12: 2351-2356.

Chetty, R. and Looney, A. 2007. Income risk and the benefits of social insurance: evidence from Indonesia and the United States. *National Bureau of Economic Research, NBER-EASE*16.2:122-128.

Chou, Y.J. and Staiger, D. 2001. Health insurance and female labor supply in Taiwan. *Journal of Health Economics* 20:187–21.

Christiaensen, L., Hoffmann, V. and Sarris, A. 2007.Gauging the welfare effects of shocks in rural Tanzania. *Policy Research Working Paper* 4406. The World Bank

Clemens M. and Moss T. 2005. Costs and causes of Zimbabwe's crisis. *Centre for Global Development* www. Cgdev.org

Cochrane, J. 1991. A Simple test of consumption insurance. *Journal of Political Economy* 99 (October): 957-976.

Daniel, F.2008. Micro-insurance as bedrock for social economic development of West Africa. A paper presented at the WAICA Educational Conference, held on the 10th – 11th November.

Dano, A.M. 2005.Road injuries and long-run effects on income and employment. *Journal of Health Economic14:955*-970.

Deaton, A. 1991.Savings and Liquidity Constraints. *Econometrica* 59.5:1221-1248.

Deaton, A. 1992.Understanding consumption. Oxford University Press, Oxford, New York.

Debebe, Z.Y., Mebratie, A., Sparrow, R., Abebaw, D., Dekker, M., Alemu, G. and Bedi, A.S. 2011. Coping with shocks in rural Ethiopia. In: *ASC Working Paper* 110/2013. Leiden, the Netherlands: African Studies Centre. 1–35.

Deiana, C. 2013. Health shocks and labour transitions across Europe. *Centre for North South Economic Research Working Paper* 13/12 University of Cagliari.

Del Ninno, C. and Marini A. 2005. Household's vulnerability to shocks in Zambia. *World Bank Social Protection Discussion Paper*, 0536, September, 2005.

Dercon, S. 1999. Income Risk, Coping Strategies and Safety Nets. Mimeo prepared for the2000/1 World *Development Report*. Katholieke Universiteit Leuven.

Dercon, S. 2007. Risk, insurance, and poverty: a review. In: Insurance against poverty. S. Dercon Ed. New York: Oxford University Press.9-37.

Dercon, S. Ed. 2004: *Insurance against Poverty*. Oxford University Press.

Dercon, S. 2005. Risk, vulnerability and poverty in Africa. In *Journal of African Economies*, 14.4: 483–88. http://jae.oxfordjournals.org/cgi/reprint/14/4/483

Dercon, S. and Hoddinott J. 2004.Health, shocks and poverty persistence. *Insurance against Poverty.*S. Dercon. Ed. Oxford University Press.

Dercon, S. 2002. Income risks, coping strategies, and safety nets. *World Bank Research Observer* 17.2:141-66.

Dercon, S. 2011. Social protection, efficiency and growth. *CSAE Working Paper* WPS/2011-17.

Dercon, S. and Hoddinott, J. 2003.Health, shocks and poverty persistence. World *Institute of Development Economics Research Discussion Paper* WDP 2003/08

Dercon, S. and Krishnan, P. 2000. In Sickness and in health: risk sharing within households in rural Ethiopia. *The Journal of Political Economy* 108.4: 688-727.

Dercon, S., Hoddinott, J. and Woldehanna, T. 2005.Shocks and consumption in 15 Ethiopian villages, 1999-2004. *Journal African Economics* 14:559.

Dercon, S., Tessa, B. and Cesar, C. 2004.*Insurance for the Poor*. University of Oxford Press.

De Ferranti, D., Perry, G., Gill, I. and Serven, L. 2000. Securing our future in a global economy. World Bank Latin American and Caribbean Studies, Washington, DC.

De Weerdt, J. 2007.Risk-sharing and endogenous network formation. In S. Dercon (Ed.), Insurance against poverty. New York: Oxford University Press 197-21

De Weerdt, J. 2005. Risk sharing and endogenous network formation. Insurance *against poverty*. S. Dercon. Ed. Oxford, UK: Oxford University Press. 197-216.

De Weerdt, J. and Dercon, S. 2006. Risk sharing networks and insurance against illness. *Journal of Development Economics* 81.2:337–56.

DFID (Department for International Development) 2005. Social transfer and chronic poverty: emerging evidence and the challenge ahead. *DFID Practice Paper* London: DFID.

Dhanaraj, S. 2015. Health shocks and coping strategies. Helsinki, Finland: World Institute for Development Economics Research, *WIDER Working Paper 2014/003* United Nations University.

Dhanaraj, S. 2016. Effects of Parental Health Shocks on Children's Schooling: Evidence from Andhra Pradesh, India. *International Journal of Educational Development 49: 115–125*

Di, M. 2005. Safety nets for the poor and equitable healthcare financing. *Policy Brief* for the Department for International Development (DFID) in partnership with Nigeria Partnership for Transforming Health System (PATH).

Dong, H, De Allegri, M., Gnawali, D., Souares, A. and Sauerborn, R. 2009. Drop-out analysis of community-based health insurance membership at Nouna, Burkina Faso. *Health Policy* 92. 2-3: 174-179.

Dorich J. 2007. The welfare losses of Price Rigidities.

Dror, D. M. (2002). Health insurance and reinsurance at the community level. *Social reinsurance: a new approach to sustainable community health financing.* D. M. Dror, and A. S. Preker. Eds.Washington: The World Bank.103-124.

Dror, D. M., Preker, A.and Jakab, M. 2002. The role of communities in combating social exclusion. *Social Reinsurance: a new approach to sustainable community health financing*. D.M. Dror and A. Preker. Eds. World Bank and ILO. 37-56

Ekong U. M. and Ekong, U.C. 2016. Skills Acquisition and Unemployment Reduction in Nigeria: A Case Study of National Directorate of Employment (NDE) in Akwa Ibom State. *International Journal of Economics & Management Sciences* ISSN: 2162-6359

Ellis, F. 2008. We are all Poor Here. Economic Difference, Social Divisiveness and Targeting Cash Transfers in Sub-Saharan Africa. Paper Presented at the conference on Social Protection for the Poorest in Africa: Learning from Experience, Entebbe.

EPA, 2010. Applicability of the federal prevention of significant deterioration permit requirements to new and revised national ambient air quality standards. Stephen D. Page Memorandum, dated April 1, 2010. U.S. Environmental Protection Agency, Research Triangle Park, NC.

Fafchamps, M. and Susan, L. 2003. Risk-sharing networks in Rural Philippines. *Journal of Development Economics* 71.2: 261-287.

Fafchamps, M., Udry, C. and Czukas, K. 1998. Drought and saving in West Africa: arelivestock a buffer stock? *Journal of Development Economics* 55.2: 273-305.

FAO (Food and Agricultural Organisation) 2003. Safety nets and the right to food. Intergovernmental Working Group for the Elaboration of a Set of Voluntary Guidelines to Support the Progressive Realisation of the Right to Adequate Food in the Context of *National Food Security Information Paper*. Rome: FAO.

Farrington, J. 2004. Risk and vulnerability. Background paper prepared for DFID.

Federal Ministry of Health, 2016. National Health Policy: Promoting the Health of Nigerians to Accelerate Socioeconomic development.

Filmer, D. 2008.Disability, poverty, and schooling in developing countries: results from 14 household surveys. *The World Bank Economic Review*22.1: 141-163.

Flores, G., Krishnakumar, J., O'Donnell, O. and Van Doorslaer, 2008. Coping with healthcarecosts: implications for the measurement of catastrophic expenditures andpoverty. *Health Econ* 17:1393–1412

Foster, A.D. 1993. Household partition in rural Bangladesh. *Population Studies* 47.1: 97-114

Galiano, A. and Vera Hernandez, M. 2008. Health shocks, household consumption, and child nutrition. In: *WP-EC* 2008-14. PaseoSagasta: University of Zaragoza.

Ganon, B. and Nolan, B. 2004. Disability and labour force participation in Ireland. *The Economic and Social Review* 35.2: 135–155

Garcia-Gomez, P. 2011. Institutions, health shocks and labour market outcomes across Europe. *Journal of Health Economics* 30: 200–213

General Household Survey (GHS) Panel. 2012/2013.LSMS-Integrated Surveys on Agriculture GHS Panel. A report by the Nigerian National Bureau of Statistics in collaboration with the Federal Ministry of Agriculture and Rural Development and the World Bank.

Genoni, M.E. 2012. Health shocks and consumption smoothing: evidence from Indonesia. *Economic Development and Cultural Change* 60.3: 475–506.

Gertler, P. and Gruber, J. 2002.Insuring consumption against illness. *American Economic Review*92.1: 51-70.

Gertler, P., Levine, L. and Moretti, E. 2009. Do microfinance programs help families insure consumption against illness? *Health Economics* 18: 257-273.

Ghatak, A. and Madheswaran, S. 2011. Burden of income loss due to ailment in India: evidence from NSS data. In *Working Paper* 269. Bangalore, India: The Institute for Social and Economic Change

Goldstein, M., De Janvry, A. and Sadoulet, E. 2007. Is a friend in need a friend indeed? Inclusion and exclusion in mutual insurance networks in Southern Ghana. *Insurance against poverty*. S. Dercon Ed. New York: Oxford University Press.217-246.

Grant, U. 2005. Health and poverty linkages: perspectives of the chronically poor. Chronicpoverty research centre (CPRC), background paper for the chronic poverty report 2008- 09.

Grimm, M. 2010. Mortality shocks and survivors' consumption growth. *Oxford Bulletin of Economics and Statistics*72.2: 146-171.

Grimard, F. 1997. Household consumption smoothing through ethnic ties: evidence from Cote d'Ivoire. *Journal of Development Economics* 53.2: 391-422.

Grosh, M., De Ninno, C., Tesliuc, E. and Ouerghi A. 2008. For protection and promotion: The design and implementation of effective safety nets. *The World Bank.* Washington DC 20433.

Grossman, M. 1972. On the concept of health capital and the demand for health. *Journal of Political Economy*80.2: 223–255.

Gujarati, D. N. 2004. Basic Econometrics, McGraw Hill, 4th Edition pg.613

Gupta, N. D., Kleinjans, K. and Larsen, M. 2015. The effect of a severe health shock on work behavior: Evidence from different health care regimes. *Social Science and Medicine* 136.137: 44-45

Hangoma, P., Aakvik, A. and Robberstad, B. 2017. Health Shocks and Household Welfare in Zambia: An Assessment of Changing Risk. *Journal of International Development*10.1002/jid.3337

Haethcote, J., Storesletten, K. and Violante, G. L. 2011. From wages to welfare: gains and losses from rising inequality. Prepared for a talk at the Tenth World Congress of the Economic Society, Shangai, China.

Hauck, K. 1997. The social security program of the self-employed women's association Ahmedabad, India. *World Health Organization*: Geneva.

Heitzman K., Canagarajah, R. S.and Seigel P. B. 2002. Guideline for assessing the sources of risk and vulnerability. *Social Protection Discussion Paper* 0218, June, 2002; Social Protection Unit, Human Development Network, The World Bank.

Heltberg, R. and Lund, N. 2009. Shocks, coping, and outcomes for Pakistan's poor: health risks predominate. *The Journal of Development Studies*45.6: 889-910.

Holmes, R., Sadana, N. and Rath, S. 2010. Gendered risks, poverty and vulnerability in India: Case study of the Indian Mahatma Gandhi National Rural Employment Guarantee Act (Madhya Pradesh). Overseas Development Institute and Indian Institute of Dalit Studies

Holzmann, R. and Jorgensen, S. 2000. Social Risk Management: A new conceptual framework for Social Protection, and beyond. Social Protection Discussion Paper No. 0006. World Bank: Washington, DC

Hoogeveen, J., Tesliuc, E., Vakis, R. and Dercon, S. 2005.A guide to the analysis of risk, vulnerability and vulnerable groups. World Bank: Washington, DC

Humphreys, M. 2003. Economics and violent conflict. Harvard University. Retrieved from http://www.unglobalcompact.org/docs/issues_doc/Peace_and_Business/Economics and_Violent_Conflict.pdf

Ichoku, H. 2005. Income Redistributive Effects of the Health Care Financing System in Nigeria.

International Policy Centre for Inclusive Growth (IPC-IG) 2011. Cash Transfer Programmes in Africa.

Islam A, and Maitra, P. 2013. Health shocks and consumption smoothing in rural households: does microcredit have a role to play? *Journal of Development Economics*, Vol. 97, pp. 232–243.

Jacoby, H.G. and Skoufias, E.1997. Risk, financial markets, and human capital in a Developing country.*The Review of Economic Studies* 64.3: 311-35.

Jalan, J. and Ravallion, M. 2000. Behavioral Responses to Risk in Rural China.*Journal of Development Economics* 66: 23-49.

Juetting, J. 1999. Strengthening social security systems in rural areas of developing countries. *ZEF Discussion Papers* on development policy, No. 9. Center for Development Research: Bonn.

Juetting, J. 2000. Determinants of viable insurance schemes for the rural poor in developing countries: lessons from SEWA. Center for Development Research: Bonn.

Jutting, J. P. 2005.Health insurance for the poor in developing countries. Burlington, VT: Ashgate.

Kadiyala, S., Rogers, B., Quisumbing, A. and Webb, P. 2011.The effect of prime age adult mortality on household composition and consumption in rural Ethiopia. *Food Policy* 36: 647-655.

Kawabata, K., Xu, K. and Carrin, G. 2002. Preventing impoverishment through protection against catastrophic health expenditure. *Bull World Health Organ* 80: 612.

Khan, F.U. 2010. Economic consequences of health shocks and coping strategies: evidence from urban poor households in Bangladesh. The Hague, the Netherlands: Erasmus University, Graduate School of Development Studies

Khan, F., Bedi, A. and Sparrow, R. 2015. Sickness and Death: economic consequences and coping strategies of the urban poor in Bangladesh. *World Development*, 72.1:255-266

Kochar, A.1995. Explaining household vulnerability to idiosyncratic income shocks. *American Economic Review* 85.2: 159–164.

Lindeboom, M., Llena-Nozal, A. and Klaauw, B. 2006. Disability and Work: the role of health shocks and childhood circumstances. *IZA Discussion Papers* Institute for the study of labor (IZA), 2096.

Lindelow, M. and Wagstaff, A. 2005. Health shocks in china: are the poor and uninsured less protected? *World Bank Policy Research Working Paper*3740. Washington, DC.

Linnemayr, S. 2010. Consumption smoothing and HIV/AIDS: The case of two communities in South Africa. Econ. Dev. Cult. Change 58:475–506.

Loayza, V., Ranciere, R., Serven, L. and Ventura J. 2007. Macroeconomic Volatility and Welfare in Developing Countries: An Introduction. *The World Bank economic review* 21. 3: 343-357.

Lucas, R. E. 2003. Macroeconomic priorities. Department of Agricultural Economics, University of Chicago. January 10, 2003.

Lundberg, O. and Manderbacka, K. 1996. Assessing reliability of a measure of self -rated health. *Scandinavian Journal of Social Medicine* 24:218-224

Lundberg, M., Over, M. and Mujinja, P. 2000. Sources of financial assistance for households suffering an adult death in Kagera, Tanzania. *South African Journal of Economics*68.5: 420-443.

Lustig, N. Ed. 2000.Social protection for equity and growth. Washington DC. Inter-American Development Bank.

Marques, S. 2003. Globalisation, Risk and international environnemental Policy. ACTAS DOS IX CURSOS INTERNACIONAIS DE VERAO DE CASCAIS (8a 13 de Julho de 2002), Cascais, Camara Municipalde Cascais.4 :45-50

Mazzocco, M. 2004.Saving, risk-sharing and preferences for risk. *American Economic Review* 94.4:1169-1182

Mazzocco, M. and Saini, S. 2006. Testing efficient risk-sharing with heterogeneous risk preferences: semi-parametric tests with an application to Village Economies. *Department of Economics, University of Wisconsin Working Paper*

McCord, M.J. 2000.Synthesis of case studies from health care financing programs in Uganda, Tanzania, India, and Cambodia. A revised and updated version can be found in McCord, M.J. 2001. Healthcare micro insurance: case studies from Uganda, Tanzania, India and Cambodia. *Small Enterprise Development* 12.1:1-14.

McCord, M.J. 2000. AIG and NHHP partnering with FINCA Uganda: an example of the partner/agent model. *Proceedings of the World Bank Workshop on Risks, Poverty and Insurance: Innovations for the Informal Economy*.

McDonald, S. and Roberts, J. 2002. Growth and multiple forms of human capital in an augmented Solow model: a panel data investigation. *Economics Letters*74:271-276.

McIntyre, D., Ranson, M.K., Aulakh, B.K. and Honda, A. 2013. Promoting universal financial protection: evidence from seven low- and middle-income countries on factors facilitating or hindering progress. *Health Res. Policy Syst*. 11.1:36

Meyer, B. D. and Mok W. K. 2013. Disability, earnings, income and consumption. National Bureau of Economic Research.

Mihaylova, B., Briggs, A., O'Hagan, A. and Thompson S. 2011. Review of statistical methods for analyzing health care resources and costs. *Health Economics* 20.8: 897–916.

Milanovic, B. 2000. Social transfers and social assistance. An empirical analysis using Latvian household survey data. *The World Bank, Policy Research Working Paper*2328.

Mitra, S., Palmer,M., Mont, D. and Groce, N. 2016. Can Households Cope with Health Shocks in Vietnam? *Health Economics*. 25.7: 888-907

Modena, F. and Gilbert, C. 2011. Shock responses of rural households in Indonesia: a multinomial logit analysis. Trento, Italy: Department of Economics, University of Trento.

Mohanan, M. 2013. Causal effects of health shocks on consumption and debt: quasi-experimental evidence from bus accidents injuries. *Review of Economics and Statistics* 95.2:673–681.

Moghalu, C. 2004. Social protection profile of Nigeria. *An ILO Working Paper*.

Moran, M. 2006. Dry and destitute, Niger languishes. *Analysis Brief* posted on website of Council on Foreign Relations.

Morduch, J. 1998. The microfinance promise. *Journal of Economic Literature* 37.4:1569- 1614.

Morduch, J. 1999. Between the state and the market: can informal insurance patch the safety net? *World Bank Research Observer* 14.2: 187-207.

Morduch, J. 2000. Schism. World *development*28.4: 617-629

Morduch, J. and Sharma, M. 2001. Strengthening social safety nets in developing countries: emerging issues and evidence. Food Consumption and Nutrition Division. *International Food Policy Research Institute Discussion Paper*122. Washington, DC.

Morduch, J. and Sharma, M. 2002. Strengthening public safety nets from the bottom up. *Development Policy Review* 20: 569–588.

Murgai, R., Winters, P., Sadoulet, E. and de Janvry, A. 2002. Localized and incomplete mutual insurance. *Journal of Development Economics* 67. 2: 245-274.

National Bureau of Statistics. 2012. Consumption pattern in Nigeria. 2009/10. Preliminary report

National Health Insurance Scheme, 2012. Operational Guidelines

NBS (National Bureau of Statistics Nigeria), 2015.Millennium Development Goals performance tracking Ssurvey report. Abuja: NBS.

NBS, 2012. Nigerian General Household Survey: Basic Information Document. Abuja, Nigeria. Available www.nigerianstat.gov.ng

NEMA, 2016.Agency's challenges of disaster management in rural communities**.**www.pulse.ng/news

NHIS (National Health Insurance Scheme) 2006.National health insurance scheme operational guidelines. National Health Insurance Scheme, Abuja, Nigeria.

Nguyen, T.N. and Mangyo, E. 2010. Vulnerability of households to health shocks: an Indonesian study. *Bulletin of Indonesian Economic Studies*46.2: 213–235.

Nkpoyen, F., Bassey, G.E and Uyang, F. A. 2014.Health capital and poverty reduction in rural Cross River State, Nigeria. *Journal of Education and Research* 2.5:357-372.

Oberlander, L. 2013. Community-based Health Insurance and Household Welfare – Empirical Evidence from Burkina Faso. Master Thesis of the Faculty of Economics and Social Sciences, Ruprecht-Karls-University Heidelberg

Okunmadewa, F and Elder, F.2003. Nigeria: risk and vulnerability assessment. *Human Development* 3. Country Department 12

Olalekan, S., Olawuyi, O. and Raufu, O. 2011. Shocks and coping strategies of rural households: evidence from Ogo-Oluwa Local Government, Oyo State, Nigeria. *International Journal of Agricultural Management and Development* 1.4: 259-266.

Olaniyan, O., Onisanwa, D. and Oyinlola, M. 2013. Health Care Expenditure and GDP: a panel data approach. *Proceedings of the 2013 Centre for the Study of African Economies Conference on Economic Development in Africa.* St Catherine's College, Oxford.

Olaniyan, O., Oni, O. and Adepoju, A. O. 2012.Welfare costs of risks and risk management options in Nigeria. Report submitted to the World Bank.

Olaniyan, O., Yusuf, S.A. and Oni, O. 2004. Social protection strategy for Nigeria: policy note. Nigeria Social Protection Committee, National Planning Commission, Abuja, August, 2004.

Olaniyan, O, Oyeranti, O., Bankole, A. and Oni, O. 2003. Evaluation of risk management agencies in Nigeria. Consultant Report for the World Bank/NPC social risk assessment exercise.

Olawuyi, O., Fola, O. and Raufu, M.O. 2011. Shocks and coping strategies of rural households: evidence from Ogo-Oluwa Local Government, Oyo State, Nigeria. *International Journal of Agricultural Management and Development.*

Omar, M.andThiele, R. 2013. Does prime-age mortality reduce per-capita household income? Evidence from rural Zambia. *World Development* 2013.45:51–62.

Omoruan, A. I., Bamidele, A.P. and Phillips, O. F. 2009. Social health insurance and sustainable healthcare reform in Nigeria. Ethno-Med, 3.2: 105-110.

Oni, O.A. 2013.Money Market Indicators, Pension Funds, and Real Estate Finance in Nigeria.Covenant University Repository.

Oni, O. A. and Yusuf, S. A. 2008. Determinants of expected poverty among rural households in Nigeria. *AERC (African Economic Research Consortium) Research Paper* 183, September, 2008.

Oni, O. A.2008. Farming households vulnerability to risk in the Northern Region of Oyo State, Nigeria. *Journal of Social Science*17. 3: 201-210.

Otrok, C. 1999.On measuring the welfare cost of business cycles. First version, 1998; Updated version, 1999.

Over , M ., Lundberg, M. and Mujinja, P. 2000. Sources of financial assistance for households suffering an adult death in Kagera, Tanzania. *South African Journal of Economics* 68.5: 420-443.

Oyekale, T. and Yusuf, S.A. 2010. Multidimensional poverty of shock-exposed households and coping mechanisms in rural Nigeria.*Medwell Journal of Social Sciences* 5.3: 254-263.

Oyekale, A.S. and Oyekale, T.O. 2010. An Assessment of Income Shocks and Expected Poverty Dynamics in Nigeria. *The Icfai University Journal of Agricultural Economics* 7.3: 18-50.

PenCom (National Pension Commission), 2010.Annual Report and Statement of Accounts. National Pension Commission, Wuse Abuja, Nigeria.

Park,C. 2006. Risk pooling between households and risk-coping measures in developing countries: evidence from rural Bangladesh. *Econ. Dev. Cult. Change*54:423–457

Paxson, C.1993. Consumption and income seasonality in Thailand. *Journal of Political Economy* 101.1: 39-72.

Pohl, V., Nelson,C. andParro, F. 2013. Health Shocks, Education, and Labor Market Outcomes

Porter, C. 2008. The long run impact of severe shocks in childhood: evidence from the Ethiopian famine of 1984. University of Oxford. Department of Economics

Powell-Jackson, T. and Hoque, M.E. 2012. Economic consequences of maternal illness in rural Bangladesh. *Health Economics* 21:796–810.

Preker, A.Jangenbrunner, L. and Jakab, M. 2002. Rich-poor differences in health care financing. *Social reinsurance: a new approach to sustainable community health financing*. D. M. Dror. And A. S. Preker. Eds.21-36

Pritchett, L. 2005. A Lecture on the political economy of targeted safety nets social protection *The World Bank Discussion Paper*0501. Washington, DC.

Pryer, J., Rogers, S. and Rahman, A. 2005. Work-disabling illness as a shock for livelihoods and poverty in Dhaka slums, Bangladesh. *Int. Plan Stud*. 10:69–80.

Ravallion, M. and Chaudhuri, S.1997. Risk and insurance in village India: Comment.*Econometrica*65 .1: 171–184.

Rocco, L., Tanabe, K., Suhrcke, M. and Fumagalli, E. 2011.Chronic diseases and labor market outcomes in Egypt.*World Bank Policy Research Working Paper* 5575. Washington, DC. World Bank

Rosenzweig, M. and Binswanger, H. 1993.Wealth, weather risk and the composition and profitability of agricultural investments. *Economic Journal* 103: 56-78.

Rosenzweig, M. and Wolpin, K. 1993. Credit market constraints, consumption smoothing, and the accumulation of durable production assets in low-income countries: investments in Bullocks in India. Journal of Political Economy 101.2: 223-244

Rutherford, S. 2000. The poor and their money. Department for International Development (DFID). Oxford University Press.

Sachs, J. D. and Brundtland, G.H. 2002. Health and economic growth and poverty reduction. *World Health Organization Commission on Macroeconomics and Health, Working Group1*.

Saltman, R. B. and Dubois, F. W. 2004. The historical and social base of social health insurance systems. *Social health insurance systems in Western Europe*. R. B. Saltman R. Busse and J.Figueras. Eds.21-32.

Saksena, P. and Durairaj, K. 2010. The drivers of catastrophic expenditure: outpatient services, hospitalization or medicines?*World Health Report Background Pape* 21. Geneva. World Health Organization.

Sanubi, F. A. 2011. Social Protection as a Residual Safety Net in Democratic Governance in Nigeria: A Critical Analysis of Some Current Policy Initiatives. *A paper presented at the International Conference on Social Protection for Social Justice.* Institute of Development Studies, UK.

Sauerbor, R., Adams, A.andHien, R. 1996. Household strategies to cope with the economic costs of illness. *Social Science and Medicine* 43.3: 291-301.

Scott-Emuakpor, A. 2010. The evolution of health care systems in Nigeria: Which way forward in the twenty-first century. *Niger Med. Journal 51:53-65. Available from: http://www.nigeriamedj.com/text.asp?2010/51/2/53/70997*

Shi, L., Macinko, J., Starfield, B., Politzer, R., Wulu, J. and Xu, J. 2005.Primary care, social inequalities, and all-cause, heart disease, and cancer mortality in U.S. counties: a comparison of urban and rural areas. *Public Health* 119:699–710

Silva, S.and Tenreyro, S. 2006. The log of gravity. The review of economics and statistics 88.4: 641–658.

Skoufias, E. and Quisumbing, A.R. 2005. Consumption insurance and vulnerability to poverty: a synthesis of the evidence from Bangladesh, Ethiopia, Mali, Mexico and Russia. *The European Journal of Development Research* 17.1: 24-58.

Smith, J. P. 1999. Healthy bodies and thick wallets: the dual relation between health and economics status. *Journal of Economic Perspectives*13.2: 145-66.

Smith, P. C. and Witter, S. N. 2004.Risk pooling in health care financing. The implications for health system performance. Health, nutrition and population family (HNP) of the *World Bank's Human Development Network, Discussion paper*.

Snel, E. and Staring, R. 2001. Poverty, migration and coping strategies: an introduction. *European Journal of Anthropology* 38:7-22.

Somi, M. F., Butler, J. R., Vahid, F., Njau, J. D. and Abdulla, S. 2009. Household responses to health risks and shocks: a study from rural Tanzania raises some methodological issues. *Journal of International Development* 21.2: 200-211.

Sparrow, R, Poel, V., Hadiwidjaja,G., Yumna, A., Warda, N. and Suryahadi, A. 2012. Financial consequences of ill health and informal coping mechanisms in Indonesia. *Working paper in Trade and Development*. Australian National University.

Sparrow, R., Poel, E. V., Hadiwidjaja, G., Yumna,A., Warda, N. and Suryahadi, A. 2013.Coping with the economic consequences of ill health in Indonesia. *Journal of Health Economics*. 23: 719–728

Spiers, J. 2000. New perspectives on vulnerability using emic and etic approaches. *Journal of Advanced Nursing* 31.3: 715 –21

Stern, S.1989. Measuring the effect of disability on labour force participation. *Journal of Human Resources*24:361-395.

Strauss, J. and Thomas, D. 1998. Health, nutrition, and economic development. *Journal of Economic Literature* 36.2: 766-817.

Subramanian, S. V., Subramanyam,M. A., Selvaraj, N. and Kawachi, I. 2009. Are self-reports of health and morbidities in developing countries misleading? Evidence from India. *Social Science and Medicine* 68.2: 260-265.

Suhrcke, M., McKee, M., Arce, R.S., Tsolova, S. and Mortensen, J. 2005. The contribution of health to the economy in the European Union. Brussels, Belgium: European Commission, DG Health and Consumer Protection.

Suranovic, S. M. 2004. Welfare effects of a tariff. International Trade Theory and Policy; Chapter 90: 8.

Tatlock, C. W. 2006. Water stress in Sub-Saharan Africa. Posted on Website of Council on Foreign Relations; Copyright 2011.

Tesluic, E. D. and Lindert, K. 2002. Vulnerability: a quantitative and qualitative assessment. Guetemala poverty assessment program.

Townsend, R.M. 1994. Risk and insurance in village India.*Econometrica*62.3: 539-591

Townsend, R. M. 1995. Consumption Insurance: an evaluation of risk-bearing systems in low-income economies. *Journal of Economic Perspectives* 9.3: 83-102.

Umoru, D. and Omolara, Y. 2013. Labour productivity and health capital in Nigeria: The empirical evidence. *International Journal of Humanities and Social Science*3. 4

UNAIDS.2017.http://www.unaids.org/en/regionscountries/countries/nigeria

United Nations. 2015. Explanatory note on 2014 Human Development Indices in Nigeria.

UNCDF, 2000. The Roundtable on micro insurance services in the informal economy: the role of microfinance institutions.

UNDP 2011. Human development report: sustainability and equity: a better future for all. New York, NY: United Nations Development Program

United Nations Development Program (UNDP) 2013. Website of the United Nations Development Programme.

Wagstaff, A. 2005. The Economic Consequences of Health Shocks. World Bank, *Policy Research Working Paper* 3644, Washington, DC

Wagstaff, A.2007. The economic consequences of health shocks: evidence from Vietnam, *Journal of Health Economics* 26:82–100

Wagstaff, A. and Van Doorslaer, E. 2003. Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998. *Health Econ*omics 12:921–933.

Wagstaff, A. and Lindelow, M. 2005. Can Insurance Increase Financial Risk? The curious case of health insurance in China.*World Bank Policy Research Working Paper* 3741

Wagstaff, A. and Lindelow, M. 2014. Are Health Shocks Different? Evidence from a multi-shock survey in Laos. *Journal of Health Economics*. 23.1: 706-718

Wagstaff,A. and Manachotphong, W. 2012. Universal healthcare and informal labour markets: the case of Thailand. *Policy Research Working Paper* 6116. Washington, DC: World Bank.

Wang, H., Zhang, L., Yip, W. and Hsiao, W. 2006. Adverse selection in a voluntary rural mutual health care health insurance scheme in China. *Social Science and Medicine*63.5: 1236 - 1245.

Weinberger, K. and Jutting, J. 2000. The role of local organizations in risk management: some evidence from rural Chad. *Quarterly Journal of International Agriculture*39.3: 281-298.

Witoelar, F. 2005. Inter-household allocations within extended family: evidence from the Indonesia family life survey. Economic Growth Center, Yale University, *Center Discussion Paper* 912

Wood, B., Nelson, C. and Nogueria L. 2010.Measuring the welfare impact of food price increases on Mexican households.

WHO. 2010.The World Health Report 2010. Health systems financing: the path to universal coverage. World Health Organization

_____2013.World health Statistics. Geneva. World Health Organization.

_____ 2015. World health statistics 2015. Geneva: World Health Organization.

World Bank, 2001.World Development Report: Attacking poverty. Oxford University Press, Oxford.

_____2000.Social Protection Sector Strategy: from safety net to trampoline. Human Development Network, Social Protection Team, Washington, D.C.

_____2000. Risks, poverty and insurance: innovations for the informal economy: Workshop proceedings, September 6, 2000.

_____2000.World Development Report 2000/2001 – attacking poverty, Oxford University Press: New York.

_____ 2001.Social Protection Sector Strategy: From Safety Net to Springboard. The Human Development Network. Washington, D.C.

_____ 2013.World Development Indicators Online database.

*World Bank, 2014. The World Bank Annual Report 2014.*Washington, D.C. World Bank. https://openknowledge.worldbank.org/handle/10986/20093

World Health Organization (WHO). 2016. Data from global health expenditure database, national health accounts indicators.

World Health Organization, (World health statistics) 2015. Geneva: World Health Organization; 2015.161. Available from: http://apps.who.int/iris/bitstream/10665/170250/1/9789240694439_eng.pdf.

Xu, K., Evans, D.B., Carrin, G., Aguilar-Rivera, A.M., Musgrove, P. and Evans, T. 2007 Protecting households from catastrophic health spending. *Health Aff*26:972–983.

Yamano, T. and Jayne, T. S. 2004. Measuring the impacts of prime-age adult death on rural households in Kenya, Department of Agricultural Economics, Michigan State University East Lansing, Michigan.

Yamauchi, F., Buthelezi, T. and Velia, M. 2008.Impacts of prime-age adult mortality on labour supply: evidence from adolescents and women in South Africa. *Oxford Bull Econ. Stat*70:37