VULNERABILITY AND POVERTY TRANSITIONS AMONG RURAL HOUSEHOLDS IN SOUTH WEST NIGERIA

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DEDICATION

This work is dedicated to The Immortal, The Invisible, The only Wise God, The Most Blessed, The Most Glorious, The Ancient of Days, The Almighty and The Victorious God. To HIM be all Glory, Honour and Power forever and ever and to the cherished memory of my late sister – Mrs Yetunde Morenikeji Faluyi.

ABSTRACT

Successive governments in Nigeria have implemented poverty alleviation programmes and strategies without commensurate reduction in poverty. The near failure of these programmes and strategies has been associated with improper diagnosis of poverty as a static rather than dynamic concept. Poverty dynamics enables a better appreciation of the extent of poverty over time by distinguishing between households exiting and entering into poverty, those never poor and the persistently poor. The dynamics of and vulnerability to poverty in rural Southwest Nigeria (SWN) were therefore investigated.

Primary data were collected from a two-wave panel survey (harvesting and lean periods) employing a multi-stage sampling technique. The first stage was a random selection of Oyo and Osun states. Thereafter, was the random selection of three Local Government Areas (LGAs) from each state. Ten rural Enumeration Areas (EAs) were randomly selected from each LGA and ten households were systematically selected from each EA. In all, 600 households were interviewed in the Harvesting Period (HAP) out of which 582 could be tracked in the Lean Period (LEP) which constituted the sample size. The sample was weighted using the inverse of the overall selection probabilities to make it representative of the region. Information was collected on socioeconomic and demographic characteristics, monthly consumption expenditure as well as economic infrastructure available in the respondents' communities. Data were analysed using descriptive statistics, Foster, Greer and Thorbecke poverty measure, 3-Stage Feasible Generalized Least Squares, Tobit, Probit and Multinomial Logit regression methods.

A higher proportion of the households (79.6%) were headed by males. The mean age and household size of the respondents were 50.8 ± 15.3 years and 5.0 ± 3.3 respectively. The mean per capita household consumption expenditure at HAP was ₦4970.36 ± ₦3274.25, while that of LEP was ₦6140.43 ± ₦5113.94 with poverty lines of ₦3313.57 and ₦4093.21 respectively. The incidence of poverty was 35.0% for HAP and 43.6% for LEP. At the standard vulnerability threshold of 0.5, 55.7% of rural households in SWN were vulnerable to poverty. A unit increase in household size and dependency ratio aggravated vulnerability by 0.05 and 1.28, while attainment of

secondary and tertiary education reduced (p<0.01) vulnerability by 0.14 and 0.23 respectively. Vulnerability also translated into significantly (p<0.01) higher poverty by increasing the ex-post probability of becoming poor by 0.34. Household poverty transitions revealed that 49.5% of the households were never poor, 28.2% were chronically poor, while 22.3% were transiently poor. However, of the transient poor, while 6.8 percent exited poverty, 15.5 percent moved into poverty. Vulnerability aggravated both chronic and transient poverty by impacting on the odds of being chronically poor and moving into poverty by 10.05 and 1.80, respectively (p<0.05).

The poor in Southwest Nigeria were a heterogeneous group consisting of the transient and chronic poor. Vulnerability trapped poor households in poverty while propelling the non-poor into it. Poverty dynamics and vulnerability underscored the centrality of effective poverty reduction tools in Southwest Nigeria.

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Once again, I praise my God from Whom all blessings flow, in Whom I live, move and have my being, The Alpha and Omega: Glory to your mighty name.

Abimbola Oluwayemisi ADEPOJU   August, 2011

CERTIFICATION

I hereby certify that this work was carried out by ABIMBOLA OLUWAYEMISI ADEPOJU under my supervision in the Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria

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ACGS	Agricultural Credit Guarantee Scheme
ADF	African Development Fund
ADP	Agricultural Development Programme
AIDS	Acquired immune Deficiency Syndrome
BLP	Better Life Programme
CB	Community Banks
CBN	Central Bank of Nigeria
CPI	Consumer Price index
CWIQ	Core Welfare Indicator Questionnaire Survey
DFRRI	Directorate of Food, Roads and Rural Infrastructure
EA	Enumeration Area
ERHS	Ethiopian Rural Household Survey
FCPE	Free and Compulsory Primary Education
FCT	Federal Capital Territory
FEAP	Family Economic Advancement Programme
FFW	Food for Work
FGLS	Feasible Generalized Least Squares
FGT	Foster, Greer and Thorbecke
FMP	First-Order Markov Processes
FOS	Federal Office of Statistics
FSP	Family Support Programme
GDP	Gross Domestic Product
GNI	Gross National Income
GWEP	Guinea-worm Eradication Programme
HDI	Human Development Index
ICRISAT	International Crops Research Institute for the Semi Arid Tropics
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
I-PRSP	Interim Poverty Reduction Strategy Paper
LGA	Local Government Area

MGDs	Millennium Development Goals
MPCHHE	Mean Per Capita Household Expenditure
MPI	Multidimensional Poverty Index
NALDA	National Agricultural Land Development Authority
NAPEC	National Poverty Eradication Council
NAPEP	National Poverty Eradication Programme
NBS	National Bureau of Statistics
NCAER	National Council of Applied Economic Research
NDE	National Directorate of Employment
NEEDS	National Economic Empowerment Strategy
NFDP	National Fadama Development Project
NLSS	Nigerian Living Standard Survey
NPC	National Population Commission
NRDCS	National Resource Development and Conservation Scheme
OFN	Operation Feed the Nation
PAP	Poverty Alleviation Programme
PBN	Peoples Bank of Nigeria
PPP	Purchasing Power Parity
PSID	Panel Study of Income Dynamics
RBDA	River Basin Development Authority
RBP	Rural Banking programme
RES	Rural Electrification Scheme
RIDS	Rural Infrastructure Development Scheme
RPP	Rural Poverty Portal
SAP	Structural Adjustment Programme
SEEDS	State Economic Empowerment Strategy
SOWESS	Social Welfare Service Scheme
SPW	Special Public Works
UBE	Universal Basic Education
UN/ISDR	United Nations International Strategy for Disaster Reduction
UNDP	United Nation Development Programme
UNHCR	United Nation High Commission for Human Rights
UNU	United Nations University
VEP	Vulnerability as Expected Poverty

VER	Vulnerability as Exposure to Risk
VEU	Vulnerability as Expected Utility
VHLSS	Vietnam household Living Standard Survey
VSD	Vocational Skills Development
YES	Youth Empowerment Scheme

CHAPTER ONE

INTRODUCTION

1.1   Background to the Study

The majority of the world's poor still reside in rural areas and rely very substantially on income from agriculture, either directly as cultivators or indirectly as agricultural wage labourers. Thus, weather related shocks can generate substantial income variability. For the rural poor, who have negligible assets to buffer against such shocks, and limited access to consumption credit, such income variability could well translate into consumption shortfalls especially during periods of low rainfall. If shocks are correlated and persistent, the dynamic impact of a sequence of bad shocks could be even more substantial as households deplete assets over time in an effort to protect consumption, increasing levels of observed poverty (Healy and Mansuri, 2005).

Poverty in Nigeria is largely a rural phenomenon with agriculture accounting for the highest incidence over the years. The neglect of the rural population has increased poverty in oil-rich Nigeria. The situation has worsened since the late 1990s to the extent that the country is now considered as one of the 20 poorest countries in the world. Over 70 per cent of the population is classified as poor, with 35 percent living in absolute poverty (NBS, 2005). This situation is one of the greatest challenges to the nation's quest for economic growth and development because the rural sector, with its abundant human and natural resources remains the country's treasure-house. The failure of previous programmes and strategies to slow down the incidence of poverty in Nigeria bears a strong testimony to two main issues, namely, whether the country lacks the capacity to mitigate the social risks faced by households and communities; and whether the country has not paid sufficient attention to the issue of risk and uncertainty, which is important for the understanding of the dynamics leading to and perpetuating poverty. Given the importance of risk and uncertainty, policy makers are beginning to incorporate risk and vulnerability into their strategies to reduce poverty (Alayande and Alayande, 2004).

A conventional tool for summarizing the welfare status of the less fortunate is to estimate poverty indices based on income or consumption data. However, the welfare of a household depends not only on its present income or consumption, but also on the risks or negative shocks it faces (Zhang and Wan, 2008). It is also known that today's poor

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may not be tomorrow's poor and that non-poor households or individuals could fall into poverty due to unexpected shocks such as bad harvests, job losses, and illness. This has led to the increasing recognition in the past few years that there are considerable flows into and out of the poverty pool (Baulch and Hoddinott, 2000). For instance, Adams and He (1995) surmise that rather than households in rural villages in Pakistan remaining below poverty line from year to year, they indeed moved above and below the poverty line. In the same vein, Baulch and McCulloch (1998) observe that a high percentage of households in Pakistan moved into poverty due to temporary shocks (such as illness or loss of employment) that were reversed just one or two years later. Also, many of the people who escaped poverty or who were not vulnerable only succeeded in doing or being so for one or two years before a reverse in their circumstances forced them back below the poverty line. Therefore, analyzing poverty transitions may be more relevant from a policy perspective rather than focusing on correlates of poverty status alone as focusing anti-poverty efforts on the correlates of poverty status means that it is the symptoms rather than the causes of poverty that are being addressed (Baulch and McCulloch, 1998).

The analysis of poverty dynamics distinguishes between the transient and chronic poverty or the exit, entry and re-entry in to poverty which suggests that while some households might be trapped into chronic poverty, others might only temporarily be poor, whereas other households currently non-poor might still face a high risk of falling into poverty in the future. Chronic poverty typically causes more concern among policymakers and scholars than transitory poverty. Nevertheless, it is important to understand movements in and out of poverty over time, and factors associated with transitions, since they have relevance for poverty persistence (Gamba and Mghenyi, 2004). Poverty measured at a particular point in time however, usually does not take into account the future prospects of household welfare or associated risks. These led to the recent emergence of the concept 'vulnerability to poverty' in the economics and development literature.

Vulnerability to poverty has been defined as the likelihood that at a given time in the future, an individual will have a level of welfare below some norm or benchmark (Quisumbing, 2002). It is a forward-looking (ex-ante) measure of a household's well-being which shows that a household whether or not is poor today, may find itself poor tomorrow (Chaudhuri, 2001). Vulnerability to poverty describes the exposure to poverty rather than the poverty outcome itself. It can be determined by the options available to

households (individuals, communities) to make a living (including assets, activities, market and non-market institutions, public services provision), the risks faced by households and individuals when making a living and the ability to handle these risks (Dercon, 2001). Vulnerability is an important concept that deepens the understanding of poverty since it reveals information on what measures should be taken to prevent poverty, while poverty dynamics largely implies the past and contemporary poverty situation and is helpful on how to alleviate the existing situation. Investigating vulnerability to poverty, therefore, has both instrumental and intrinsic value (Chaudhuri, 2003). Instrumental value in the sense that so many households are faced with shocks which render their income volatile and in the absence of adequate risk management strategies, households may adopt strategies that perpetuate the vicious cycle of poverty as is the case in most developing countries. It has intrinsic value because individuals should not only have sufficient resources today but must also have good prospect today of having enough to live a comfortable life tomorrow. Thus, poverty reduction policies should not only care about people who are currently in poverty but also give concern to those who have higher risks of falling into poverty. Long-term poverty reduction may, however, only be possible by reducing the probability of falling into poverty and thereby reducing vulnerability (Gunther, 2006).

1.2   Problem Statement

Poverty is prevalent in large parts of the world and is one of the largest challenges of mankind in the 21st century. Therefore, member states of the United Nations decided at the Millennium Summit in 2000 to combat global poverty and to halve the number of poor people by the year 2015. While the Millennium Development Goals (MDGs) give quantitative targets and indicators in order to measure progress in the fight against poverty, the achievement of these targets is jeopardized because poor people are especially vulnerable with the least possibilities to cope with hazards or shocks. On a global scale, over 1.4 billion people live below the international poverty line of $1.25 per day, that is are poor at any point in time (International Herald Tribune, 2008) and many more people are faced with temporary poverty or are at a high risk of falling into poverty. While most of the developing world has managed to reduce poverty, the rate in sub-Saharan Africa, the world's poorest region, has not changed in nearly 25 years, using the new $1.25 a day poverty line (International Herald Tribune, 2008).

Every yardstick of poverty ranks Nigeria at the bottom list of nations, with a Human Development Index (HDI) of 0.423 which gives the country a rank of 142 out of 169 countries in 2010, estimated GNI per capita of $2156, life expectancy at birth of 48.4 years, Multidimensional Poverty Index (MPI) of 0.368 (UNDP, 2010) and 54.4% of the population below the poverty line in 2004 out of which 36.6 % of the total population are living in extreme poverty (NBS, 2005). In other words, about 76.6 million Nigerians are languishing in poverty out of an estimated population of about 140 million. Findings of a 2006 Core Welfare Indicator Questionnaire (CWIQ) survey conducted by the National Bureau of Statistics also reveal that 67 per cent or two-thirds of Nigeria's rural population were poor compared to 57.9 per cent in urban areas (Okoronkwo, 2007).

With only four years away from the target date for achieving the MDG goal on the reduction of poverty and hunger, the rural poverty situation remains a daunting challenge. Experts say that rather than decline, the poverty profile has been on the increase over the past decade. The rate of poverty reduction achieved, if any, is far below what is required to achieve the MDG poverty reduction goal (Okoronkwo, 2007). The reality of the Nigerian situation is that the benefits of development have bypassed large segments of the rural society in a country that is vastly rich in oil and other mineral resources and yet is home to extremely poor people. The rural communities suffer immense deprivation. Life in the rural area is often devoid of opportunities and choices, while the environment is lacking in infrastructure, such as roads, potable water and sanitation, electricity and communication facilities (RPP, 2008). This ugly circumstance subjects the people to different forms of risks, most of which threaten their livelihoods and their existence.

Successive governments of Nigeria have however, tried several programmes, approaches and strategies (Green Revolution, National Fadama Development Project I, II and III, National Poverty Eradication Programme (NAPEP), National Economic Empowerment Development Strategy (NEEDS), Seven Point Agenda among others)[1] aimed at improving the conditions of the rural poor. While some of the efforts are still on course, many have since gone moribund (Nwachukwu and Ezeh, 2007). Despite these various programmes and strategies, the number of the poor continues to rise. There are suggestions that the major issue is not that households are poor but the probability that a household if currently poor, will remain in poverty or if currently non-poor will fall

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[1] See Appendix I for an appreciation of governments' efforts at poverty alleviation in Nigeria.

below the poverty line (that is household vulnerability to poverty). That is vulnerability to poverty is one of the factors that explain the ever-increasing level of poverty. Given the increasing population growth, rapid urbanization, environmental degradation, frequency and magnitude of natural disasters and recent food, fuel and financial crises (the so called 3F's), the concept of vulnerability can no longer be ignored as investigating poverty from a dynamic perspective is expected to show useful insights for poverty alleviation policies.

In all these major challenges currently facing the world and Nigeria in particular, no progress is possible without alleviation of poverty. To reduce poverty sustainably, however, reducing household vulnerability and increasing household resilience are also necessary. This aspect is often overlooked by policy-makers. For instance, most of the traditional measures of poverty, including those used to define some of the Millennium Development Goals (MDGs), only weigh the current poverty of a household, with no regard for the probability that a household might fall into poverty in the future. This *ex post* measure of development needs to be replaced by indicators that recognize that anti-poverty policies need to be forward-looking and incorporate the hazards affecting whether individuals or households are in poverty or are likely to fall into poverty, that is, their vulnerability (Naude *et al.,* 2008). Consequently, this study will attempt to answer the following questions:

- What are the factors influencing household poverty and vulnerability?
- What is the relationship between household poverty and vulnerability?
- Are vulnerable households more likely to remain poor if poor?
- Are vulnerable households more likely to slip into poverty if non-poor?

1.3   Research Objectives

The main objective of this study is to assess the vulnerability of rural households to poverty in South West Nigeria and examine how it affects their poverty status over time. The specific objectives are to:

(i)   generate a vulnerability profile of rural households in South West Nigeria;

(ii)   examine the correlates of poverty and vulnerability to poverty;

(iii)   assess the relationship between vulnerability and poverty status and

(iv)   examine the factors influencing poverty transitions in rural South West Nigeria.

1.4   Justification of the Study

The need for designing and targeting of forward-looking interventions underscores the need for vulnerability assessments in Nigeria (Alayande and Alayande, 2004). The poor are commonly asserted as being among the most vulnerable in any society (World Bank, 2001). However, the overlap between poverty and vulnerability is not perfect. Clarifying the distinction between poverty and vulnerability is, therefore, important especially since social protection strategy is moving from ex-post poverty strategies to ex-ante vulnerability considerations (Holzman, 2001). This study will therefore, assist in quantifying not only the existing poor but also those in danger of becoming poor in the future.

Until recently, development institutions and economists (e.g. World Bank, 2001; NBS, 2005 Swanepoel, 2005; Omonona, 2001) have measured the well being of the poor people and households in a population using cross-sectional data on income and/or consumption expenditures mostly over a short period of time. The focus was on static poverty measures generally expressed by indicators such as the headcount ratio and the poverty gap. The drawback of such approach is that it measures poverty on a given date without distinguishing between those that are chronically poor due to low asset base and those that are transiently poor due to shocks. Recent research has however established that for assessing the well-being of poor households and for devising effective strategies of poverty reduction in developing countries, the need for measures that take into account the dynamic nature of poverty phenomena is imperative (Hardewag *et al.*, 2007). In line with the recent trend, this study, therefore, assesses the dynamics of poverty in rural Southwest Nigeria with a view to assist in isolating effective strategies for poverty reduction.

While a number of studies have analyzed the status of poverty in Nigeria (FOS, 1999; Okojie *et al.,* 2000; Aigbokhan, 2000) very few have analyzed its dynamics. For instance, Alayande and Alayande (2004) carried out a quantitative and qualitative assessment of vulnerability to poverty in Nigeria using the 1996 national data without the inclusion of covariates. Oni and Yusuf (2008) extended this approach with the inclusion of some regional specific covariate shocks in their analysis of expected poverty for rural Nigeria also using the 1996 national data. Oyekale and Oyekale (2007) further assessed income shocks and expected poverty dynamics using the 2004 national data while Oluwatayo (2007) examined the determinants of vulnerability to poverty among rural households in Ekiti State. However, these studies apart from using cross sectional data

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which involves the exclusive reliance on the strong assumption of the ability of cross-sectional variability to capture temporal variability, did not investigate which factors were associated with movements into and out of poverty and how they compare with the static correlates of poverty. The problem of distinguishing between chronic and transitory poverty, and investigating the factors that determine if a household will remain poor or move out of poverty with time has not received much attention in the poverty literature in Nigeria, largely due to the lack of nationally representative panel data that track the poverty status of households over time. The attendant cost of collecting such data at the national level and the need to demonstrate the usefulness of panel data justifies the choice of South Western Nigeria.

An understanding of the factors that determine poverty transitions has important implications for the design of cost effective poverty reduction strategies (Kirimi and Sindi, 2006) particularly for rural communities in Nigeria where poverty rates are disproportionately high. It will also allow anti-poverty policies to be targeted at particular vulnerable groups because if the characteristics of those above the poverty line but vulnerable to shocks differ from those of the poor, targeting the latter may miss a significant proportion of those whose living standards decline sharply when a shock occurs (Gaiha *et al.*, 2007). This study will, therefore, examine the factors associated with poverty transitions to allow for effective targeting of vulnerable groups.

Apart from contributing to scarce literature on poverty transitions and vulnerability to poverty in Nigeria, this study will also allow for a characterization of the importance of variations in household consumption at seasonal frequencies. It will further contribute to the body of knowledge as knowledge of a household's vulnerability to poverty is important not only for cognitive purposes, but also to design appropriate vulnerability mitigating interventions. In this way policymakers can formulate better risk-management policies (including a mix of informal, market-based, and public risk management methods) to reduce the effect of shocks in a cost-effective manner (Appiah-Kubi and Oduro, 2005). Moreover, policies purely based on current poverty profile may not be effective for those vulnerable individuals and households therefore, by obtaining a vulnerability profile, both existing and future poverty can be targeted (Zhang and Wan, 2008).

The foregoing phenomenon suggests that a thorough understanding of the poor and vulnerable, their characteristics, constraints and priorities is crucial to formulating an effective strategy for reducing poverty and for designing social protection programmes.

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Since vulnerability analysis is also key to understanding the dynamics leading to and perpetuating poverty, an assessment of the dynamics of poverty in Nigeria will provide a deeper understanding of the linkages between vulnerability and poverty. This would also provide an empirical basis for social policy, thereby strengthening both the analytical and operational content of the Nigerian poverty reduction programmes. This study would therefore, provide the basis for a dynamic approach on what can be done to help the current poor come out of poverty and to reduce the likelihood of the vulnerable from falling into poverty in Nigeria.

1.5   The Structure of the Thesis

The study is divided into six chapters. Following this introductory chapter is chapter two which gives the conceptual/theoretical framework, an overview of the poverty situation and review of relevant literature on poverty, poverty transitions and vulnerability. Chapter three presents the methodology for analyzing the determinants of poverty, vulnerability and poverty transitions. It also describes the panel data used in the study. The results of the analysis on socio-economic characteristics, determinants of rural household consumption and vulnerability profile are presented in chapter four while chapter five discusses the determinants of poverty, vulnerability and poverty transitions. Chapter six presents the summary of major findings, policy implications, conclusion and recommendation.

THEORETICAL/CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Vulnerability to Poverty – The Risk Chain

The theoretical understanding that guides this analysis is from the literature on household economic vulnerability and particularly the concept of the risk chain. Vulnerability to poverty is usually defined in the economics literature as, "having a high probability of being poor in the next period" and is determined by the ability of households and individuals to manage the risks they face (Dercon, 2001). Although vulnerability is a dynamic concept in that it is concerned with the potential future welfare status of individuals and households, it also provides useful insights into accounting for why households and individuals are predominantly poor or not poor at a particular time.

The risk chain decomposes household economic vulnerability into three links: risk or risky events (shock), responses to risk and outcome in terms of welfare. The level of economic vulnerability of households is dependent on the degree to which they are exposed to negative shocks to their welfare and on the degree to which the households can cope with such shocks when they occur. Their current welfare status (whether they are poor or not) is the outcome. Although it might be described in different ways, the risk chain is a common framework in a range of sub-disciplines, including development and welfare economics, the food security literature, hazards and global climate change research, and in health and nutrition (Alwang *et al.,* 2001). To what extent households or individuals are exposed to shocks to welfare is an important consideration in assessing their likelihood of being vulnerable to falling into poverty. These risks may be events that affect the population broadly (covariate risks) or those that affect individuals or households in a more random fashion (idiosyncratic risks). Whether exposure to a risky event results in a decline in welfare depends on the degree to which the household or individual is susceptible to harm from that shock. Their resilience depends on whether they have access to necessary resources or assets to cope effectively with the shock so that no lasting damage is done to their well-being. Households can employ a broad range of risk management strategies in the face of shocks. The welfare outcome for a household or individual faced with a negative shock to their economic well-being could

be measured in several ways—most commonly, a consumption-based welfare indicator. In this study, per capita household expenditure was used. Child malnutrition rates, food consumption levels, any manner of human development or welfare indices and so on could also be used (Benson *et al.,* 2003).

Poverty dynamics refers to processes which either increase or decrease the poverty. This implies that the analysis of poverty dynamics focuses on the flow than mere stock of poverty. The conception of poverty dynamics can be broadened by including a range of social change factors including different forms of capital like social, political, environmental, cultural and coercive on top of economic and human capital (Shaffer, 2000). Changes on one of the forms of capital interact in a complex way with other forms of capital and result in change in poverty relevant policy. The changes may have either complementing or conflicting effects on each other and different aspects of well being. Studies that try to investigate on the causes of poverty and its persistence base their theoretical frame work on either aggregate or micro levels. Piachaud (2002) describes theoretically different forms of capital that are important in avoiding poverty drawing views from economics and other social sciences. Adam Smith, a couple of centuries ago, acknowledged that the wealth of nations depended on their level of physical capital, on the skills of the labor force, on the technological processes used, and on the prevailing moral values. In the 1940s, the Harrod-Domar model emphasized on accumulation of physical capital beyond the amount required to replace depreciation (Todaro and Smith, 2003) while Solow (1956) expanded the Harrod-Domar model giving attention to another factor of labor and technology.

In the mid 1960s, the Chicago economists, Schultz and Becker, realized that alike to physical capital, human capital can also be accumulated in the form of education and skill, which could result in rise in output and earning. Kalador (1957) hypothesizes that technical progress depends on level of investments and Romer (1986) argues that capital accumulation results in learning which cannot be internalized and imitation then raises efficiency in the economy as a whole. In the 1990's a shift of view occurred that institutions really matter for economic growth. A society that lacks good institutions will be characterized by low investments and low incomes. Besides, other social science disciplines initially identified that social capital (the norms, networks, rules and social values) is important for prosperity and avoiding poverty, whose importance has recently been recognized by economic literature. Based on the above reviews, Piachaud (2002) identifies the following forms of capital: financial, physical, human, public infrastructure

and social as important varieties of capital that can be accumulated and affect prosperity and poverty at individual, community and national levels.

Similarly, Shaffer (2000) reviews the changes in conception and analysis of poverty dynamics and identifies two major changes .One, the causal factors broadened to include a range of social factors. Two, the causal structure deepened focusing on flows than stock of poverty. Based on the causal factors different poverty intervention approaches are in practice. A few among others are the human capital approach based on presumption that there is a link between investment in education, health and nutrition and the primary income of the individual (or poor), and the production function approach presupposing that the primary income of an individual (or poor) is related to the output she or he produces and output is a function of factors of production (land, labor and capital). The conventional micro perspective of proximate causes of poverty is based on individual's behavior. The neoclassical economics argues that an individual is poor because of his/her decisions. The assertion is individuals seek to maximize their own well being by making choices and investments. When some people choose short term and low-payoff returns, economic theory holds the individual largely responsible for their individual choices, for instance to forego education or other training that will lead to better paying employment or adoption of production process in the future.

Past studies have distinguished between three forms of vulnerability (Hoddinott and Quisumbing 2003a, 2003b) – (i) Vulnerability as Expected poverty (VEP) or an ex ante measure of vulnerability; (ii) Vulnerability as Expected low Utility (VEU) or an ex post measure of vulnerability; and (iii) Vulnerability as Uninsured Exposure to Risk (VER) also an ex post measure of vulnerability .

2.1.2 Vulnerability as Expected Poverty (VEP)

VEP was first proposed by Chaudhuri *et al*. (2002). Vulnerability in this approach is defined as the probability of being poor in the future and intrinsically can take on two forms. It is either the *ex ante* risk that a household that is currently not poor will fall below the poverty line or the risk that a household that is currently poor will remain poor. This can be formally expressed as:

$$V_{ht} = \Pr\left(C_{h,t+1} \leq Z\right) \dots\dots\dots\dots\dots \tag{1}$$

Where $C_{h,t+1}$ is the household's per-capita consumption level at time $t+1$ and Z is the poverty line.

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Following from the definition of vulnerability in equation 1, the determinants of the household consumption C_h are used because a household's consumption pattern in any period is influenced by cross-sectional determinants of consumption as well as inter-temporal aspects of consumption. Consumption can therefore be presented in the following reduced form expression:

$$C_{h,t+1} = C\ (X_h, \beta_t, \alpha_h, \varepsilon_{ht}) \dots\dots\dots\dots\dots\dots \quad (2)$$

where: X_h denotes a bundle of observable household characteristics , β_t is a vector of parameters describing the state of the economy at time t, α_h and ε_{ht} represent respectively, an unobservable time-invariant household-level effect and any idiosyncratic factors that contribute to differential welfare outcomes for households that are otherwise observationally equivalent.

Substituting equation 2 into equation 1, the expression for the vulnerability can be rewritten as:

$$V_{ht} = \Pr\ (C_{h,t+1} = C(X_h, \beta_{t+1}, \alpha_h, \varepsilon_{h,t+1}) \leq Z\ |X_h, \beta_{t+1}, \alpha_h, \varepsilon_{ht}) \dots\dots\dots\dots \quad (3)$$

The expression in equation 3 suggests that a household's vulnerability level derives from the stochastic properties of the inter-temporal consumption stream it faces, and these in turn depend on a number of household characteristics and the characteristics of the environment it operates. This expression allows for the possibility of complicated interactions between the multiple cross-sectional determinants of a household's vulnerability level and because a household vulnerability is defined in terms of its future consumption prospects conditional on its current characteristics, both observed and unobserved, the possibility of poverty traps and other non-linear poverty dynamics is implicitly built in.

The possible contribution of aggregate shocks and unanticipated structural changes in the macro-economy to vulnerability at the household level is also incorporated through inclusion of some time-varying set of parameters (Chaudhuri, 2002). Thus, the different types of shocks that households are faced with are incorporated in the measure of vulnerability to poverty. Covariant shocks such as droughts, floods, price rises, worsened terms-of-trade for agricultural products, and other health-related shocks that affect whole communities are represented in equation 3 as α_h. Household-specific shocks such as job losses, death in the household, death of the breadwinner, indebtedness, illnesses, injury, and birth in the family are entered into the system as ε_{ht}. These shocks determine how a household is currently vulnerable to future consumption poverty, as denoted by the subscripts in equation 3 (Makoka and Kaplan,

2005). VEP estimation assumes that per capita expenditure is normally distributed and parameter estimates are obtained using a three-step feasible generalized least squares (FGLS) methodology. Using these estimated values, the expected log consumption and the variance of the log consumption for each household is obtained.

2.1.3 Vulnerability as Expected Utility (VEU)

In this context, Ligon and Schechter (2003) posit that VEP has the perverse implication that increases in risk would reduce the vulnerability level of those with mean consumption levels below the poverty line since the FGT measure is not well suited in representing household risk attitude. To remedy this weakness, they propose VEU which focuses on the distribution of households' consumption expenditures rather than measures of income or wealth on the grounds that these kinds of expenditures are what most directly determine household welfare. They define the vulnerability of the household by the function:

$$V^i(c) = U^i(z) - \mathrm{E}U^i(c^i).$$

(4)

Where z is some certainty-equivalent consumption such that if household i had certain consumption greater than or equal to this number, the household will not be regarded as vulnerable. The choice of z is analogous to the choice of the "poverty line" in the poverty literature. Hence, the vulnerability of a typical household is defined as the difference between the utility from a certainty equivalent consumption (z) sufficient to ensure that the household is not regarded as vulnerable and the expected value of the actual utility of the household from its (risky) stream of consumption. To better understand the balance between poverty and risk in their measure of vulnerability, they then decompose the measure into distinct components reflecting poverty and risk respectively:

$$
\begin{aligned}
V^i(z) = \quad & [U^i(z) - U^i(\mathrm{E}c^i)] && \text{(Poverty)} \\
+ \ & [U^i(\mathrm{E}c^i) - \mathrm{E}U^i(\mathrm{E}(c^i|\bar{x}))] && \text{(Aggregate risk)} \\
+ \ & [\mathrm{E}U^i(\mathrm{E}(c^i|\bar{x})) - \mathrm{E}U^i(c^i)]. && \text{(Idiosyncratic risk)}
\end{aligned}
$$

(5)

The merit of this measure, besides redressing the weakness of VEP, is to allow decomposition of vulnerability to the factors that resulted them, that is vulnerability due to poverty reflecting low asset or low asset return, vulnerability due to aggregate or

idiosyncratic risk reflecting the aggregate or idiosyncratic shock and inability to cope with them. However, two demerits of this measure are that results depend on the functional form assumed and the unit of measurement is in a term of util which is not easily understandable to non-economists.

2.1.4 Vulnerability as Exposure to Risk (VER)

VER is an *ex-post* measure of vulnerability. This approach to the measurement of vulnerability (Amin *et al.,* 1999; Glewwe and Hall, 1998; Dercon and Krishnan, 2000) focuses on the response of households' consumption expenditures to various observable shocks such as drought or idiosyncratic fluctuations in income. If household consumption expenditures covary with income shocks, then it may be inferred that a risk-averse household lacks the means to smooth or insure away these shocks to its expenditures. However this measure of vulnerability does not depend directly on a household's level of consumption or the risk a household bears. Hence, a household with a large variation in consumption which does not stem from variation in observables would have a low measured vulnerability. Shocks result in drops in consumption and hence welfare losses when risks are not managed effectively. Vulnerability depends on the severity of shocks – both idiosyncratic as well as general. Typically, households are better able to cope with idiosyncratic shocks as opposed to general shocks and within the context of measurement of poverty, it is important to identify those households that become chronically poor as a result of such general shocks (Gaiha and Imai, 2004). The merit of this approach is that it allows seeing whether aggregate or idiosyncratic shocks are dominant causes of welfare loss. Moreover, it shows whether the existing risk management is doing poorly in protecting households from income shocks. The downside of the approach is that it requires panel data, it doesn't provide a "headline" estimate of vulnerability and it is backward looking. Indeed, looking in retrospect is important, nevertheless forward-looking poverty interventions require measures that can identify who will lose than those actually lost in retrospect. Besides, under this approach what matters is the change in outcome not the levels as there is no critical threshold (like poverty line) and probabilities of shock occurring doesn't matter rather it is the reaction to shock, given that the shock occurs (Calvo and Dercon, 2005) . In other words, what matters is the uninsured exposure to risk.

A common characteristic that these three approaches have is that each of them constructs a model that predicts a measure of welfare. Further, VEP and VEU share two

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characteristics: they make reference to a welfare benchmark as well as a probability of falling below this benchmark. While VEP and VEU approaches employ the same measure in analyzing vulnerability, the VEU approach takes into consideration covariate shocks and considers risk preferences in evaluating vulnerability. In this study, following the framework of Chaudhuri *et al.* (2002) and Gaiha *et al.* (2007), vulnerability was defined as the probability that a household would find itself consumption poor in the next period. Ideally, an estimate of household's expected mean and variance of consumption expenditures requires panel data collected over a sufficiently long period. However, since there is no panel data in Nigeria till date, this study estimates the extent of vulnerability as "expected poverty" (Suryahadi and Sumarto, 2003; Christiaensen and Subbarao , 2001; Chaudhuri, 2003; Kamanou and Morduch, 2004; Oni and Yusuf, 2006; Oyekale and Oyekale, 2007) for currently poor and non poor households because of the advantage of the VEP approach especially in terms of its capability to identify households "at risks" who are not poor and owing to the fact that this study employed a short period panel data. The other vulnerability measures (Vulnerability as Expected Utility (VEU) and Vulnerability as Exposure to Risk (VER) which are *ex post* measures can only be constructed with the availability of long panel data set where household response to shocks can be identified (Gaiha *et al.,* 2007).

2.2 Conceptual Framework

Concepts of vulnerability and poverty (which is also multidimensional) are linked but not identical. For example, (Hoddinot and Quisumbing, 2003a, 2003b; Christiaensen and Subbarao, 2001; Kamanou and Murduch, 2002 and Chaudhuri, Jalan and Suryahadi 2002) submit that vulnerability is an ex-ante (forward-looking) rather than an ex-post concept. While poverty status can be observed at a specific time period given the welfare measure and the poverty threshold, household vulnerability is not directly observed; rather it can only be predicted. In other words, the observed poverty status of a household (defined simply by whether or not the household's observed level of consumption expenditure is above or below a pre selected poverty line) is the ex-post realization of a state, the ex-ante probability of which can be taken to be the household's level of vulnerability. While poverty is concerned with not having enough now, vulnerability is about a high probability now of suffering a future shortfall (Christiaensen and Boisvert, 2000). However, it is pertinent to say that though in practice, the poor are

often also vulnerable, both groups (poor and vulnerable) are not typically identical (Sen, 1998 and Baulch and Hoddinot , 2000).

Vulnerable people live in circumstances where they are liable to, or live in fear of, a sudden, traumatic loss of their means of livelihoods and of their social or physical environment that they cannot prevent. This loss may be caused by a range of hazards including natural disasters or civil conflicts which affect many, or shocks such as sickness or injury which may affect individual households. In each case, vulnerable people lack the resilience to cope with and recover from such shocks. The resulting loss is enough to push them into a crisis situation where they are unable to continue with their old means of livelihoods. On the other hand, poor people have a low level of assets (physical, financial, natural, human and social) on which to base their livelihood strategies. They are usually the most vulnerable because they have little to fall back on if any shock suddenly reduces one or more of these assets still further. Their ability to adapt to changed circumstances and adopt different livelihood strategies is limited. They also tend to have little access to and influence over the institutions and policies that govern their entitlements to resources.

2.2.1 Linkages between Vulnerability and Poverty

The linkages between vulnerability and poverty have been the subject of intensive research. According to literature (Hoddinot and Quisumbing, 2003a, 2003b; Chaudhuri *et al.,* 2002; Christiaensen and Subbarao, 2001; Kamanou and Mudorch, 2002), there is a clear linkage between vulnerability and poverty. Vulnerability to poverty forms a particular linkage between the two concepts. Although, vulnerability and poverty are both seen as multi-dimensional concepts, poverty is not only regarded as not having enough income anymore, but also looks at the "well-being" of the people and focuses more on social and economic obstacles than on the hazard itself, while vulnerability gives a forward-looking perspective on what might happen, if a certain hazard takes place. That is, poverty is a description and measure of current status (Alwang *et al*., 2001 and Cannon *et al.,* 2003) and is not hazard-specific like vulnerability. The micro-level literature focusing on rural poverty dynamics has (collectively) highlighted the possible two-way causality between poverty and vulnerability (e.g., Morduch 1995; Dercon 2005). On the one hand, poor households tend to be more vulnerable to various income shocks than their wealthier neighbors. Due to their poverty (e.g., low level of asset holding and limited access to credit), they are often

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ill-prepared to cope with negative income shocks. Given their already low margin for survival, the direct consequences of suffering from the income shock could be quite severe. On the other hand, vulnerability could exacerbate the future depth of poverty and the very behaviour to cope with the risks could make their prospect of escaping poverty even more remote. Given the potentially grave consequences of negative income shocks, the poor may opt for "income smoothing" strategies by choosing safer but lower-return economic activities/investments, thereby forgoing potentially higher-return (but riskier) economic activities. In addition, some *ex post* risk-coping (consumption smoothing) behaviours (such as the depletion of assets) could erode the productive base for future income earnings (Balisacan and Fuwa, 2004).

In the context of development cooperation, vulnerability is seen as one aspect, which can cause poverty or hinder people from escaping out of poverty and the inclusion of vulnerability into analyses of poverty is supported by the fact that today's poverty is not only being measured as income poverty, but also seen within a larger framework of "well-being", which tries to take a comprehensive view on the livelihood of the people (Makoka and Kaplan, 2005). It is therefore expected that when households and individuals are classified on the basis of poverty and vulnerability to poverty, there may be some overlapping because some households will be poor and vulnerable to poverty. However poverty is not a sub-set of vulnerability to poverty and vulnerability to poverty is not a sub-set of poverty. A classification of vulnerability to poverty developed by Dercon (2000) brings this out quite clearly. Hence the vulnerable to poverty consists of four groups:

• The permanently poor
• Those becoming permanently poor because of trend events that will take them below the poverty line.
• Those likely to become poor because of predictable events
• Those likely to become poor because of shocks or damaging fluctuations.

As shown in figure 2.1, the permanently poor and those becoming permanently poor due to trend events are the chronically or structurally poor, those likely to become poor due to predictable events are those likely to move out of poverty but may be poor again while those likely to become poor because of shocks or damaging fluctuations are those at risk of becoming poor. Thus households and individuals vulnerable to poverty include some of the poor and some of the non-poor.
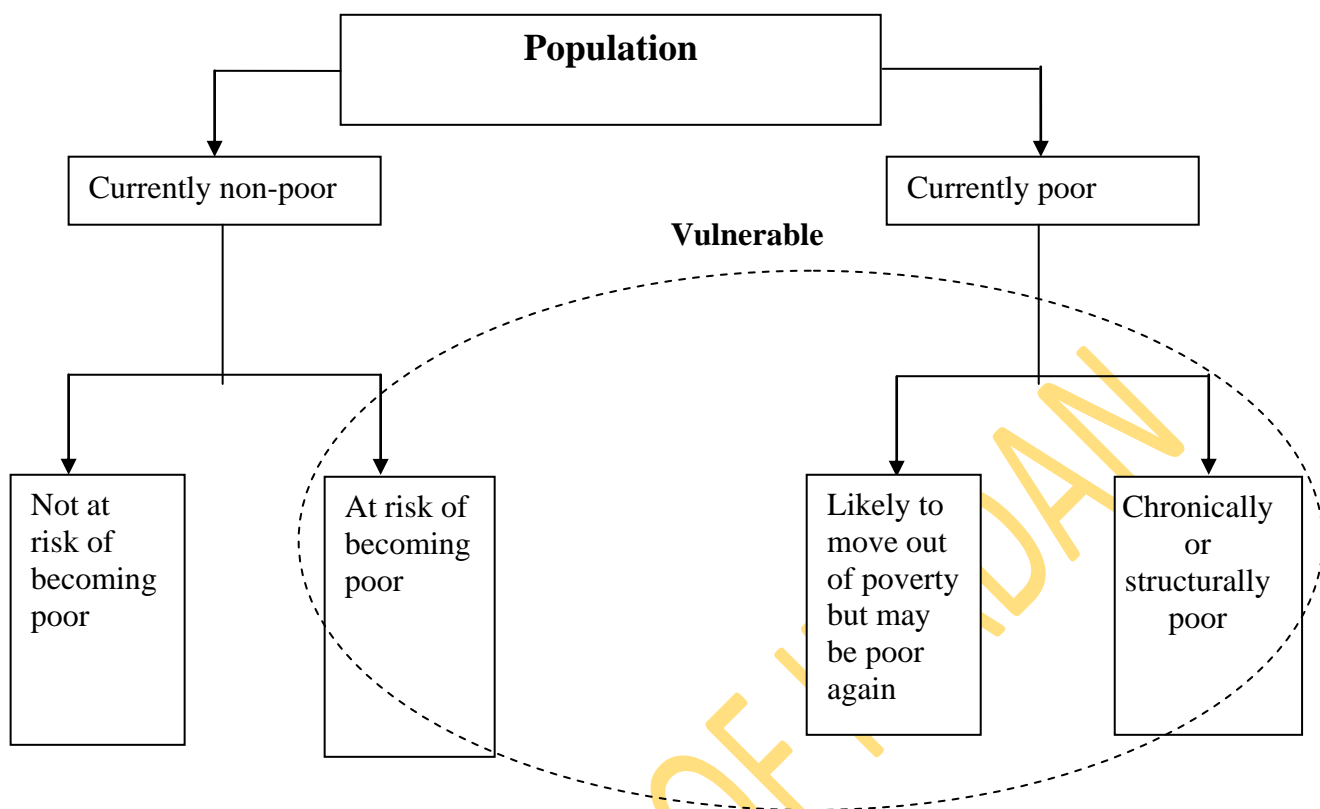
Fig. 2.1   **Conceptual Framework on Vulnerability to Poverty**

Source: Grosh *et al.* (2008)

2.2.2   Definition of Poverty

Poverty is a vicious cycle, which keeps the poor in a state of destitution because it affects many aspects of human welfare. Generally, poverty is defined as an unacceptable level of welfare. In this context, welfare covers a broad range of dimensions such as consumption or income poverty, inadequate nutrition, lack of access to health and education, insecurity due to conflicts and lack of political freedom among others (Grosh *et al.,* 2008). Though poverty exists in all nations of the world, a universally acceptable consensus in its definition has remained elusive. Quite a number of researchers and scholars have written elaborately about the concept of poverty. Their perceptions and definitions of poverty however vary from one socio-cultural setting to another.

The World Bank (2000) broadly defines poverty as lack of command over commodities, leading to pronounced deprivation in well-being or welfare, which extends beyond food and non-food items to include key assets and social determinants which are essential for human development. UNDP (2002) sees poverty in relation to human beings and defines human poverty as the lack of basic human capabilities, illiteracy, malnutrition, etc. UNHCR defines "Poverty" as a human condition characterized by the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political social rights (UNHCR, 2004). Thus, poverty is the state of being without the necessities of daily living, often associated with need, hardship and lack of resources across a wide range of circumstances. Kasirye (2007) and Ayoola *et al.* (1999) describe the poor as those who cannot obtain adequate income and feed properly, live in unhygienic houses, cannot educate their children quantitatively, are unemployed, lack formal education and cannot pay medical bills. Englama and Bamidele (1997) also defined poverty as a state where an individual is not able to cater adequately for his basic needs of food, clothing and shelter, when he is unable to meet social and economic obligation, unemployed, lacking skills, assets, self-esteem and has limited access to social and economic infrastructure such as education, health, potable water and sanitation, and as a result has limited chance of advancing his welfare beyond the limit of his capabilities. Similarly, Olayemi (1995) defines poverty at the household or individual level as the inability to gain access to basic necessities of life (such as food, clothing and shelter; inability to fulfil basic economic and social obligations, and a general lack of self-esteem.

From the above discussion with regard to the definition of poverty, it is obvious that no universally recognized or agreed definition of poverty exists. However, it could be concluded from the various descriptions and views that the inadequacy of a person's or household's earnings to meet basic necessities in his community at a point in time describes the person's or household's degree or level of poverty. It can also be inferred that mere physical subsistence is not sufficient to regard a person or household as not being poor, as things like lack of comfort, lack of opportunities, vulnerability and also lack of status and power to control the benefit of one's labour are also elements of poverty. These facts make it difficult to quantify poverty.

2.2.3   Main Concepts of Poverty

The measurement and analysis of poverty requires some measure of welfare. Ideally, such a measure would capture the multidimensional aspects of poverty and be observable and measurable in a consistent way across households, space and time. One-dimensional welfare measures, whether monetary (income, consumption and assets) or non-monetary (malnutrition, access to health, education and basic services) are more common (Grosh *et al.,* 2008). From the perspective of indicators, these distinctions are important since poverty measurement and subsequent policy and programme implications depend on what facets or angles of poverty are being addressed. For example, if a national poverty reduction strategy is supposed to address both temporary and chronic poverty, two distinct sets of policies and programmes would be required, along with two sets of indicators for establishing baselines and monitoring progress (Dessalien, 2000). Likewise, if the definition of poverty is based on the human capabilities concept, then appropriate sets of indicators would be required to measure it along with corresponding policies and programmes to address it. This would result in poverty reduction strategies that differ from those associated with an income-based concept of poverty (UNDP, 2000). This section describes different concepts of poverty and attempts to distinguish them from other closely related concepts.

- **Absolute and Relative Poverty**

Poverty can be viewed in absolute and relative terms. Absolute poverty refers to subsistence below minimum, socially acceptable living conditions, usually established based on nutritional requirements and other essential goods (e.g. per capita income under a certain arbitrarily fixed poverty line in USD per unit of time, a daily intake of

less than 2,150 calories/person/day, or Human Development Index). It is a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services (United Nation Report of the World Summit for Social Development, 1995). In this regard, absolute poverty is characterized by low calorie intake, poor housing conditions, inadequate health facilities, poor quality of educational facilities, low life expectancy, high infant mortality, low income, unemployment and underemployment.

Relative poverty compares the lowest segments of a population with upper segments, usually measured in income quintiles or deciles and may be quantified by concentrating on a small number of key indicators such as the share, in national wealth or income, possessed by 20% of the poorest inhabitants of a country. It is considered within the European Union as having an income which is 60% or less than the national median income per adult equivalent. Relative poverty would occur where certain sections of a society do not have adequate income to enable them have access to some basic needs being enjoyed by other sections of such society (Olaniyan and Bankole, 2005).

Absolute and relative poverty trends may move in opposite directions. For example, relative poverty may decline while absolute poverty increases if the gap between upper and lower strata of a population is reduced by a decline in well being of the former at the same time that additional households fall beneath the absolute poverty line (Dessalien, 2000). Even within so-called absolute poverty, countries often distinguish between indigence, or primary poverty and secondary poverty (sometimes referred to as extreme and overall poverty). Indigence usually refers to those who do not have access to the basic necessities for human survival, while other forms of poverty refer to degrees of deprivation above that threshold. For example, households incapable of obtaining sufficient food for survival are considered absolutely poor. However, the costs and composition of that food basket may vary considerably between households across different groups, regions and countries (Makoka and Kaplan, 2005). Another facet of absolute and relative aspects of poverty pertains to changes in circumstances. For example, if prices rise faster than incomes, the well-being of some households classified as relatively poor may decline to levels formally associated with absolute poverty, without a corresponding change in status since the living standards of the absolute poor have also declined proportionally.

- **Chronic and Transient Poverty**

The analytical research into the relationship between poverty and risk and the subsequent distinction between chronic and transient poverty dates back to Ravallion (1988), named persistent and transient poverty by him. Morduch (1994) defines these notions of poverty sample-specific: If a household is poor in every observed period, it is chronically poor; otherwise it is transiently poor, which he also names stochastic poverty, as the transient poverty often is caused by stochastic elements. Transitory poverty may result from households' inability to smooth consumption while chronic poverty may occur because households don't accumulate sufficient physical or human capital (Ulimwengu and Kraybill, 2004). Many households, while not currently in poverty, are vulnerable to events like a bad harvest, job loss, illness, death, and unexpected expense or even an economic downturn that could easily push them into poverty (Pritchett *et al.,* 2000).

Chronic poverty can be identified by its persistence over time (Hulme and Shepherd, 2003) as an individual, or household, is classified as chronically poor if observed welfare over an observed length of time is below the minimum social norm. According to Barrientos (2007), there are three main operational definitions of chronic poverty emerging from the literature. One approach focuses on the duration of poverty spells and defines a chronically poor household as one which shows per capita levels of income or consumption at or below the poverty line at each, or most, observation points (Baulch and Hoddinott, 2000; Baulch and Masset, 2003). The chronically poor are identified as those found to be persistently below the poverty line. A second approach focuses on income or consumption shortfall over a period of time. In line with the permanent income hypothesis, it suggests income and consumption have constant and fluctuating components, which can be distinguished empirically (Ravallion, 1988; Jalan and Ravallion, 2001). A household is said to be chronically poor if its constant (permanent) component of income or consumption is at, or below, the poverty line. A third approach focuses on the probability of deficient future consumption. It combines knowledge of current income or consumption with its variance across households to estimate the probability that future income or consumption is below the poverty line (Pritchett *et al.*, 2000; Chaudhuri and Datt, 2001; Chaudhuri *et al.*, 2001; Chaudhuri, 2002). This approach makes the strong assumption that variability in consumption across households can proxy variability in household consumption over time. It defines a household as chronically poor if its current consumption is at or below the poverty line

and, on the basis of current information, has a high probability that future consumption will also be at or below the poverty line. According to McKay and Lawson (2002), the characteristics most commonly associated with chronic poverty include, among others: being in a disadvantageous position regarding human capital, factors related to the household demographic composition, regional residence location, ownership or not of physical assets and low paid labour market occupation (Ribas *et al.,*2006).

Transitory poverty refers to a situation where the time path of (conditional) expected income always stays above the poverty line but sufficiently close to it so that the actual income would fall below the poverty line fairly frequently (but not most of the time). In other words, households in transient poverty are those which show variation in income or consumption around the poverty line, but with most observations above the line. In relation to transient poverty, due to its temporary nature, some of the factors which determine the transient component of poverty can be considered the family size, government transfers, seasonality of economic activities, physical assets scarcity, migration, and life cycle events. Empirical evidence strongly indicates that transient poverty is associated with the inability of families to maintain their consumption level when facing fluctuations or shocks which affect their incomes or individual circumstances. However, some factors such as human capital are important for both types of poverty (Jalan & Ravallion, 1998). In a recent summary of over thirteen different longitudinal studies of poverty, Baulch & Hoddinott (2000) find that most studies show a higher percentage of transiently poor households than chronically poor households. This does not downplay the unenviable position of the 'always poor' but do stress the importance of transient poverty and thus risk for the livelihood of poor households. Thus, not only is "chronic poverty" different from "temporary" or "transient" poverty, the difference between the two is also likely to call for distinct policy responses (Chronic Poverty Research Report, 2004).

Other concepts of poverty that have evolved over time include material poverty, which is taken to imply lack of ownership and control of physical assets such as land and animal husbandry (UNDP, 1997). This is similar to the concept of exchange entitlement and capabilities propounded by Sen (1981) and Dreze and Sen (1990). The multi-dimensional aspects of poverty can also be illustrated by the definition provided by the European Commission: 'People are said to be living in poverty if their income and resources are so inadequate as to preclude them from having a standard of living considered acceptable in the society in which they live. Because of their poverty they

may experience multiple disadvantages through unemployment, low income, poor housing, inadequate healthcare and barriers to lifelong learning, culture, sport and recreation. They are often excluded and marginalised from participating in activities (economic, social and cultural) that are the norm for other people and their access to fundamental rights may be restricted' (European Commission, Joint Report on Social Inclusion, 2004).

2.2.4   Perspectives of Poverty

- **Objective and Subjective Perspectives**

Poverty can be approached from objective or subjective perspectives. The objective perspective (sometimes referred to as the welfare approach) involves normative judgements as to what constitutes poverty and what is required to move people out of their impoverished state. The subjective approach, on the other hand, places a premium on people's preferences, on how much they value goods and services (hence the emphasis on individual utility). Economists have traditionally based their work on the objective approach, mainly because of the obstacles encountered when trying to aggregate multiple individual utilities across a population (Dessalien, 2000). Advocates of this approach use the argument that individuals are not always the best judge of what is best for them. For example, most poverty measurement systems focus on nutritional attainments. The main argument under this focus is that: although all individuals value food consumption, some may place higher value on certain food types or food quantities that are not best for their physiological well being. It is conceivable that the subjective approach could both undervalue and overvalue food consumption when compared to the welfare approach, leading to conflicting assessments as to who are the poor. However, poverty measurement has traditionally been dominated by the objective approach. Only relatively recently has the international community as a whole taken a serious interest in measuring subjective poverty. This is mainly because of mounting recognition of the limitations associated with so-called objective indicators and the value of understanding the perspectives of the poor in shaping policies and programmes. As a result, participatory poverty assessment methodologies have been gaining ground (Dessalien, 2000). Clearly, both objective and subjective perspectives bring valuable insights to the measurement and analysis of poverty. They approach the phenomenon from different angles and capture fundamentally different aspects of it, neither of which can be said to be categorically right or wrong (Makoka and Kaplan, 2005).

- **Physiological and Sociological Deprivations Perspective**

Poverty concepts can be divided into two types of deprivations—physiological and sociological. Regarding the former, the line of thinking is that, people are poor because they lack income, food, clothing and shelter. Both the income and basic needs concepts of poverty stem from physiological deprivations. The concepts of poverty emerging from the perspective of sociological deprivations, on the other hand, are rooted in the underlying structural inequities and inherent disadvantages. They are based on observations that even when resources are flowing into sectors dominated by the poor, they may not be able to take full advantage because of social structural impediments (Philip and Ryan, 2004).

2.2.5 Definition and Concept of Vulnerability

The term 'vulnerable' is originally derived from Latin '*vulnerare*' that means 'to wound' (Calvo and Dercon, 2005). However, different ideas about the meaning of 'vulnerability' can be found in literature. Alwang *et al*. (2001) provide a stimulating, critical review of the different concepts prevalent in disciplines such as economics (including the food security, asset-based and sustainable livelihoods literatures), sociology/anthropology, disaster management, environmental science and health/nutrition. The economics literature generally conceptualizes vulnerability as an outcome of a process of household responses to risks, given a set of underlying conditions. Vulnerable households are those that have moved or are likely to move into a state of poverty or destitution as a result of the cumulative process of risk exposure and response. Generally speaking, vulnerability can be defined with respect to different entities such as states, companies or individuals, and with respect to different risks such as natural disaster or financial crises. For example, Glewwe and Hall (1998) perceive vulnerability as a dynamic concept, involving a sequence of events following a macroeconomic shock. Vulnerability, as it is commonly used in the sustainable livelihood literature, refers to the probability that livelihood stress will occur - with more stress or a higher probability implying increased vulnerability. Thus, their vulnerability might be denoted "livelihood vulnerability." This concept is forward looking and an ongoing state. Vulnerability has, in this literature, two sides: an external side of risks, shocks, and stress; and an internal side, which is defenselessness, meaning a lack of means to mitigate or cope without incurring losses (Chambers, 1989).

Many sociologists have adopted the term "vulnerability" as an alternative means of characterizing the dimensions of poverty not ordinarily captured by money-metric measures. In fact, sociologists often discuss "social vulnerability" as opposed to "economic vulnerability" (for example Loughhead and Mittai, 2000). They identify vulnerable groups such as "children at risk", female - headed households, elderly and disabled, and deal with intra-household relations. This focus tries to identify vulnerable groups based on broad household characteristics, not specific measures of economic outcomes. For example, Moser and Holland (1998) define vulnerability as "the insecurity of the well-being of individuals, households, or communities in the face of a changing environment." The disaster management literature's common theme is the idea that vulnerability is defined with respect to natural disasters; and people, households, communities, etc. are vulnerable to damages from a natural disaster (Kreimer and Arnold, 2000). They focus on risks and refer to them as hazards. The degree of vulnerability is determined, in part, by social factors. For instance, the literature on vulnerability to famine discusses vulnerability as a predisposition to famine before the impact of a specific trigger event. Vulnerability is usually defined as an underlying condition, distinguished from the risky events that may trigger the outcome (for example Webb, 1993). A search of the ecology-based environmental literature reveals that a substantial portion of discussion of vulnerability relates to the vulnerability of species or ecosystems to damage. In the case of species, they are vulnerable to extinction; and ecosystems tend to be vulnerable to irreversible damage. The key notion is that this literature defines vulnerability with respect to an outcome, which is based on ecologic-centric concerns as opposed to other approaches that are usually human-centric. This literature focuses on risks and outcomes.

In the nutrition literature, vulnerability refers to nutritional vulnerability, usually taken as a probability of inadequate food intake needed to live a normal and active life (National Research Council, 1986), or the probability of suffering nutrition-related morbidity or mortality (e.g. Davis, 1996). This outcome focus does not distinguish between risks and responses. Typical indicators of nutritional vulnerability are anthropometric indices, chemical analyses, and food intake analyses. A major theme in this literature examines the implications of malnutrition (as indicated by anthropometry) for outcomes such as educational attainment, probability of mortality, adult productivity, etc. The International Strategy for Disaster Reduction (UN/ISDR) sees vulnerability as "the conditions determined by physical, social, economic and environmental factors or

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processes, which increase the susceptibility of a community to the impact of hazards" (UN/ISDR 2004). The United Nations Development Programme in contrast defines vulnerability as "a human condition or process resulting from physical, social, economic and environmental factors, which determine the likelihood and scale of damage from the impact of a given hazard" (UNDP 2004). Chauduri *et al.* (2002) and Christiaensen and Subbarao (2001) define vulnerability within the framework of poverty eradication, as the *ex-ante* risk that a household will, if currently non-poor, fall below the poverty line, or if currently poor, will remain in poverty. Similarly, Pritchett, Suryahadi and Sumarto (2000) and Mansuri and Healy (2001) conceptualize vulnerability to poverty as the probability that a household would experience at least one episode of poverty in the near future or over a given number of time periods. On the other hand, since poverty is a multi-dimensional construct, which reflects deprivation on multiple fronts, some analysts consider vulnerability to poverty in terms of exposure to adverse shocks, rather than to poverty (Cunningham and Maloney 2000; Glewwe and Hall 1998; Jalan and Ravallion 1998, 2000). This view indeed considers vulnerability as the lack of capacity (of a household) to cope with (an adverse) shock or (a household's) resilience against a shock, that is, the likelihood that a shock will result in a decline in well-being of the household (Alwang and Siegel, 2000).

Kühl (2003) in the same vein defines vulnerability to poverty as the propensity of a household to suffer a significant shock that brings its welfare below a socially accepted level. The Human Development Group of the World Bank in a report on social protection in Africa defines vulnerability as "… the inability to manage risk, in other words, the inability of households to prevent major declines in their living standards or major variability in their consumption" (World Bank, 1999). Calvo and Dercon (2005) view vulnerability as the burden of the threat of future poverty. As such, it relates both to the likelihood of future poverty episodes, and to the severity of poverty in such cases. These concepts of vulnerability indicate that vulnerability is not static. Vulnerability to poverty will change from one period to the next depending on what the nature of the risks is. Hence till date, no preferred definition of, or measurement methodology for, vulnerability to poverty has been agreed on. However, in the context of poverty, reference to the notion of vulnerability can broadly be seen in one of the following three contexts (Prowse, 2003):

• **Vulnerability to Poverty**: This strand of literature describes vulnerability as the potential for people to enter into poverty. Prominent in the poverty dynamics literature,

this conceptualisation is the most widely used in the economics literature. While much of the empirical literature focuses on the so-called "transient" poor (i.e., the population at risk of entering into poverty due to some shock), the literature also recognises the importance for policy purposes of focusing on people who are already poor (even without the shock).

• **Vulnerability as a symptom of Poverty**: Similar to the global change and disaster management communities, vulnerability here is seen as vulnerability to some external shock. In line with Sen's (1981) influential work on poverty and famines, it is often argued that vulnerability to external shocks is intimately linked with poverty. Hence this strand of literature visualises vulnerability as "cause" and "symptom" of poverty.

• **Vulnerability as part of Poverty**: Increasing acceptance of multi-dimensional nature of poverty has meant the inclusion of risk and vulnerability as components of poverty (Hulme *et al*., 2001).

In addition to these three contexts, vulnerability is sometimes also used with respect to the effects of poverty, rather than just poverty. This creates a distinction between the means and ends of human welfare, where means constitute income, consumption of food or access to health services, and ends refer to life expectancy, literacy or nutrition level.

However, in the economics literature and as demonstrated in Zhang and Wan (2006), vulnerability to poverty (the probability of a household or individual falling into poverty in the future) is the most commonly-used conceptualisation. This is the definition adopted in this study.

2.2.6 Causes of Vulnerability

Common characteristics of all vulnerable people are a lack of control and sense of powerlessness over the threats that face them. To address this in a sustainable way requires tackling the causes of their powerlessness and strengthening their resilience. The main causes of vulnerability have therefore been identified as follows:

- **Hazards and Major Threats**

Hazards have always been part of the world's reality, and people in hazard-prone areas have adapted to deal with extreme events, using their own capabilities, skills, knowledge and technologies. Natural disasters occur when events triggered by natural hazards overwhelm local response capacity and seriously affect the social and economic development of a region. Hazards may be natural or man-made or a combination of the

two. People have little or no control over natural disasters such as earthquakes but other natural hazards such as floods, drought, pests and diseases may be influenced by human activity and policies. In these cases, the hazard is not just an external factor, but is linked to long term trends, institutional structures and people's livelihoods. Weather-related hazards have more impact in many less developed countries because in these countries, the agricultural sector provides a high proportion of the national income.

- **Long Term Trends**

Long term environmental, political and economic trends can impact people's livelihoods directly by affecting their access and control over resources or more indirectly by affecting the stability of their environment. Some of these trends, such as globalisation, will be outside the control of local communities whilst others, such as environmental degradation, will be influenced by both external and local factors.

Environmental degradation is one of the factors contributing to the increased vulnerability of the resource-poor to natural hazards. Degradation of land cover and soils leads to declining productivity and, therefore, gradually reduces the value of natural assets available to people. Changes in land use over time can also contribute to disasters such as conflict. For example, pastoralists are a group of people that worldwide have seen a reduction in their rangeland, due to appropriation of land to other uses (settled agriculture and wildlife conservation, in particular). This has led to conflict over the remaining scarce natural resources (pasture, woodland and water) among different tribes and between nomadic people and settled farmers. Long-term climate change, resulting in frequent droughts has led to repeated loss of livestock and reduced ability of some communities to recover from natural hazards. Intensification of agriculture and a decline in biodiversity are trends that can increase the risks of crop failure. More continuous cropping and widespread use of a limited number of varieties mean that pest and disease outbreaks increase.

Growing privatisation of resources is one of the major political and economic trends occurring in most countries. This includes privatisation of natural resources such as land, forest resources, and also of services such as education and health. Since the poor are more likely to make use of communal resources and exchange relations than the rich, growing privatisation is likely to increase vulnerability of the poor by effectively removing their access to the privatised resources. Many of these trends may continue for years, gradually reducing productivity or causing rising tensions over access to resources.

- **Institutions, Policies and Processes**

The socio-political context in which people live is shaped by the structures formed by the institutions, organisations, policies and legislation that affect people's livelihoods. These structures operate at all levels from the household and local community to the international level. They include not just formal organisations and laws but all the informal structures including cultural codes of conduct. Consideration of this institutional and policy context is vital in analysing vulnerability, because it determines how people can access and control resources, what rights and entitlements they have and what say they have over decisions affecting their livelihoods. If people have few rights and lack control over resources and decision-making, they are likely to be much more vulnerable to any threats to their livelihoods. Issues of social justice and human rights are, therefore, part of the context of vulnerability. Although the institutional and policy context can act as an enabling environment, making it easier for people to improve their livelihoods, all too often, it has the reverse effect, blocking and discouraging people from adopting strategies that would help them cope with shocks[2].

2.2.7 Measuring Vulnerability

Much of the policy debate over poverty is inextricably entangled with vulnerability. However, there is no consensus about how to define and measure vulnerability (Kamanou and Morduch, 2002). In a general context, vulnerability is related to lack of educational opportunities, mortality, poor nutrition and health care, and the occurrence of climatic, social, and political distress. Dercon (2001) suggests that for operational use the notion of vulnerability should be tied to a benchmark, which in turn could facilitate its measurement. He argues that in the context of poverty policy, vulnerability to poverty is the appropriate concept. He clarifies this definition by explaining that well-being and poverty are the *ex post* outcome of a complex decision process of households over income and expenditures, faced with risk; and that vulnerability to poverty is the *ex ante* situation, i.e. before one has knowledge of the actual shocks that will occur. Vulnerability is determined by the options available to households to make a living, the risks they face, and their ability to cope with these risks. Measurements of vulnerability usually include both the sensitivity, which is the extent of the response, and the resilience, which is the ability of economic units to recover from a

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[2] *Adapted from: Practical Action Aim 1 – Conceptual framework on reducing vulnerability*

shock (Ligon & Schechter, 2003; Kamanou & Morduch, 2002; Hulme *et al*., 2001). Measures of vulnerability to poverty could be derived in its various dimensions (e.g., income, or consumption of a bundle of goods). One possibility is to tie the measurement of vulnerability to a welfare framework, in which the outcome of potentially occurring negative situations is weighed against a socially defined minimum level (Ligon and Schechter, 2002). An operational option is to generate an outcome-based measure of vulnerability, in which distributions of prices and income are generated resulting in changes in poverty which could be labelled as an *ex ante* distribution of poverty.

Ideally, one would wish to track individual household outcomes in each possible situation, and based on a pre-determined minimum level of well-being, establish which households are permanently poor, those becoming permanently poor in the future, and those who will be temporarily (seasonally) poor. This could lead to the definition of low and high vulnerability groups, which could find a great use in policy work comparing vulnerability of different regions or social groups. The problem however, is that even with the availability of detailed household surveys, information requirements are excessive and no straightforward measurement of hypothetical situations is possible. Most of the work on this topic infer the distribution of possible outcome shocks from the error process in cross-section regression models (Pritchett *et al.*, 2000) or from panel data in which inter-temporal measures are not too distant (Dercon and Krishnan, 2000), which implies strong assumptions about how shocks evolve over time and space. Dercon (2001) argues that uncertain assumptions about statistical error processes could be replaced by explicitly modelling households' ability to cope with shocks. By using survey data on shocks faced, combined with historical sources on large or common shocks such as climatic variations and price shocks, it could be possible to derive measures of vulnerability allowing for more realistic models which involve risk and differential household's risk-coping ability. Additionally, the inclusion of risk modelling and the availability of two or more period records in surveys could aid in the generation of transition matrices depicting movement of households in and out of poverty (Valenzuela and Hartel, 2006).

However, corresponding to different definitions of vulnerability, alternative measurement methods have been used empirically. These include using the difference between expected consumption and the poverty line (Kochar 1995; Dercon and Krishnan 2000) and using the probability to fall into poverty (Chaudhuri *et al.,* 2002). Coudouel and Hentschel (2000) use average income and its standard deviation to measure

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vulnerability. Based on the Foster, Greer and Thorbecke (1984) poverty indices, Kamanou and Morduch (2002) measure vulnerability as the difference between the expected value of poverty in the future and its current value. Since the poverty measure of Foster, Greer and Thorbecke (1984) may lead to underestimation of the effect of risk managing mechanisms, Ligon and Schechter (2003) propose measuring vulnerability as the difference between the value of a utility function evaluated at the poverty line and that evaluated at the expected level of consumption. In addition, Dercon (2005) simply takes the degree of risks faced by individuals or households as a measure of vulnerability. Wan (2008) discussed different ways in which household vulnerability has been measured, noting that there is still no preferred measure for vulnerability to poverty in the literature. The authors clarify the literature by exploring the sensitivities of the various measurements of vulnerability to vulnerability lines, poverty lines and techniques for estimating permanent income. For this, they use household survey data for 1989, 1991 and 1993 from the China Health and Nutrition Survey. They estimated household vulnerability using 1989 and 1991 data, and from this predicted vulnerability to poverty, comparing their predictions to the actual situation in 1993. Their premise is that "the closer the predicted vulnerability is to actual poverty, the better the measurement technique is". They find that it is better to set the vulnerability line at 50 per cent , to use past average income as an estimate of permanent income and to use a higher poverty line (US\$2 rather than US\$1) in order to improve the measurement of household vulnerability to poverty (UNU, 2008).

As discussed above, there are several approaches of quantifying vulnerability to poverty, however, the measure in Chaudhuri *et al.* (2002) is adopted in this study since the aim of this study is to show the extent of vulnerability and its correlates without dealing with the contribution of risk to vulnerability and which type of risk dominates.

2.2.8 Vulnerability and Vulnerable Groups

Vulnerability hinges on the notion that certain groups in society are more susceptible to shocks that threaten their livelihoods and survival. It is mostly the members of these vulnerable groups that are at a high risk of perpetuating poverty to the next generation (Makoka and Kaplan, 2005).Vulnerable groups have a low resilience to a given shock because of a limited portfolio of assets at their disposal. They are an important aspect in the analysis of vulnerability and poverty because of their inability to take advantage of profitable opportunities. As such, without substantial support, they

usually end up in severe and persistent poverty. Groups that are more prone to poverty due to their high vulnerability differ significantly between the developing and the developed countries.

In developing countries there are large sections of society that may be classified as vulnerable. In many developing countries in general, and in sub-Saharan Africa, in particular, HIV/AIDS infected and affected households are accounting for a significant proportion of vulnerable groups. According to UNAIDS (2004), the HIV/AIDS prevalence rate in the sub- Saharan Africa is 7.4 %. Such HIV/AIDS affected households are more susceptible to becoming poor in the presence of a shock – whether it is an economic shock, such as rising prices, or a natural disaster such as a flood. The situation is exacerbated because they usually have no means to cope with the shock when it occurs. Another vulnerable group that is increasingly becoming more common in the developing countries is orphans, mainly due to the HIV/AIDS pandemic. In certain areas, the death of parents due to the HIV/AIDS pandemic means that the household becomes child-headed. In such households, their resilience to a given shock is usually very low because they hardly hold any assets, and are, therefore, least protected from the shock. Female-headed households also represent another important vulnerable group in developing countries, particularly in Africa. These households have a low asset base, such that their resilience in the face of a shock is very low. This makes them very vulnerable to the effects of such shocks because they have low coping strategies. This justifies the desirability of the measures to reduce their vulnerability to the impact of shocks, by improving their susceptibility to poverty and empowering them to be more resilient. The third group includes children, particularly the girl child. In most of the developing world, special programmes are put in place to ensure that children are not malnourished; that they have access to education and health care facilities to ensure that they lead a healthy life and are less prone to serious poverty. However, these programmes may not be well spread throughout a particular country, such that some children would still remain vulnerable. In Africa, the girl child is particularly vulnerable because she is subjected to carrying out household chores, some of which are beyond her capacity. This gives her less time to concentrate on her studies, and it increases the likelihood of her dropping out of school.

In developed countries, on the other hand, there are fewer vulnerable groups of people in society. However, the elderly need special attention to ensure that they are not vulnerable to poverty. It is in this regard that in many societies, there are social security

systems in place to ensure that the elderly, who form a significant proportion of the population in the developed countries, are not vulnerable to poverty. The disabled represent another vulnerable group both in developing and developed countries. Usually, the disabled cannot manage to fend for themselves and they need special attention to ensure that they do not fall or remain in poverty. The third category includes the minority groups and immigrants. If there are no deliberate policies to integrate them into the wider society of the developed countries, the minorities and the immigrants may be more vulnerable to poverty, and may cause a great challenge to the government (Makoka and Kaplan, 2005).

2.2.9 Approaches to Reducing Vulnerability

Several approaches to tackling vulnerability which are not mutually exclusive can be identified. In most situations, a combination of approaches will be required. Understanding the issues underlying vulnerability could help in identifying which approaches to take. However, whatever approach is used and whatever level the intervention (local community, regional, national or international) the most important issue always remains the impact of the approach on reducing people's vulnerability and increasing their resilience. According to the practical action aim 1, some of the approaches to reducing vulnerability include the following:

- **Strengthening Livelihood Protection Strategies**

There are a variety of risk management strategies poor people can employ to cope with uncertain situations. These include strategies such as diversifying the crops grown and having multiple sources of supply of food including plants and foods bought from the market as a way of reducing risks of insufficient food. Other strategies include vaccination of livestock as an insurance strategy against the loss of essential assets, diversifying sources of income to include non-farm and farm work, financial insurance schemes such as local rotating savings schemes that provide money for members when they have particular need (for example, to pay hospital bills), and maintaining strong social networks and exchange relations with others in the local community that can be called upon in times of need. In times of hardship, rationing food and disposing of non-essential assets are other strategies.

However, when the strategies are insufficient to cope with the particular shock, people may resort to selling essential assets or abandoning their homes and are left with no viable means of rebuilding their livelihoods. Hence, interventions that build on

people's own survival strategies are important and they include strengthening food security, both in terms of the food produced by poor people and the conditions under which they have access to food, developing technologies and strategies that allow people to continue working after disasters such as development of labour-saving technologies for families hit by HIV/AIDs or seed stores for those whose seed reserves have been depleted after droughts or floods and diversification of the means of livelihoods which is a key way of reducing risks. Sole reliance on agriculture, for example, is more risky and prone to natural hazards than when the household has both farm and non-farm sources of income. Ways of strengthening livelihood assets and facilitating people to adopt diverse livelihood strategies, can therefore, strengthen their resilience.

- **Strengthening the Natural Resource Base and Promoting Sustainable use of Natural Resources**

Environmental degradation can result in people gradually becoming poorer as the productivity of the land reduces and also result in more unstable conditions as the risks of floods and drought increase on deforested, barren or eroded land. Strategies to strengthen the resilience of the natural environment include reforestation, contour bunding to prevent soil erosion and soil and water management. However, technologies are only part of the picture and cannot be successfully promoted without sustainable management of natural resources. One aspect of this includes environmental risk management. Another aspect is facilitating access and control of natural resources where there is competition for these resources.

- **Building up the Capacity of Local People, CBOs and other Local Institutions**

Social mobilisation and facilitating the formation and strengthening of CBOs are also essential. One area of this is to strengthen the capabilities of local people to use technologies and information more effectively, and increase their access to education and training programmes.

- **Building Alliances and Networks between Multiple Levels of Stakeholders**

One aspect of this is to strengthen the representation of poor people at local and international levels to allow their voices to be heard. Another is to facilitate links between multiple levels of stakeholders to increase the effectiveness in addressing risk management issues by promoting integration and consensus-building.

- **Facilitating Policy Interventions**

The policy environment has a substantial impact on people's livelihood options. Information from projects at the grass roots level can be used to analyse the impact, good and bad, on vulnerable people, and to develop recommendations for policy changes. Areas of particular concern are the policies concerned with social protection. Influencing those policies in order to provide more effective protection for vulnerable people is an important approach.

- **Enhancing Security**

Reducing vulnerability to economic shocks, natural disasters, ill health, disability and personal violence is an intrinsic part of enhancing well being and encourages investment in human capital and in higher-risk, higher return activities. This requires effective national action to manage the risk of economy wide shock and effective mechanisms to reduce the risks faced by poor people, including health- and weather related risks. It also requires building the assets of poor people, diversifying household activities and providing a range of insurance mechanisms to cope with adverse shocks – from public work to stay in school programs and health insurance (Grosh *et al.,* 2008).

In Nigeria, the welfare problem arises due to the absence and ineffectiveness of existing formal insurance or risk management interventions and the limitations of the informal coping or risk management strategies of the poor and non-poor (Okunmadewa, 2003). The risk management strategies used in Nigeria include prevention, mitigation and coping strategies. Prevention strategies seek to reduce the probability of welfare reducing risk through activities such as education, immunization, irrigation, use of mosquito nets or information campaigns, extension services etc. While mitigation strategies seek to decrease the impact of a future welfare reducing risk through activities such as insurance policy, crop diversification, mixed farming, storage programme and price support. Coping strategies on the other hand relieve the impact once the risk has occurred. The most common forms of coping consist of individuals using their savings, selling assets and borrowing. Vulnerable households and individuals must, therefore, be identified by the government and stakeholders and also the causes of the shocks that they are experiencing and the existing risk management strategy should be assessed so as to use it to protect vulnerable households and individuals.

2.2.10 Poverty Transitions

Whenever a household's income crosses over the poverty line, that household makes a poverty transition. An increase in income that moves a household over the poverty line is defined as an exit or movement out of poverty, while a decrease in income that moves a household's income below the poverty line is defined as an entry or movement into poverty (Baulch and Mcculloch, 1998).

Dynamics research presents a more comprehensive understanding of poverty than point-in-time studies. While point-in-time studies provide a static 'snap shot' of the population at a given single moment, dynamics or longitudinal research traces the same individuals or households over time and so is able to record stories of change. Poverty in Nigeria is still most frequently examined using point-in-time approaches. However, from this perspective, poverty can seem rather one-dimensional – as a homogenous and relatively static state experienced by a homogenous and discrete group: 'the poor'. An impression given by point-in-time studies is of a population differentiated between 'the poor' and 'the non-poor' like two relatively separate entities. In contrast, dynamics research shows that people can experience different types of poverty, that the majority of people who experience poverty move out of poverty, and that many more people experience poverty over a period of time than they do at any one moment in time .

However, understanding of poverty dynamics is not clearly evident in current Nigeria social policy. The progress to eradicate poverty has been held back by a failure to target persistent poverty and a lack of emphasis on safeguarding against re-entry to poverty in order to prevent recurrent poverty. The dynamics literature shows that the Government's standard, point-in-time measurement of the poverty rate vastly underestimates the number of people who experience poverty over a period. While poverty, for most, is not persistent, it is not necessarily a transient, one-off experience. On the contrary, poverty dynamics research shows that many people who leave poverty return to experience recurrent episodes of poverty. This 'churning' of people in and out of poverty is explained in the literature by the fact that income mobility tends to be short-range. Income often increases only enough to lift people just above the poverty threshold, where they remain on the cusp of poverty, at high risk of re-entering poverty. As this suggests, different types of poverty can be identified: people who never experience poverty; people who have a one-off, transient experience; those experiencing recurrent poverty; and those in persistent poverty. In exploring the dynamics of poverty, it is important to understand the correlates and causes of movements into and out of

poverty. The most straightforward approach to this is to examine poverty transition matrices. A poverty transition matrix shows the number of households in and out of poverty in a particular period, broken down by their poverty status in a previous period. Thus it is easy to see the number of households who have been poor or non-poor in both periods along with the number who have escaped poverty and those who have entered poverty. This approach has been used in a number of studies in both industrialised and developing countries (Baulch and McCulloch, 1998) and is adopted in this study.

2.3   Methodological Framework

This section presents a review of literature on empirical models, estimation approaches and methods employed in analysing poverty dynamics.

2.3.1   Vulnerability Threshold

Determining the proportion of a population that is vulnerable to poverty involves dividing the population into two groups: those who are vulnerable and those who are not vulnerable. This entails establishing a vulnerability threshold, *v*, such that a household is said to be vulnerable if its vulnerability coefficient is greater than or equal to the value v, that is, *vh* ≥*v.* As noted by Chaudhuri *et al.* (2002), the choice of vulnerability threshold is ultimately quite arbitrary and its selection is subjective. According to literature, two vulnerability lines have been given special consideration. One is identical to the observed headcount ratio as used by Rajadel (2002). For example, if the headcount ratio of a region is 40 per cent, and the probability of a household falling into poverty in the future is greater than 40 per cent, then this household is regarded as vulnerable. In other words because the observed poverty rate represents the mean vulnerability level in the population, anyone whose vulnerability level lies above this threshold faces a risk of poverty that is greater than the average risk in the population, and hence, can be legitimately included among the vulnerable' (Chaudhuri, 2003). The other vulnerability line, which is a common choice in literature and which has been applied in this study, is 50 per cent , as adopted by Kühl (2003); Wan and Zhang (2006) , Pritchett *et al.* (2000) Gaiha *et al.* (2007); Imai *et al.* 2009; Oni and Yusuf (2006) and Alayande and Alayande (2004) . In this case, those with a 50 per cent or more chance of falling into poverty in the future are identified as vulnerable. In other words, households having vulnerability coefficients of 0.5 or higher are considered vulnerable. The latter vulnerability line is

sometimes called *percent stringent* or *high vulnerability threshold* (Chaudhuri *et al.,* 2002).

The choice of 0.5 is justified for two reasons. First, it makes intuitive sense to say that a household is vulnerable if it faces a 50% or higher probability of falling into poverty in the next period. Second, when a household whose current level of consumption is equal to the poverty line faces a zero mean shock, it has a one period ahead vulnerability of 0.5. In the limit, as the time horizon approaches zero, then being currently poor and being vulnerable to poverty coincide (Pritchett *et al.,* 2000).

2.3.2   Models Relating to Poverty Dynamics Analysis.

The poor are a heterogeneous group, with different endowments and different characteristics as some households observed as being poor at a certain point in time may only be temporarily poor, whilst others are always poor. The temporary or transient poor, experience movements into and out of poverty, termed poverty spells. Households trapped in protracted poverty are labelled the chronic poor. The expectation is that these groups of 'the poor' have different endowments and characteristics and there is ample evidence in the literature that the determinants of transient poverty differ from the determinants of persistent or chronic poverty (Oduro, 2002). Clearly, this is important to consider when designing policies aimed at reducing poverty. There have been two main approaches in the literature to analyse poverty dynamics: spell approach and components approach. The spells approach and the components approach are both sensitive to the choice of welfare measure and to where the poverty line is drawn (McKay & Lawson 2003), but are still very useful techniques, as we cannot escape from the fact that all poverty measures are subjective (Swanepoel, 2005)

- **Spell or Hazard Models**

This approach involves the identification of the poverty status of households in every period under investigation, for the purpose of detecting changes in the status of the household over time (Oduro, 2002). The transient and chronic poor are then identified based on the number of rounds spent in poverty. This is an arbitrary classification, as the available information is of a truncated nature with no observations before, after or between rounds, which necessarily results in some misclassification (Swanepoel, 2005). For example, a household that is poor in all rounds, but one, may not be classified as chronically poor. Hulme and Shepherd (2003) warn that the spells approach usually overestimates transient poverty. Furthermore, small variations in method could lead to

different results. Therefore, McKay and Lawson (2003) note that one should be very cautious when defining or interpreting these categories.

The use of hazard rate models to estimate poverty dynamics was first proposed in an influential study by Bane and Ellwood (1986). A hazard model simply provides information about the likelihood (i.e., probability) of experiencing an event at time t (e.g., exiting poverty) given that the event has not occurred prior to time t (e.g., the person is in poverty in the period prior to t, t-1). It provides policy makers with an insight into poverty transitions, just like the models based on the First-order Markov Processes (FMP). However, unlike the FMP, the hazard model, especially the multivariate models analyse events that trigger individuals' entries into and exits from poverty. The multivariate hazard model allows the probability of experiencing an event at time *t* (e.g., exiting poverty) to depend on a set of explanatory variables, which includes among other characteristics, age, gender, and educational attainment, as well as the trigger events. In this framework, separate poverty entry and exit equations are estimated and this process allows the determination of the relative importance of multiple events in poverty transitions, which cannot be obtained from a descriptive analysis.

Sometimes discrete-time hazard models are used. These models assume that the probability of entering (or exiting) poverty in a given period (e.g., year) is represented by a logit specification. The logit specification is popular as it is very tractable and it restricts the transition probabilities to lie between zero and one (Allison 1984). Several studies of poverty transitions have used the logit specification (Stevens 1994 and 1999, Iceland 1997b).

- **Component Models**

The components approach attempts to isolate the permanent component of poverty from transitory shifts. Transient poverty is defined as the contribution of the variability in a welfare indicator over time to the expected value of poverty, measured using this welfare indicator. The non-transient component, the poverty that remains when inter-temporal variability has been smoothed out, is labelled chronic poverty (Jalan and Ravallion, 2000). These models provide information on poverty durations, such as analyzing permanent and transitory components of the model (Ali, 1998; Kakwani 1993; Datt and Ravallion, 1992). One criticism of this methodology is that decomposition of poverty is not sufficiently responsive to fluctuations in consumption over time around the poverty line. Stevens (1999) compares this model using US data to the results from

spell analysis and concludes that the latter approach does a better job at predicting poverty dynamics than the components model. Hence, in this study, the spells approach which classifies a household that is poor in one period as transient poor and those poor in both periods as chronically poor is used for analysis since the components approach relies on the computation of inter-temporal mean consumption which cannot be properly captured using only two waves of panel data.

2.3.3 Factors Influencing Poverty Transitions: Estimation Methods and Approaches

In practice, a number of different approaches have been adopted towards understanding the factors associated with chronic and transitory poverty, or with poverty transitions. Some of these approaches are based on straightforward descriptive analysis. For example, Sen (2003) considers these factors within a livelihoods framework. Most studies complement descriptive analysis with an explicitly multivariate approach, generally based on econometric analysis. These generally take two forms, those modelling a discrete dependent variable measuring dynamic poverty status and those modelling the (generally continuous) underlying variable measuring the standard of living. The former approach has been strongly criticised by Ravallion (1996) for the loss of information it implies; but if the poverty line is set at a meaningful absolute level, it is still valuable to consider and model transitions across the poverty line. Focusing first on the discrete dependent variable approach, McCulloch and Baulch (1998) distinguish chronically, transitorily and never poor households for Pakistan, and model the associated characteristics using both an ordered logit model and a multinomial logit model. While the ordered logit approach is good for understanding the relative influence of different household characteristics on its poverty status and is used in cases where the dependent variable in question consists of a set number (more than two) of categories which can be ordered in a meaningful way, the more widely used multinomial logit approach enables the identification of the characteristics that are more prevalent within each category.

A different approach though is to recognise that when modelling poverty transitions different poverty states are dynamic in nature. For example, households that are escaping poverty may be affected by two sets of factors: those that made them more likely to be poor in the first place; and those which enabled them to escape from poverty. One straightforward way of undertaking this sequential modelling is by means of a series

of related probit models, as is used, for instance, by Bhide and Mehta (2003) in modelling poverty transitions in rural India. The first step of the model considers whether or not a household is poor in the earlier period, and the second step models for each group separately the factors associated with the same household being poor or not in the second period. However, when the dependent variable just distinguishes the poor from the non-poor, as in the probit model, this implies the loss of a substantial amount of information about the household's living standard, which, measurement error notwithstanding, is known much more precisely than this. It may be much more promising in modelling the dynamics of living standards directly, or within a panel context, modelling the factors influencing the change in household living standards by what is essentially a micro-level growth equation (Dercon, 2003; Fields *et al.*, 2003). In this way, it is also straightforward to quantify the different factors associated with changes in living conditions and it does not lead to concerns related to the aforementioned approaches, which might be sensitive to the level at which the poverty line is set (Awel, 2007).

In this study, the multinomial logit model was estimated to identify the factors that affect the likelihood of the household becoming chronic or transient poor because of its appropriateness in models where the dependent variable in question is nominal (a set of categories which cannot be ordered in any meaningful way, also known as categorical), consists of more than two categories and the advantage of its ease of specification and estimation. Adopting poverty spells approach (Baulch and McCulloch, 1999; Bhatta and Sharma, 2006; Lawson, 2004 and Lawson *et al.,* 2004), the dependent variable distinguishes four cases; the never poor, those poor in both periods, those poor in first period and not in the 2nd period (escaping poverty) and those non-poor in the 1st period but that were poor in the second period (falling into poverty). As poverty outcome can only take 4 distinct values in the framework and poverty status is based on an underlying welfare measure (per capita expenditure) defined on an interval scale, ordered probit or logit models are possible alternatives but are less suitable for this study since it is not always appropriate to assume that chronic poverty represents a higher level of deprivation than transient poverty as would be implied by treating it is an ordinal variable. Therefore, it is reasonable to view poverty status as a nominal variable, hence the use of the multinomial logit model is justified for the analysis.

The multinomial logit method may however, suffer from heterogeneity of the transient poor group when modelling whether a household is in chronic poverty, transient

poverty or never poor, this was overcome by distinguishing the transient poor into those that have fallen in to, and escaped poverty following Baulch and Mcculloch (1999). When using multinomial logistic regression, one category of the dependent variable is chosen as the comparison category. Separate relative risk ratios are determined for all independent variables for each category of the independent variable with the exception of the comparison category of the dependent variable, which is omitted from the analysis. Relative risk ratios, represent the change in the odds of being in the dependent variable category versus the comparison associated with a one-unit change on the independent variable.

2.4   Empirical Review

This section presents a comprehensive empirical review of literature on vulnerability to poverty and poverty transitions.

2.4.1   Review of Empirical Studies on Vulnerability to Poverty

Pritchett *et al.,* (2000) and Chaudhuri *et al.,* (2002) develop quantitative measures of vulnerability, as the ex ante risk of facing poverty in the future. Although the type of household data and the empirical methodology they employ differ, they each define vulnerability as the probability that a household will find itself consumption-poor in the near future that is, estimates whether a household will be vulnerable to poverty in the future using a measure of the variability of their expenditures, without directly observing the household's current level of vulnerability can be made. Pritchett *et al.*, (2000) estimate this vulnerability measure using panel data from two waves of the Indonesian "100 villages' survey" of 1997 and 1998. They found that 50 per cent of their sample was vulnerable to poverty, even though only 20 per cent of the population was defined as poor in the first year. This confirms that "the poor at any point in time are only a fraction of those who must worry about, and struggle to avoid, falling into poverty. Chaudhuri, *et al.* (2002) using cross-sectional data from the mini-SUSENAS in Indonesia in December 1988 and a three-stage feasible generalised least squares procedure to estimate the inter temporal variance of the log of consumption on household characteristics, find that while, at the national level, 23 per cent of the Indonesian population was poor, 45 per cent of the population was vulnerable to falling into poverty in the future. Their estimates also showed that the highly vulnerable were disproportionately rural and were most likely to live in remote areas. A related study by McCulloch and Calandrino (2002)

applied the same technique to panel data from Sichuan, (the most populous province in China) between 1991 and 1995. They find that vulnerability was highest for those households in the lowest income and consumption quintile. However, households in Sichuan were found to be vulnerable to falling into poverty even when their average incomes/consumption was well above the poverty line. Adopting the vulnerability measure used by McCulloch and Calandrino (2002), Bigsten and Shimeles (2003) found factors such as size of cultivated land, education of the head of the household, education of the wives, value of crop sales, type of crops planted, access to local markets, reduce significantly vulnerability to poverty.

Kuhl (2003) further extends approaches to vulnerability measure by simulating outcomes and obtaining fully household-specific distributions of consumption. With application to data from rural Ethiopia, he developed an algorithm to obtain a household-specific measure of vulnerability which was defined as the propensity that a household's consumption will fall below a locally defined poverty line. He distinguished between permanent and transient consumption by developing a stochastic process model for household consumption. This distinction was utilized to derive an adapted Monte Carlo bootstrap algorithm for the simulation of household consumption, where household-specific consumption shocks were modelled. In a fixed-effect regression, shocks and seasonal variation were found to have a strong impact on household consumption and while the overall vulnerability in the village was concentrated among the poor, vulnerability levels were consistently higher than poverty levels for various subgroups of the households. Female-headed and relatively older households were also shown to be particularly exposed to risk, while literate households were found to be better at consumption smoothing.

Alayande and Alayande (2004) attempt a quantitative and qualitative assessment of vulnerability to poverty in Nigeria. In qualitative terms, they note that weak governance structure in the form of absence of rule of law, lack of political effectiveness and efficiency and high level of insecurity were major sources of vulnerability to poverty in Nigeria and that the macroeconomic environment especially in terms of sluggish growth, low capacity utilization in the manufacturing sector and high rates of unemployment has increased vulnerability to poverty in Nigeria. However, in quantitative terms, the study applied the Chaudhuri (2000) methodology to assess the level of vulnerability to poverty in Nigeria. The findings of the study showed that 87% of Nigerians were vulnerable to poverty and that 68.5% of the population was highly

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vulnerable, whereas only 31.5% of the population had low mean vulnerability. The study, while noting that building a strong and virile governance structure can help to reduce vulnerability in Nigeria, also recommended a pro- poor growth macroeconomic policy environment that would allow the vulnerable and the poor to make use of their hidden assets. Similarly, Christiaensen and Subbarao (2004) using pseudo panel from rural Kenya conceived vulnerability as expected poverty and empirically assessed household vulnerability using pseudo panel data derived from repeated cross section augmented with historical information on shocks. They found out that in 1994, rural households in Kenya faced on average a 40 percent chance of becoming poor in the future. Households in arid areas that experienced large rainfall volatility appeared more vulnerable than those in non-arid areas, where malaria emerges as a key risk factor. Idiosyncratic shocks also caused non-negligible consumption volatility. Possession of cattle and sheep/goats appeared ineffective in protecting consumption against covariant shocks, though sheep/goat help reduce the effect of idiosyncratic shocks, especially in arid zones. Of the policy instruments simulated, interventions directed at reducing the incidence of malaria, promoting adult literacy, and improving market accessibility held most promise.

Gunther and Harttgen (2006) extend the proposed method by Chaudhuri (2000), by introducing multilevel analysis (Goldstein, 1999) which allows a differentiation between the unexplained variance of the household level (i.e. the impact of idiosyncratic shocks) and the unexplained variance at the community level (i.e. the impact of covariate shocks) and also corrects for inefficient estimators, which might occur whenever variables from various levels (e.g. from the household and community level) are introduced in the regressions. Their approach to data from Madagascar showed that whereas covariate shocks had a substantial impact on rural households' vulnerability, urban households' vulnerability was largely determined by idiosyncratic shocks.

Oni and Yusuf (2008) on the determinants of expected poverty in rural Nigeria also extend the vulnerability to expected poverty approach with the incorporation of covariate risks in the regression analysis allowing for inclusion of time varying covariates (such as regional specific variables) namely: rainfall, radiation, notable diseases, and price level and unemployment rates among others. They found that both idiosyncratic and covariate factors affect the expected log per-capita consumption of rural Nigerians, overall expected poverty for the country at 53.5% is 1.02 times the observed poverty in 1996 and that higher expected poverty is synonymous with north

east, no formal education, farming, older head of household, large household size and male headed household.

Sarris and Karfakis (2006) develop a measure of rural household vulnerability that combines existing approaches to estimating idiosyncratic risks with an approach to measuring covariate risk arising from crop production. The methodology was applied to rural households in Tanzania, using household surveys in two export crop producing regions. The results suggest that covariate risks faced by rural households that arise from crop production are substantial and increases with farm size. Consumption was estimated to depend strongly on crop income and its variability which induced considerable overall consumption risk. Findings showed that overall, covariate risk was found to constitute smaller shares of total consumption risk in the wealthier region but a dominant share in the poorer region while the share of covariate risk in total household consumption risk was found to be larger among the poor. Rural households in the poorer region were found to exhibit considerably higher vulnerability. Also, vulnerability in the poorer region was found to be larger than poverty incidence.

Kasirye (2007) employed panel data set of 1309 households in Uganda to measure vulnerability to poverty between 1992/93 and 1999/2000 and to estimate the impact of household characteristics on vulnerability. The likelihood of future poverty was estimated based on the expected mean and variance of household consumption. Education, spatial characteristics and access to community infrastructures were found to have important impact on vulnerability. Specifically, reduction in vulnerability to poverty was found to increase with higher education attainment of the household head. Also households resident in northern Uganda were about 60 percent more vulnerable compared to their counterparts in central Uganda. The study also found that causes of vulnerability in Uganda were similar to causes of poverty. Hence policies to raise the earning capacity of poor households would help both the vulnerable and the poor.

Gaiha *et al* (2007) drawing upon the Vietnam Household Living Standards Survey (VHLSS) data that covered the whole of Vietnam in 2002 and 2004, construct *ex ante* measures of vulnerability. These they compare with static indicators of poverty (i.e. the headcount ratio in a particular year). Detailed analyses of the panel data showed that (i) in general, vulnerability in 2002 translates into poverty in 2004; (ii) vulnerability of the poor tends to perpetuate their poverty; and (iii) sections of the non-poor slip into poverty. They conclude that durable reduction in poverty is conditional on (i) identification of the vulnerable, (ii) their sources of vulnerability, and (iii) design of

social safety nets that would enable the vulnerable to reduce risks and cope better with rapid integration of markets with the larger global economy. Dercon and Krishnan (2000) measure 'vulnerability' in rural Ethiopia by estimating determinants of consumption levels and then predicting the degree to which households would suffer severe consumption shortfalls given particularly poor rainfall (less than half the long-term mean). Their estimates suggest that the 'vulnerable' population (those that have a risk of falling below the poverty line) is 40 to 70 per cent higher than the observed poverty rate.

Jamal (2009) assesses the extent of household vulnerability to poverty in Pakistan. The estimates showed that about 52 percent of the population was vulnerable to poverty during 2004-05. The rural headcount ratio in terms of household vulnerability was also relatively high as compared to the vulnerability incidence in urban areas.

The various literature highlighted above have shown that there currently exists a dearth of empirical evidence as regards vulnerability studies in the sub-Saharan African countries and most especially in Nigeria. This study will, therefore, fill the gap in knowledge and literature on vulnerability issues in Nigeria.

2.4.2 Review of Empirical Studies on Poverty Dynamics

Empirical works on poverty dynamics date back to Bane and Ellwood (1983) using panel study of income dynamics (PSID) for United States (US). They reviewed previous approaches used in studying poverty dynamics classifying them as statistical approach that model some variables like income, allowing for complex lags or some error structure to capture dynamics, tabulation of frequency of the event over some fixed time frame and spells approach. They argue that the dynamics is appropriately understood if it is defined in terms of spells of poverty that allows for estimating the extent to which the poor slip in and out due to changes in income and family structure. They found majority of poor amidst longer spells of poverty. Besides, less than 40 % of the poverty spells began due to decline in head earnings while 60% of the spells ended due to rise in household head's earnings. Similarly using PSID for 1968-1988, Steven (1995) investigated the persistence of poverty in US. In contrast to Bane and Ellwood (1983) he used multiple periods spell approach. Considering some developing economies, Jalan and Ravallion (1998) using panel data set for China decompose the poor into chronic and transient poor. While the overall expected poor are those with the inter-temporal consumption below poverty line, the chronic poor were classified as those

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with "time-mean consumption" below poverty line over a given time period. Transient poverty was then measured as the difference between overall expected poverty and chronic poverty. They proposed and used a 'component' approach of decomposing poverty into chronic and transient and investigated the process using censored conditional quintile regression method. Results of their analysis showed that while physical assets were important determinants of transient poverty, household's wealth holdings were found to decrease transient poverty. Education level and other demographic characteristics of the household were also found to be less likely to influence transient poverty. On the other hand, chronic poverty was highly influenced by demographic characteristics of the household, cultivated land holding and high variance of wealth holding. Generally they found that the determinants of chronic and transient poverty differ except for physical asset holding and life cycle effects. They suggest that poverty reduction intervention requires policy instruments like seasonal public works, credit schemes, buffer stocks, and insurance options for the poor that can reduce consumption variability.

McCulloch and Baulch (1999) distinguish chronically, transitorily and never poor households, for Pakistan, and model the associated characteristics using both an ordered logit model and a multinomial logit model. The results show that while the incidence of income poverty in the sample villages was high, turnover among the poor was also rapid. In each year of the survey between 21 per cent and 29 per cent of households had incomes below the poverty line, but 46 per cent to 51 per cent of poor households' exited poverty from one year to the next. Only 3 per cent of households were poor in all five years of the panel. Furthermore, the correlates of entries and exits from poverty were found to differ in important but unexpected ways from those of poverty status. The dependency ratio and geographic variables were important correlates of poverty status, but neither had much impact on entries into or exits from poverty. Other variables, such as education and livestock ownership, had asymmetric impact on poverty transitions: increasing exit or reducing entry probabilities without influencing transitions in the opposite direction. The policy implications of their findings indicate that targeting anti-poverty policies using the characteristics of the currently poor is highly problematic and if governments care primarily about reducing the poverty headcount, they should focus their efforts on increasing exits from and decreasing entries into poverty. The relatively few longitudinal household studies that exist for South and East Asia seem to confirm this characterisation of poverty as a temporary phenomenon. Work by ICRISAT in eight

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villages in Southern India in the late 1970s and early 1980s found that around a quarter of poor households moved out of poverty from year to year (Walker and Ryan, 1990). Similar results have been observed in four provinces in Southern China (Ravallion and Jalan, 1996) and using a sub-sample of the All India National Household Sample Survey (Gaiha, 1989).

Dercon and Krishnan (1998) using panel data of Ethiopian rural households (ERHS) collected for 1989, 1994 and 1995 find that poverty declined between 1989 and 1994 and remained same between 1994 and 1995. They also find that households with substantial human and physical capital and better access to roads and towns have both lower poverty levels and are more likely to get better off over time. Human capital and access to roads and towns also reduce the fluctuations in poverty across the seasons. Similarly Bigsten and Shimeles (2003) and Swanepoel (2005) analyze the dynamics of poverty using spells and component approach for ERHS 1994-1997 they find a decline in poverty for the rural sector and transient poverty dominating the rural sector. In rural areas, factors as age of the head of the household, dependency ratio within the household greatly affect the odds of moving into poverty, whereas factors such as size of cultivated land, education of the head of the household, education of the wives, value of crop sales, type of crops planted, access to local markets, reduce significantly vulnerability to poverty.

Gaiha (1989) used the National Council of Applied Economic Research (NCAER) data for 1968-71 and found 47% of the households as chronically poor that are identified as landless or near landless and more dependent on wage. He defines chronic poor as those whose welfare was below the poverty line over the three years. Based on International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) panel survey for 240 households from six semi-arid villages in India ranging between 1975/76 to 1984/85, Gaiha and Deolalikar (1993) find 87.8% of the sample households at least once poor over the 9 periods. And more than one-fifth of the sample households were poor all the 9 periods. On the contrary, the review work by Baulch and Hoddinott (2000) on ten developing countries reveals that chronic poverty accounts only from 3% in Pakistan to 33% in India. They conclude that poverty in developing countries is more of transient than being chronic. Using panel data from Egypt for 1997-1999, Haddad and Ahmed (2002) analyse chronic and transient poverty using both transition matrix and components approach. The evidence shows that those who moved into poverty were over twice those who exit and two-third of the overall poverty was chronic. Investigating the

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determinants of chronic and transient poverty, they documented that average years of schooling of household members inversely affect both types of poverty but stronger effect on chronic one. The value of land and livestock was found to be negatively correlated with chronic poverty. While increase in number of children under 15 and household size increase chronic poverty. The location of residence of the household (urban) was however correlated with transient poverty. They concluded that in the Egyptian context, the policy for reducing poverty should focus on improving the asset accumulation process since the majority were found to be chronically poor.

Hagos and Holden (2003) using Tigray panel data also find poverty in rural Tigray at best remaining same. In analyzing the rural Tigray poverty dynamics, they found that the proportions of people falling in to poverty are greater than those escaping. Investigating the determinants of poverty they showed that physical and human capitals are welfare enhancing and the village level variables (whether the village is affected by war, weather calamity) are found to have significant impact on the welfare of the household.

Ribar (2003) examined dynamics in poverty and food insufficiency using available longitudinal data from the 1993 panel of the Survey of Income and Program Participation (SIPP) and the follow-on Survey of Program Dynamics (SPD). The study used these data to characterize the incidence and dynamics of poverty and food problems for the entire U.S. population and for different subgroups. It also estimated multivariate, discrete-choice regression models to examine the factors associated with transitions into and out of poverty and food insufficiency, and analyzed the empirical results in the context of a life-cycle model of income and food consumption. Results indicated that the incidence of food insufficiency in the United States was low—less than 3 percent in 1997 and there also appears to be little persistence in food problems; 79 percent of people in households with food problems at the start of the study period were in households without problems 2 years later. The multivariate results indicate that female-headed households face an especially high risk of being food insufficient. Low levels of asset income, an indicator of a household's ability to spread out consumption costs over time, are also associated with food sufficiency problems. Dynamics of falling into and out of poverty were examined using a discrete time hazard approach, using a panel dataset of Kenyan rural households. Poverty incidence showed some level of decline over the panel period. However, the factors that determine whether a households slips into poverty or escapes poverty did not appear to be radically different. They concluded

that access to more of financial resources and by association better quality farm inputs may be valuable policy options that will prevent rural farm households from falling into poverty while helping others escape poverty (Kirimi and Sindi, 2006).

A study by Woolard and Klasen (2004) analyzes the dynamics in income and poverty for South Africa. Based on Kwa Zulu-Natal Income Dynamics Study (KIDS) panel data they found higher income mobility and investigated the welfare changes using both univariate and multivariate frame work. The univariate framework revealed that a change in economic event (especially a change in household's head employment status and change in the remittances) largely determined the movements in and out of poverty than the demographic events. In the multivariate analysis they developed a model of change in real adult equivalent income as function of initial income, physical and human assets, adult equivalent of the household, change in human assets, demographic compositions and employment status. Their study showed that the welfare change is negatively correlated to initial income level, household size, female headship, change in headship (from male to female) and number of children. The initial physical and human assets and their change and change in employment status (from unemployment to employment) were found to influence the welfare change positively. They also document four types of poverty traps, associated with large initial household size, poor initial education, poor initial asset endowment and poor initial employment access.

Okidi and Mckay (2003) and Lawson *et al.* (2006) examined the dynamics of poverty and factors affecting the dynamics in Uganda over the1990s. Using different econometric approaches Lawson *et al* (2006) investigated the correlates of the never poor, those moving in and moving out of poverty. They found lack of education and assets important factors influencing chronic poverty.

Using a three year panel data set of rural households in the Tigray region of northern Ethiopia, Nega *et al.*(2008) examined the dynamics of poverty and the impact of two intervention measures – the food for work (FFW) and the food security package (FSP) programs – upon poverty by disaggregating total poverty into its transient and chronic components. Findings from their study revealed that poverty in the region is predominantly chronic. Results of matching estimators indicate that the FSP program has a significant negative effect on total and chronic poverty, but not on transient poverty and that households involved in the program have on average lower levels of total and chronic poverty than households not involved in the program. The FFW on the other hand does not significantly influence any of the three forms of poverty. Tertile

regressions, however, reveal that the FFW benefits households in the richest and the middle tertiles.

Oleksiy Ivaschenko and Cem Mete (2008) in their study show that the factors which make households move out of poverty are different from the factors which make them fall back into poverty. The study uses panel data analysis for Tajikistan and shows that, in such a transitory economy, the mobility of households from and into poverty is quite high. Findings from the reviewed literature on poverty transition in the United Kingdom show that people who have experienced poverty in the past are at more risk of entering poverty than those who have not been in poverty, and that the longer someone stays poor the less likely they are to escape poverty for example, Oxley *et al.* (199l), found that 30 per cent of the 'pool' of people in poverty over a six-year period involved the same individuals revolving in and out of poverty. They observed that the probability of leaving poverty one year after entry was 45 per cent, but only 26 per cent of those who had been in poverty for four years escaped poverty by the following year. This is sometimes described in the literature as 'churning': poverty may be dynamic, but a substantial number of people seem to remain in or close to poverty by experiencing a repeated cycle of escaping from, then returning to poverty. For example, Jenkins *et al*. (1991) found that about 30 per cent of those leaving poverty became poor again within a year. For those in poverty, the chances of escaping decrease over time. They suggest even less mobility: while over half of poverty entrants left after a year and a third after two years, the exit rate declined sharply so that, of those poor for seven years, only 19 per cent had left poverty the following year.

Methodologically, the above articles used the class of decomposable poverty measures of FGT in measuring poverty. The decomposition of poverty was done using either the spells or component approach. To study the factors associated with total poverty, chronic and transient poverty; different authors used different econometric models such as multinomial logistic, probit, bivariate probit, tobit, quantile regression and variant of micro-growth regressions. In this study, the much simpler "spells approach" was adopted in decomposing poverty into its chronic and transient components (McKay and Lawson, 2003) and the factors associated with total, chronic and transient poverty were examined using the probit and multinomial logistic regression method respectively. Further, in the case of Africa, there are few studies of poverty dynamics despite the rampant poverty in the region. This may be due to the demanding nature of the data to analyze the dynamics. Only few countries (Cote

d'Ivoire, Ethiopia, Egypt, South Africa, Uganda, Kenya, Ghana and Zimbabwe) to the best of my knowledge have household-level panel data. Therefore, this study will be quite an immeasurable contribution to the body of knowledge.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Area of Study

South West of Nigeria falls on latitude 6^0 to the North and latitude 4° to the South. It is marked by longitude 4^0 to the West and 6^0 to the East. It is bounded in the North by Kogi and Kwara states, in the East by Edo and Delta states, in the South by Atlantic Ocean and in the West by Republic of Benin. The zone comprises of six states namely Oyo, Osun, Ondo, Ogun, Ekiti and Lagos. It is characterized by a typically equatorial climate with distinct dry and wet seasons. The mean annual rainfall is 1480mm with a mean monthly temperature range of 18^0 -24^0C during the rainy season and 30^0-35^0C during the dry season. The geographical location of South West Nigeria covers about 114, 271 kilometer square that is, approximately 12 percent of Nigeria's total land mass. The total population is 27,581,992 and predominantly agrarian. The vegetation is typically rainforest; however climatic changes over the years have turned some parts of the rain forest to derived savannah. The cultivation systems mostly practiced are mixed farming and mixed cropping. Depending on the prevailing vegetation, soil and weather conditions, notable food crops cultivated include cassava, maize, yam, cowpea while cash crops include cocoa, kolanut, coffee and oil palm (NPC, 2006). Non-farm activities of the households include trading, carpentry, bricklaying as well as government employment. The maps of the six South Western States of Nigeria and the Local Government Areas sampled are shown in Figures 3.1 and 3.2 respectively.

3.2   Nature and Source of Data

Primary data used in this study were collected from a two-wave panel survey undertaken at 5-months interval (Dercon and Krishnan, 2002; Cruces and Wodon, 2003; Bigsten *et al.*, 2003; Booysen, 2003, Fields *et al.*, 2006) to allow measurement of seasonal variation in behaviour and outcome and to balance both the cross-sectional and time series requirements of panel data. The two periods correspond to the lean and harvesting seasons of 2009. Data were collected (from the same households in the two rounds) on demographic characteristics, education, employment, housing and housing conditions, social capital, income, consumption expenditure as well as the economic infrastructure available to the community.
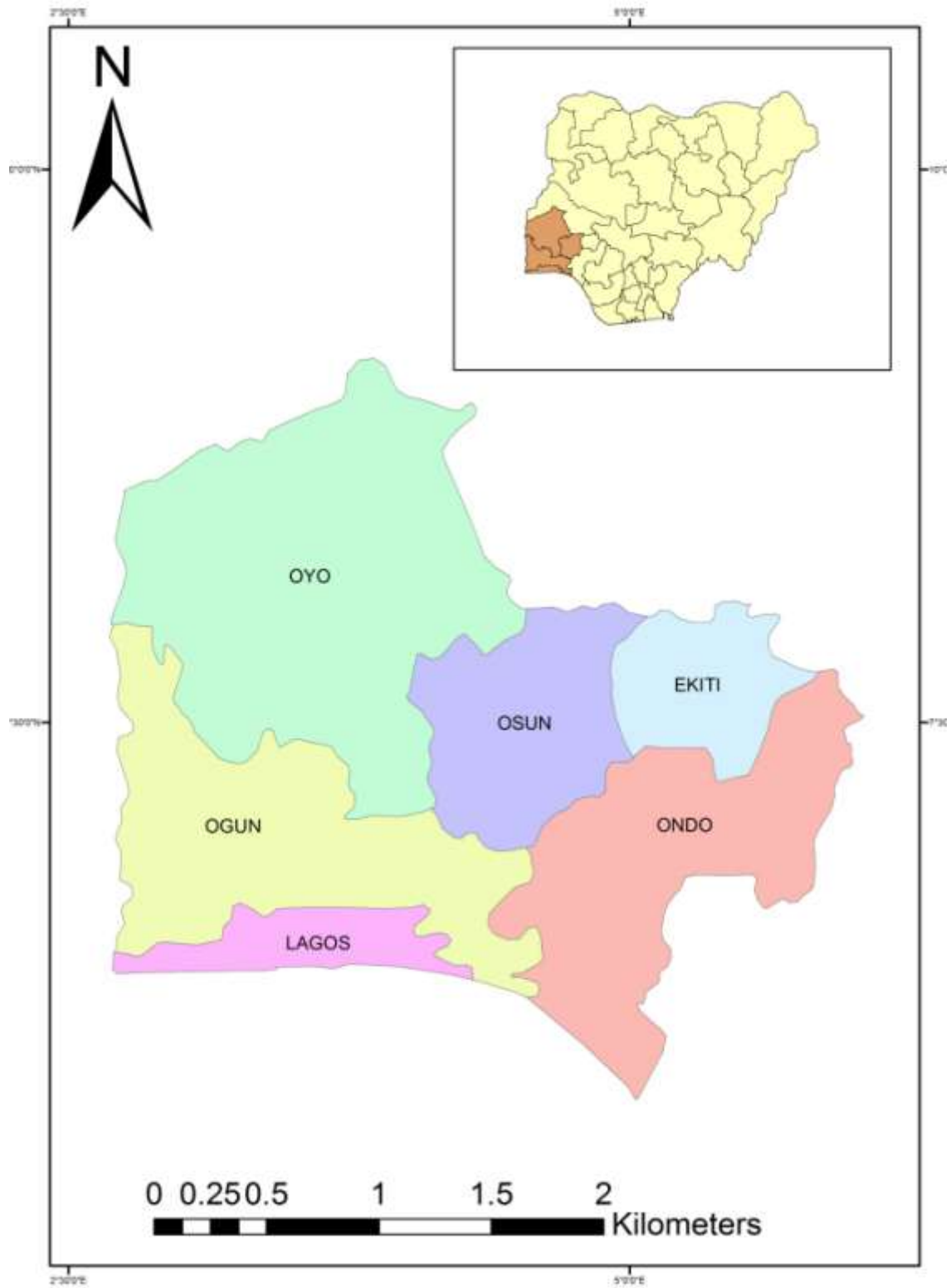
Fig.3.1: Map showing the six Southwestern States of Nigeria
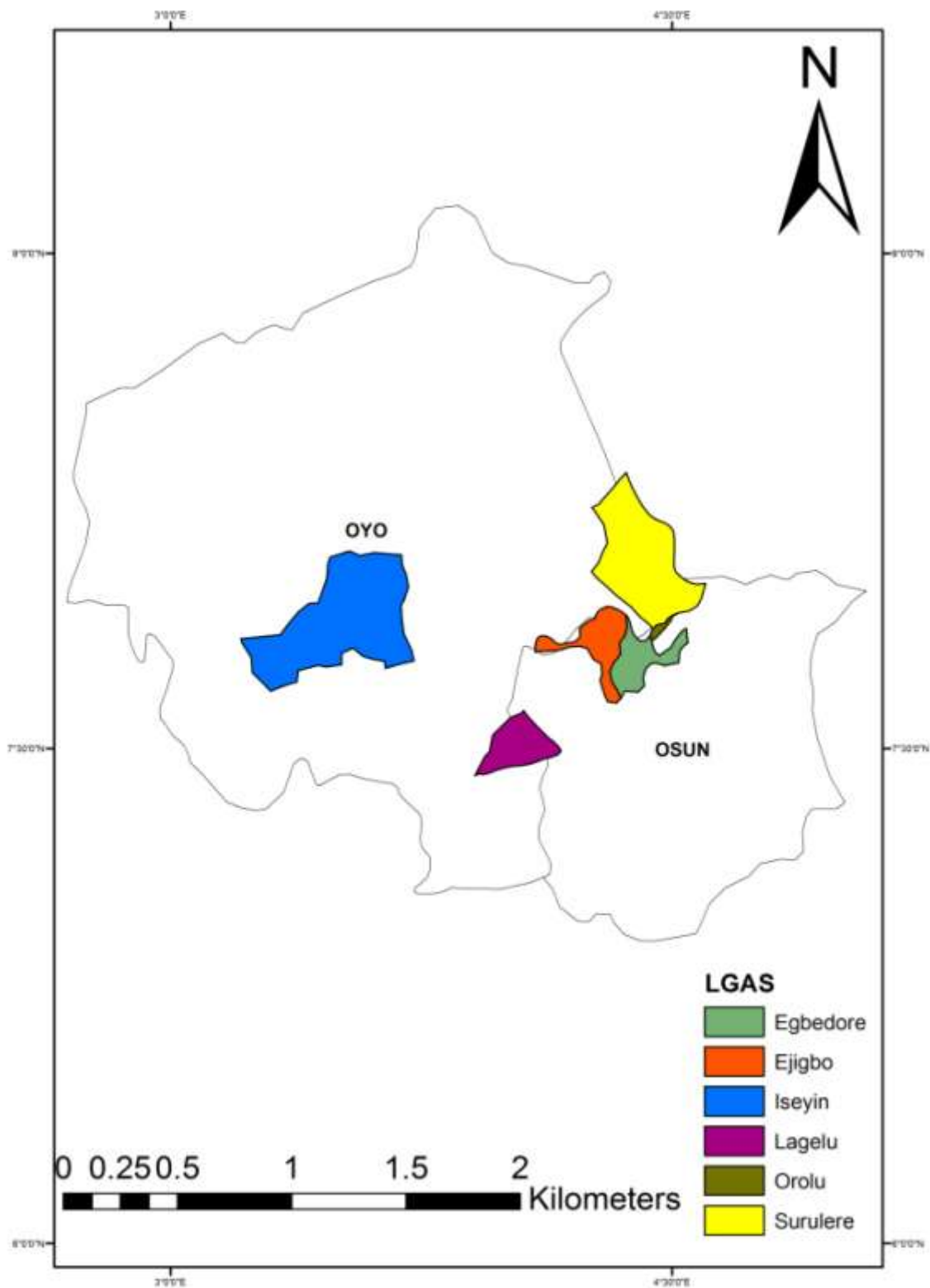
Figure 3.2: Map of Oyo and Osun States showing the Local Government Areas Sampled

3.3   Sampling Procedure and Sample size

The frame for the study was the demarcated Enumeration Area (EA) maps produced by National Population Commission for the 2006 Housing and Population Census. However, the EAs selected were updated before the commencement of the study. Furthermore, the EAs used are part of the ones usually used by National Bureau of Statistics (NBS) for her regular household-based surveys. A multi-stage sampling technique was adopted for this study for the selection of respondents. The first stage was a random selection of two states of Oyo and Osun from the six states that make-up the Southwest geo-political zone of the country. The second stage involved the random selection of three local government areas (LGAs) from each of the selected state. The third stage was the random selection of ten rural enumeration areas (EAs) from each of the selected LGA[3]. The final stage of the sampling was the systematic selection of ten households from the households listed in each selected EA. Hence, in each state 300 households were interviewed giving a total of 600 households in the two selected states canvassed for the study in the first period but only 582 households could be re-interviewed in the second round. Data from these 582 households were used for analysis in this study. These samples are representative and robust enough to give estimates at the LGA, State and Zonal levels. Table 1 shows the distribution of respondents across the sampled LGAs.

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[3] See Appendix II for the list of selected enumeration areas

Table 1: Households Sampled for the Study

State	LGA	Nos of EA's	Number of Households sampled /EA	Total Number of Households sampled /EA	Number of Questionnaire distributed	Number of Questionnaire retrieved and completely filled
Osun	Ejigbo	10	10	100	100	95
	Egbedore	10	10	100	100	96
	Orolu	10	10	100	100	91
Oyo	Surulere	10	10	100	100	100
	Lagelu	10	10	100	100	100
	Iseyin	10	10	100	100	100
Total	6	60		600	600	582

Source: Author's Compilation, 2009

For the study, all the sample data were weighted using the inverse of the overall selection probabilities (Design Weights). In addition, adjustment factors were applied to complete the weighting process for the study. The formula adopted in calculating the design weights for the study is as follows:

Design Weight = $[(k/K) .(l_h/L_h) .(n_h/N_h) .(m_h/M_{hi})]^{-1}$

Where

K = Total number of States in the South West Zone

k = Number of sampled States in the South West Zone

L_h = Total number of LGAs in State h of the South West Zone

l_h = Number of sampled LGAs in State h of the South West Zone

N_h = Total number of EAs in State h

n_h = Number of sampled EAs in State h

M_{hi} = Number of listed households in i^{th} EA of State h

m_{hi} = Number of sampled households in i^{th} EA of State h

The design weight was obtained for each of the sixty EAs canvassed in the two states and applied accordingly to all the study units. Thereafter, adjustment factors were applied for the non-responses where necessary.

3.4 Analytical Techniques and Methods

3.4.1 The Poverty Threshold

There is now recognition in literature that poverty is multi-faceted in nature and that consumption-based poverty measures are usually more stable than those of income (Lipton and Ravallion, 1995). This is because consumption tends to fluctuate less than income (which can even go to zero in certain months due to seasonality), making it a better indicator of living standards. Unlike income, consumption also reflects the ability of a household to borrow or mobilize other resources in time of economic stress (Grosh *et al.,* 2008). Household income itself is a complex concept and difficult to measure in a developing country where a large part of the labour force is either self-employed or of the own-account worker type. Therefore, in line with most poverty studies (Dercon and Krishnan, 2000; Goh *et al.*, 2001; Haddad and Ahmed, 2003; Gaiha *et al.,* 2007), per capita household consumption expenditure was used as a proxy for per capita household income. More so in Nigeria, traditionally, it is easier for households to give information on their consumption than their earnings. Per capita household expenditures were calculated as the sum of per capita household cash expenditures on food and non food

items and the value of own produced consumption based on local market prices. Thus, a relative poverty line was constructed based on the Mean Per Capita Household Expenditure (MPCHHE) of the sampled respondents. Poverty categories were then established using the relative poverty lines for each of the periods as in Baulch and McCulloch (1999); Gamba and Mghenyi (2004) and Gaiha *et al.*, (2007). Those who spent less than two-thirds of their MPCHHE were classified as poor (moderately) while (non-poor) are those who spend two-thirds or more of their MPCHHE (NBS, 2005).

3.4.2 Poverty Measure and Decomposition

The specific form of poverty measure that was used in this analysis is the class of decomposable poverty measures by Foster, Greer and Thorbecke (FGT). They are widely used because they are consistent and additively decomposable (Foster *et al.,* 1984).

The FGT index is given by

$$P_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^\alpha$$

(1)

Where;

Z is the poverty line defined as 2/3 MPCHHE, y_i is the value of poverty indicator/welfare index per capita in this case per capita expenditure in increasing order for all households; q is the number of poor people in the population of size n, and $\propto$ is the poverty aversion parameter that takes values of zero, one or two.

By setting the value of $\propto$ to zero, one, two respectively, the FGT poverty measure formula delivers a set of poverty indices.

Setting $\propto$ equal to zero, P_o is the head count index measuring the incidence of poverty that is proportion of poor people from the total population.

Setting $\propto$ equal to one, P_1 is the poverty gap measuring the depth of poverty that is on average how far the poor is from the poverty line.

Setting $\propto$ equal to two, P_2 is the squared poverty gap measuring the severity of poverty among households that is the depth of poverty and inequality among the poor.

3.4.3 Vulnerability as Expected Poverty (VEP)

Empirically, building upon the works of Chaudhuri *et al.* (2002) and Gaiha *et al.* (2007), VEP was obtained by the following procedure: First, using record level household data, the FGT measure of headcount poverty (Foster, *et al.,* 1984) was calculated. Second, household's expected consumption and its variance of the error term were estimated using Feasible Generalised Least Square (FGLS) estimation procedure. Household's vulnerability to poverty was then derived as the conditional probability of the household falling into poverty in the next period or the probability that a household's consumption will lie below the predetermined poverty line in the near future. One of the limitations of this definition of vulnerability is that it is sensitive to the choice of the poverty line. Accordingly, for this study, following the approach by Gaiha *et al.* (2007) and in order to check the sensitivity of results to the choice of a poverty threshold, poverty line was defined as (a) the relative poverty line for the study, (b) 80% of (a), (c) the national poverty line defined by the National Bureau of statistics and (d) the International poverty line of 1.25 dollars per day.

Following Chaudhuri (2002) the stages of the Feasible Generalised Least Square regression are stated explicitly as follows;

Assuming that the stochastic process generating the consumption of a household h is given by:

$$\ln C_{h,t+1} = X_h \beta + e_h \qquad\qquad (2) \qquad \text{Stage 1}$$

where C_{ht+1} is per capita consumption expenditure in time t+1, X_h represents a bundle of observable household characteristics, characteristics such as household size, location, educational attainment of the household head, etc., β is a vector of parameters, and e_h is a mean-zero disturbance terms that captures idiosyncratic factors (shocks) that contribute to different per capita consumption levels for households that are otherwise observationally

equivalent. The variance of e_h is assumed to be given by:

$$\sigma_{e,h}^2 = X_h \theta \qquad\qquad (3)$$

That is, there is no constant variance of the disturbance term and this allows for heteroscedasticity. In this setting the economic interpretation of the variance of the disturbance term is as intertemporal variance of log consumption. However, assuming constant variance of the disturbance term means that the households have constant

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variance of log consumption. This is contrary to empirical evidence since poor households have more variance in consumption than their counterpart non-poor (Chaudhuri, 2003; Christiaensen and Boisvert, 2000). Technically, heteroscedasticity biases only the disturbance term and standard errors of the coefficients not the coefficients and may be thought to be corrected using standard error robust estimation. However, in computing vulnerability the standard deviation of the disturbance term enters directly hence biases the vulnerability estimate. In order to correct for these biases, the estimates of β and θ were obtained using a three-step feasible generalized least squares (FGLS) procedure suggested by Amemiya (1977).

Equation (2) is estimated using an ordinary least squares (OLS) procedure. The estimated residuals from equation (2) are used to estimate equation (4)

$$\hat{e}^2_{OLS}, h = X_h \theta + \eta_h \qquad (4)$$

The predictions from this equation were used to transform the equation as follows:

$$\frac{\hat{e}^2_{OLS,h}}{X_h \hat{\theta}_{OLS}} = \left(\frac{X_h}{X_h \hat{\theta}_{OLS}} \right) \theta + \frac{\eta_h}{X_h \hat{\theta}_{OLS}} \qquad (5) \qquad \text{Stage 2}$$

This transformed equation was estimated using OLS to obtain an asymptotically efficient FGLS estimate $\hat{\theta}_{FGLS}$. Note that $X_h \hat{\theta}_{FGLS}$ is a consistent estimate of $\sigma^2_{e,h}$ the variance of the idiosyncratic component of household consumption.

The estimates: $$\hat{\sigma}_{e,h} = \sqrt{X_h \hat{\theta}_{FGLS}} \qquad (6)$$

Were then used to transform equation (2) as follows

$$\frac{InC_h}{\hat{\sigma}_{e,h}} t + 1 = \left(\frac{X_h}{\hat{\sigma}_{e,h}} \right) \beta + \frac{e_h}{\hat{\sigma}_{e,h}} \qquad (7) \qquad \text{Stage3}$$

OLS estimation of equation (7) yields a consistent and asymptotically efficient estimate of β. The standard error of the estimated coefficient $\hat{\beta}_{FGLS}$, was then obtained by dividing the reported standard error by the standard error of the regression. Using the estimates $\hat{\beta}$ and $\hat{\theta}$ that were obtained; the expected log consumption and variance of log

consumption were directly estimated with equations (8) and (9) respectively for each household h.

$$\hat{E}[\ln C_h | X_h] = X_h \hat{\beta} \qquad (8)$$

$$\hat{V}[\ln C_h | X_h] = \hat{\sigma}^2_{e,h} = X_h \hat{\theta} \qquad (9)$$

By assuming that consumption is log-normally distributed, these estimates were used to form an estimate of the probability that a household with the characteristics, X_h, will be poor that is, to estimate the household's vulnerability level. Letting Φ denote the cumulative density of the standard normal, this estimated probability was given by:

$$VEP = \hat{v}_h = \hat{Pr}(\ln C_{ht+1} < \ln z | X_h) = \Phi\left(\frac{\ln z - X_h \hat{\beta}}{\sqrt{X_h \hat{\theta}}}\right) \qquad (10)$$

Where

C_{ht+1}	=	Consumption level of household h in the lean period
X_h	=	Vector of independent variables
$\hat{\beta}$	=	regression coefficients of idiosyncratic variables
$\hat{\sigma}_{e,h}$	=	Variance of idiosyncratic and covariate variables
e_h	=	Error term

The Independent variables were selected following Imai *et al.* (2009); Gaiha *et al.* (2007); Oni and Yusuf (2008) and Oluwatayo (2007). These variables are as follows:

SEX	=	Sex of household head (1=Male, 0 otherwise)
AGE	=	Age of the household head (years)
AGESQ	=	Age squared (years)
HHS	=	Household size
HHSQ	=	Household size squared
SHAREFEM	=	Share of female members in total household membership
DEPBURD	=	Dependency burden
MS2	=	Marital status (married= 1, 0 otherwise)
EDUC2	=	Household head has primary education (Yes = 1, 0 otherwise)

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EDUC3   =   Household head has secondary education of household (Yes = 1, 0 otherwise)

EDUC4   =   Household head has tertiary education   (Yes = 1, 0 otherwise)

POCCUP   =   Primary occupation of household head (farming = 1, 0 otherwise)

LAND   =   Land size (hectares)

MEMASSOC =   Membership of local group/association (Yes = 1, 0 otherwise)

OWNHOUSE =   House ownership (Yes = 1, 0 if otherwise)

ACCCREDIT =   Access to credit (Yes = 1, 0 if otherwise)

ACCREMITT =   Access to remittances (Yes = 1, 0 if otherwise)

ACCELEC   =   Access to electricity (Yes = 1, 0 if otherwise)

3.4.4 Vulnerability Profile

Households with expected poverty indices below the vulnerability threshold (0.5) were regarded as non-vulnerable while those with indices equal to or above the vulnerability threshold were classified as vulnerable (see section 2.3.1). They were further classified into their vulnerability status conditional on their poverty status as presented in table 2. Households were finally classified based on selected socio-economic variables to see how vulnerability and poverty differ among different segments of the population. This classification helps to provide some insights on the average about the socio-economic characteristics of the poor and the vulnerable. According to Oni and Yusuf (2008), expected poverty profiles of this nature are useful illustrative mechanisms in the discussion of policy priorities among various socio-economic groups residing in the study area and the country at large.

Table 2: Vulnerability Estimates based on Poverty Status of Respondents

Poverty status	Vulnerability Status		Total
	Vulnerable	**Not vulnerable**	**Total**
Poor	V_{11}	V_{12}	N_1
Non-Poor	V_{21}	V_{22}	N_2
Total	V_1	V_2	Y^*

Source: Author's Compilation, 2009

Where:

V_{11} =   number of poor and vulnerable households

V_{12} =   number of poor households that are not vulnerable

V_{21} =   number of non poor households that are vulnerable

V_{22} =   number of non poor households that are not vulnerable

N_1 =   Total number of poor households in the study area

N_2 =   Total number of non poor households

V_1 =   Total number of vulnerable households

V_2 =   Total number of non vulnerable households

Y^* =   Total number of respondents

3.4.5   Determinants of Vulnerability as Expected Poverty (VEP)

The Tobit model was used to examine the determinants of vulnerability to poverty in rural South west Nigeria using the value of VEP estimated for each household (equation 10) as the dependent variable. The dependent variable has zero values for households below the vulnerability threshold which is indicative of censoring of an underlying variable and, therefore, requires Tobit estimators (Blundell and Mhegur, 2002; Wen *et al.*, 2001; Blay Loek and Blissard, 2003). The Tobit Model developed by Tobin (1958) and as adopted by Haddad and Ahmed (2003) and Omonona (2001) is expressed as:

$$Y_{ij} = \beta X_i + e_i \quad .... \quad (11)$$

$$Y_{ij} = \widehat{vh}t = Pr\left(lnCt + 1 < \frac{lnZ}{Xi}\right) = \frac{\emptyset[z - xh\beta]}{\sqrt{xh\sigma}} = VEP$$

Where $Y_{ij} = 0$ for $\widehat{V}h_t < v$.

$Y_{ij} > 0$ for $\widehat{V}h_t \geq v$.

X_1	=	Vector of explanatory variables
B	=	Vector of respective parameters
e_i	=	Independently distributed error term
Y_{ij}	=	Estimated Vulnerability as expected poverty indices
V	=	Vulnerability threshold
Z	=	Poverty line
$Xh\widehat{\beta}$	=	Expected log of consumption
$Xh\widehat{\sigma}$	=	Expected variance of log consumption

The independent variables that influence VEP according to Imai *et al.* (2009) and Gaiha *et al.* (2007) are:

SEX	=	Sex of household head (male = 1, 0 if otherwise)
AGE	=	Age of the household head (years)
AGESQ	=	Age squared
HHS	=	Household size
DEPBURD	=	Dependency burden
HHTYPE	=	Household type (Polygamous = 1, 0 if otherwise)
EDUC2	=	Household head has primary education (Yes = 1, 0 if otherwise)
EDUC3	=	Household head has secondary education (Yes = 1, 0 if otherwise)
EDUC4	=	Household head has tertiary education (Yes = 1, 0 if otherwise)

POCCUP	=	Primary occupation of the household head (Farming 1, 0 if otherwise)
YEXPOCC	=	Years of experience in primary occupation
LAND	=	Land size (Hectares)
MEMASSOC	=	Membership of Local group or association (Yes = 1, 0 if otherwise)
ACCCREDIT	=	Access to credit (1 = Yes, 0 if otherwise)
ACCREMITT	=	Access to remittances (1 = Yes, 0 if otherwise)
DISTPUBHLTH	=	Distance to nearest public health facility (km)
MUD	=	Construction Material of outside wall is mud (1 = Yes, 0 if otherwise)
RRATIO	=	Room ratio
SANEXCRE	=	Access to sanitary means of Excreta Disposal (1 = Yes, 0 if otherwise)
PWATER	=	Access to potable water (1 = Yes, 0 if otherwise)
ACCELEC	=	Access to electricity (1 = Yes, 0 if otherwise)

The *a priori* expectations of the determinants of VEP are presented in table 3

Table 3: *A priori* **expectation with respect to the determinants of VEP**

Variable	Type	*a priori* expectation with respect to VEP
Sex	Dummy	± (Imai *et al.,* 2009; Awel, 2007)
Age	Continuous	+ (Imai et al., 2009; Gaiha et al., 2007)
Age squared	Continuous	± (Imai et al., 2009; Gaiha et al., 2007; Awel, 2007)
Household size	Continuous	+ (Awel, 2007)
Dep.burd.	Continuous	+(Imai et al., 2009; Gahia et al. , 2007; Awel, 2007)
Household type	Dummy	±(Imai et al., 2009; Gahia et al., 2007)
Primary Educ.	Dummy	-(Imai et al., 2009; Gahia et al., 2007; Awel,2007)
Sec. Educ.	Dummy	-(Imai et al., 2009; Gaiha et al., 2007; Awel, 2007)
Tertiary Educ.	Dummy	-(Imai et al., 2009; Gaiha et al., 2007; Awel, 2007)
POccup.	Dummy	+(Lawson et al., 2005)
Yexp. In pry.Occup.	Continuous	-(Omonona, 2001)
Land size	Continuous	-(Gahia et al., 2007)
Member Assoc.	Dummy	-(Oluwatayo, 2007)
Access to credit	Dummy	-(Oluwatayo, 2007)
Access remitt.	Dummy	-(Bhatta and Sharma, 2006)
Dist.pub.Health	Continuous	+ (Omonona, 2001)
Mud	Dummy	+(Oni and Yusuf, 2008)
Room ratio	Continuous	-(Lawson et al., 2005; Oni and Yusuf, 2008)
Access San excre	Dummy	-(Oni and Yusuf, 2008)
Access Pot.water.	Dummy	-(Chaudhuri et al., 2002; Kasirye, 2007)
Electricity	Dummy	-(Imai et al., 2009; Gahia et al., 2007)

Source: Author's Compilation, 2009

3.4.6 Determinants of Poverty in the Two Periods

In estimating the determinants of poverty, a probit model was applied to estimate whether a household's consumption per capita was below the poverty line in the two periods, conditioned on a vector of determinants of per capita consumption, X_i.

$$\Pr(Y_i = 1) = \Phi(X_i\gamma')$$

(12)

Where $Y_i = 1$ if $\ln C_{t+1} < \ln Z$ and $Y_i = 0$ Otherwise.

The probit model assumes that while we observe the values of 0 and 1 for the variable Y_1 there is a latent, unobserved continuous variable Y^* that determines the value of Y, we assume that Y^* can be specified as follows:

$$Y^* = B_o + B_1 X_{1i} + B_2 X_{2i} + \dots B_k X_{ki} + U_i \dots\dots\dots\dots\dots$$ (13)

and that: $Y_i = 1$ if $Y^* < 0$

$Y_i = 0$ otherwise

Where

Y_i = poverty level (poor = 1, 0 = non poor)

$X_{1i} \dots X_{22i}$ = Vector of Independent variables

B_o = constant

B_1 = coefficient estimates

U_i = random disturbance term from equation Y.

$$P_r(Y_i = 1) = (B_o + B_1 X_{1i} + B_2 X_{2i} \dots B_k X_{ki} + U_i > 0 \dots\dots$$ (14)

Rearranging terms

$$P_r(Y_i = 1) = P_r[U_i > -(B_o + B_1 X_{1i} + B_2 X_{2i} + \dots B_k + K_i)] = 1 - P_r[U_i < -(B_o + B_1 X_{1i} + B_2 X_{2i} + \dots B_k + K_i]$$

If we make the usual assumption that U is normally distributed, we have

$$P_r(Y = 1) = 1 - \phi[-(B_o + B_1 X_{1i} + B_2 X_{21} + \dots B_k X_{ki})]$$

$$= 1 - \phi(-X_1 B) = \phi(X_1 B) \quad \text{------}$$ (15)

where ϕ = standard cumulative normal distribution using data from panel

X_1 = vector of independent variables

B's = estimates of coefficients which give the impact of the independent variables on the latent variable Y^*.

3.4.7 Relationship between Vulnerability and Poverty Status of the Respondents

The association between vulnerability in the first survey period and the probability of being poor in the second period was also analysed by adding VEP_i in the first period as one of the explanatory variables in the second period (Gaiha *et al.*, 2007). The independent variables were included in the model following Omonona (2001), Imai *et al.* (2009) and Gaiha *et al.* (2007). They include:

SEX	=	Sex of household head (male = 1, 0 if otherwise)
AGE	=	Age of the household head (years)
AGESQ	=	Age squared
HHS	=	Household size
DEPBURD	=	Dependency burden
HHTYPE	=	Household type (Polygamous = 1, 0 if otherwise)
EDUC2	=	Primary Education of household head (Yes = 1, 0 if otherwise)
EDUC3	=	Secondary Education of household head (Yes = 1, 0 if otherwise)
EDUC4	=	Tertiary Education of household head (Yes = 1, 0 if otherwise)
POCCUP	=	Primary occupation of the household head (Farming= 1, 0 if otherwise)
YEXPOCC	=	Years of experience in primary occupation
LAND	=	Land size (hectares)
MEMASSOC	=	Membership of Local group or association (Yes = 1, 0 if otherwise)
ACCCREDIT	=	Access to credit (1 = Yes, 0 if otherwise)
ACCREMITT	=	Access to remittances (1 = Yes, 0 if otherwise)
DISTPUBHLTH	=	Distance to public health facility (km)
MUD	=	Construction Material of outside wall is mud (1 = Yes, 0 if otherwise)
RRATIO	=	Room ratio
SANEXCRE	=	Access to sanitary means of Excreta Disposal (1 = Yes, 0 if otherwise)
PWATER	=	Access to potable water (1 = Yes, 0 if otherwise)
ACCELEC	=	Access to electricity (1 = Yes, 0 if otherwise)
VEP	=	VEP (Index)

The *a priori* expectations of the determinants of poverty are presented in table 4.

Table 4: *A priori* **expectation with respect to the determinants of Poverty**

Variable	Type	*a priori* expectation with respect to poverty
VEP	Continuous	+(Gaiha et al., 2007)
Sex	Dummy	± (Omonona, 2001; NBS, 2005)
Age	Continuous	+(Haddad and Ahmed, 2003; Imai et al., 2009)
Age squared	Continuous	-(Haddad and Ahmed, 2003; Imai et al, 2009)
Household size	Continuous	+(Swanepoel, 2005)
Dep.burd.	Continuous	+(Imai et al., 2009; Gaiha et al., 2007)
Household type	Dummy	±(Omonona, 2001)
Primary Educ.	Dummy	-(Imai et al., 2009; Gahia et al., 2007)
Sec. Educ.	Dummy	-(Imai et al., 2009; Gaiha et al., 2007)
Tertiary Educ.	Dummy	-(Imai et al., 2009; Gaiha et al., 2007)
POccup.	Dummy	+(Omonona, 2001)
Yexp. In pry.Occup.	Continuous	± (Omonona, 2001)
Land size	Continuous	-(Haddad and Ahmed, 2003; Gahia et al., 2007; Swanepoel, 2005)
Member.Assoc.	Dummy	-(Omonona, 2001)
Access to credit	Dummy	-(Muyanga et al., 2007; Omonona, 2001)
Access remitt.	Dummy	-(Omonona, 2001)
Dist.pub.Health	Continuous	+ (Omonona, 2001)
Mud	Dummy	+(Oni and Yusuf, 2008)
Room ratio	Continuous	-(Omonona , 2001)
Access San excre	Dummy	-(Oni and Yusuf, 2008)
Access Pot.water.	Dummy	-(Chaudhuri et al., 2002; Oni and Yusuf, 2008)
Electricity	Dummy	-((Imai et al., 2009; Gahia et al., 2007)

Source: Author's Compilation, 2009

3.4.8   Poverty Transitions Modelling

To examine the movements of households in and out of poverty and to understand the relationship between poverty entry and exits using the incidence of poverty, poverty transition matrix and the simple-first order Markov model were employed.
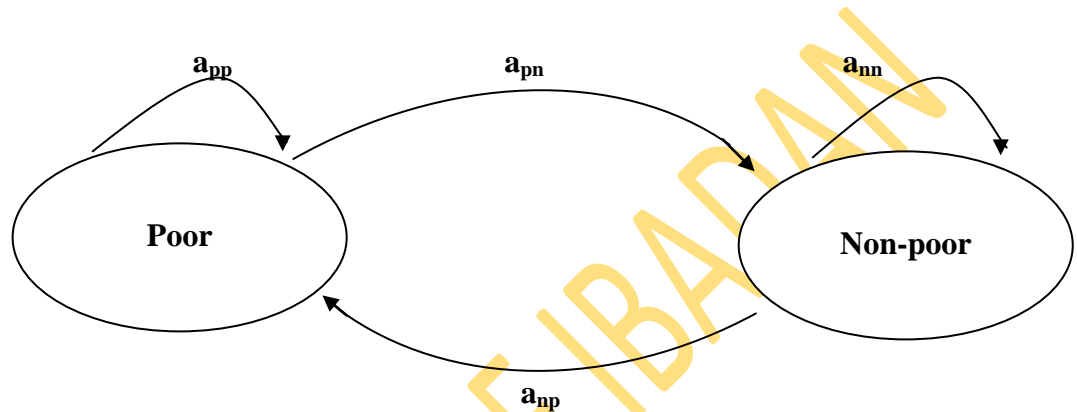
Fig. 3.3   Markov Model of Poverty Transitions

Source: Adapted from Baulch and McCulloch (1998)

Where p denotes poor and n denotes non-poor, thus

a_{pp} = probability of staying poor

a_{nn} = probability of staying non-poor

a_{pn} = probability of exiting poverty

a_{np} = probability of entering poverty

In Table 5, a_{pp} and a_{nn} represent the stationary states of poverty status respectively. That is, households that maintained their status between the harvesting and the lean periods. On the other hand, a_{pn} and a_{np} represent the transitional states of poverty. That is, households that were poor in the harvesting period but exited/ escaped poverty in the lean period and those non poor in the harvesting period but moved into poverty in the lean period respectively. N_1 and N_2 represent row and column total for poor and non poor households respectively while N^* represents the total number of respondents.

Table 5:   Poor/Non Poor Transition Matrix Box

Harvesting period	Lean Period		
	Poor	Non-Poor	Total
Poor	a_{pp}	a_{pn}	N_1
Non-Poor	a_{np}	a_{nn}	N_2
Total	N_1	N_2	N^*

Source: Author's Compilation, 2009

3.4.9   Correlates of Poverty Transitions

3.4.9.1   Multinomial Logit Model

The multinomial logit model (following Gaiha *et al.*, 2007; Bigsten *et al.,* 2003; Bhatta and Sharma, 2006; Lawson, 2004; Haddad and Ahmed, 2003; Baulch and Hoddinott, 2000; McCulloch and Baulch, 1999) was used to analyze the shift of poverty status between the two periods (Harvesting and Lean periods). The relative probability of $Y_i = j$ in relation to the base category $Y = 0$ is given by the Relative Risk Ratio (RRR) or odds ratio.

$$\Pr(Y_i = j) = \frac{e^{(X_{ij}\lambda \, + \tau V\hat{E}P_{ijt-1})}}{\sum_{k=0}^{3} e^{(X_{ij}\lambda + \tau V\hat{E}P_{ijt-1})}}, \quad j = 0,1,2,3$$

(16)

The parameter estimates measure the impact of a unit increase in the relevant explanatory variable on the log odds ratio of the particular state in relation to the base line category. In other words, the RRR shows how the predicted odds favouring an outcome (compared with the base outcome – being non-poor) are multiplied per unit increase in the value of the associated explanatory variable, when other variables are controlled for in the model. Hence an RRR value of one indicates a lack of association between the explanatory variable and the outcome (that is, it leaves the dependent variable unchanged). An RRR value greater than one indicates a positive association between the explanatory variable and the outcome implying that the explanatory variable increases the dependent variable while an RRR smaller than one represents a negative relationship implying that the explanatory variable reduces the dependent variable. Hence, the strength of the relationship is reflected in how far the RRR deviates from 1 (Bhatta and Sharma, 2006).

The MNL model is explicitly expressed as

$$Y_1 = \alpha_1 + B_{11}X_1 + B_{21}X_2 + \ldots\ldots\ldots\ldots B_nX_n + \epsilon_i \text{ -------------------------(17)}$$

$$Y_2 = \alpha_2 + B_{12}X_1 + B_{22}X_2 + \ldots\ldots\ldots\ldots B_nX_n + \epsilon_i \text{-------------------------(18)}$$

$$Y_3 = \alpha_3 + B_{13}X_1 + B_{23}X_2 + \ldots\ldots\ldots\ldots B_nX_n + \epsilon_i \text{-------------------------(19)}$$

$$Y_o = \alpha_o + B_{10}X_1 + B_{20}X_2 + \ldots\ldots\ldots\ldots B_nX_n + \epsilon_i \text{--------------------} \quad (20)$$

Where Yi represents 4 unordered categories of poverty transition:

Y_1 = those who were poor in both periods (i.e. chronically poor)

Y_2 = those who were poor in the first period, but non-poor in the second period (i.e. transitory poor)

Y_3 = those who were non-poor in the first period, but poor in the second period (i.e. transitory poor)

Y_0 =those who were non-poor in both periods (i.e. always non-poor) (which is the reference case where it was assumed that $\lambda_0 = \tau_0 = 0$ Hence, the results for the base will not appear).

X_1 - - X_n represent vector of the explanatory variables where n = 1 …22

B_1 - - B_{22} represent the parameter coefficients

ϵ_i = represents the independently distributed error terms

$\propto_1 - \propto_4$ shows the intercept or constant terms

To measure the promotional and protective effect, following Greene (2000), equation (16) was normalized by setting $\lambda_0 = \tau_0 = 0$

$$\Pr(Y_i = j) = \frac{e^{(X_i \lambda_j)}}{1 + \sum_{k=1}^{3} e^{(X_i \lambda_k + \tau_k V\hat{E}P_i)}}, \quad j = 1, 2, 3 \tag{21}$$

$$\Pr(Y_i = 0) = \frac{1}{1 + \sum_{k=1}^{3} e^{(X_i \lambda_k + \tau_k V\hat{E}P_i)}}, \quad j = 0 \tag{22}$$

Probabilities for four different choices were then obtained from equations (21) and (22). Upon normalization, the 'protective effect' (i.e. the effect of preventing the non-poor from falling into poverty), and the 'promotional effect' (i.e. the effect associated with helping the poor escape poverty in a dynamic framework) were then identified

Equations (21) and (22) allowed a computation of the log-odds ratio for non poor – poor category (category 3):

$$\ln\left[\frac{\hat{\Pr}(Y_i = 3)}{\hat{\Pr}(Y_i = 0)}\right] = X_i\hat{\lambda}_3 + \hat{\tau}_3 V\hat{E}P_i \tag{23}$$

Equation (23) suggests that the probability of the non-poor falling into poverty, relative to remaining non-poor, is lower (i.e. the protective effect is higher) if a component of $\hat{\lambda}_3$ (for a positive component of Xi), or $\hat{\tau}_3$, is negative and significant. A positive $\hat{\tau}_3$

implies that non-poor households are more likely to fall into poverty. The promotional effect (equation 24) was measured by comparing the probabilities of the household belonging to categories 2 (poor – non poor) and 1 (poor – poor).

$$\ln\left[\frac{\hat{Pr}(Y_i = 2)}{\hat{Pr}(Y_i = 1)}\right] = X_i[\hat{\lambda}_2 - \hat{\lambda}_1] + [\hat{\tau}_2 - \hat{\tau}_1]V\hat{E}P_i$$

(24)

Hence, the greater the difference between coefficient estimates for categories 2 and 1, the higher the promotional effect.

The explanatory variables were selected based on Gahia *et al.* (2007); Imai *et al.* (2009); Bhatta and Sharma (2006); Lawson (2004); Lawson *et al.* (2005); Swanepoel (2005); Muyanga *et al.* (2007) among others. Chi-square (X^2) distributions and log – likelihood function was used to test the goodness of fit of the overall model. The independent variables used in the study were captured as:

SEX   =   Sex of household head (male = 1, 0 if otherwise)

AGE   =   Age of the household head (years)

AGESQ   =   Age squared

HHS   =   Household size

DEPBURD   =   Dependency burden

HHTYPE   =   Household type (Polygamous = 1, 0 if otherwise)

EDUC2   =   Household head has primary education (Yes = 1, 0 if otherwise)

EDUC3   =   Household head has secondary education (Yes = 1, 0 if otherwise)

EDUC4   =   Household head has tertiary education (Yes = 1, 0 if otherwise)

POCCUP   =   Primary occupation of the household head

                (Farming 1, 0 if otherwise)

YEXPOCC   =   Years of experience in primary occupation

LAND   =   Land size (Hectares)

MEMASSOC = Membership of Local group or association (Yes = 1, 0 if otherwise)

ACCCREDIT = Access to credit (1 = Yes, 0 if otherwise)

ACCREMITT = Access to remittances (1 = Yes, 0 if otherwise)

DISTPUBHLTH= Distance to nearest public health facility (km)

MUD   =   Construction Material of outside wall is mud

                (1 = Yes, 0 if otherwise)

RRATIO	=	Room ratio
SANEXCRE	=	Access to sanitary means of Excreta Disposal
		(1 = Yes, 0 if otherwise)
PWATER	=	Access to potable water (1 = Yes, 0 if otherwise)
ACCELEC	=	Access to electricity (1 = Yes, 0 if otherwise)
VEP	=	VEP (Index)

The *a priori* expectations of the determinants of households being chronically poor and transiently poor (i.e. exiting and moving into poverty) are presented in table 6. The table of analysis of objectives of the study is also presented in appendix III.

Table 6: *A priori* Expectation with respect to the Determinants of Chronic and Transient Poverty

Variable	Type	*apriori* expectation with respect to Chronic poverty	*apriori* expectation with respect to Exiting poverty (Transient)	*apriori* expectation with respect to Movimg into Poverty (Transient)
VEP	Continuous	+(Gaiha *et al*., 2007)	-(Gaiha *et al*., 2007)	+ (Gaiha *et al*., 2007)
Sex	Dummy	± (Muyanga *et al.*, 2007)	±(Herrera, 1999; Lawson, 2004)	± (Lawson, 2004)
Age	Continuous	+(Haddad and Ahmed, 2003; Awel, 2007).	+(Gaiha *et al*., 2007; Haddad and Ahmed, 2003)	±(Awel, 2007; Gaiha *et al.,* 2007)
Age squared	Continuous	**-**(Gaiha *et al*., 2007)	**-**(Gaiha *et al*., 2007)	-(Gaiha *et al*., 2007)
Household size	Continuous	+(Bhatta and Sharma, 2006; Swanepoel, 2005)	**-**(Bhatta and Sharma, 2006; Imai *et al.*, 2009)	+(Bhatta and Sharma, 2006; Haddad and Ahmed, 2003)
Dependency.burden	Continuous	+(Bhatta and Sharma, 2006; Muyanga *et al.*, 2007)	± (Gaiha *et al*., 2007, Bigsten *et al.*, 2003)	+(Swanepoel, 2005; Muyanaga *et al.,* 2007)
Household type	Dummy	+(Omonona, 2001)	-(Omonona, 2001)	+(Omonona, 2001)
Primary Education	Dummy	-(Gaiha *et al*., 2007; Muyanga *et al.*, 2007)	±(Lawson *et al.,* 2005; Haddad and Ahmed, 2003)	-(Gaiha *et al.,* 2007; Muyanga *et al.*, 2007)
Secondary Education	Dummy	- (Lawson *et al.,* 2005 and Muyanga *et al.,* 2007	+(Bigsten *et al.*, 2003; Haddad and Ahmed, 2003)	-(Lawson, 2004; Muyanga *et al.,* 2007
Tertiary Education	Dummy	-(Gaiha *et al*., 2007; Muyanga *et al.*, 2007)	±(Gaiha *et al*., 2007; Contreras *et al.,* 2004)	-(Lawson *et al.,* 2005; Muyanga *et al*., 2007
Primary Occupation	Dummy	± (Muyanga *et al.,* 2007; Haddad and Ahmed, 2003)	-(Lawson *et al.,* 2005)	+(Lawson *et al*., 2005)
Years of experience in pry occup.	Continuous	+(Omonona, 2001)	± (Omonona, 2001)	± (Omonona, 2001)
Land size	Continuous	- (Gaiha *et al*., 2007; Haddad and Ahmed, 2003)	±(Gaihia *et al*., 2007; Woolard and Klasen, 2005)	-(Lawson *et al.,* 2005; Muyanga *et al.,* 2007; Swanepoel, 2005)

Table 6 contd.

Membership of association	Dummy	-(Omonona, 2001)	+(Omonona, 2001)	-(Omonona, 2001)
Access to credit	Dummy	-(Muyanga *et al.,* 2007)	+(Muyanga *et al.,* 2007)	-(Muyanga *et al.,* 2007; Bhatta and Sharma, 2006)
Access to remittances	Dummy	**-**(Bhatta and Sharma, 2006)	+(Bhatta and Sharma, 2006)	-(Bhatta and Sharma, 2006)
Distance to public health facility	Continuous	+(Omonona, 2001)	-(Omonona, 2001)	+(Omonona, 2001)
Material of wall is Mud	Dummy	+ (Oni and Yusuf, 2008)	-(Oni and Yusuf, 2008)	+ (Oni and Yusuf, 2008)
Room ratio	Continuous	-(Lawson *et al.,* 2007)	+(Lawson *et al.,* 2007)	-(Lawson *et al.,* 2007)
Access to sanitary excreta disposal	Dummy	-(Oni and Yusuf, 2008)	+(Oni and Yusuf, 2008)	-(Oni and Yusuf, 2008)
Access to Potable Water	Dummy	-(Alayande and Alayande, 2004)	+(Alayande and Alayande, 2004)	-(Alayande and Alayande,2004)
Access to electricity	Dummy	-(Gaiha *et al.,* 2007)	+(Gaiha *et al.,*2007)	-(Gaiha *et al.,*2007)

Source: Author's Compilation, 2009

3.5 Definition of the Variables used in the Study

The variables used in the study are classified and defined explicitly as follows:

A. Demographic Characteristics

Sex of the household head: This is the gender of the household head. It is represented by a dummy variable indicating whether or not the head of the household is male (1) or female (0).

Age of the household head: This is a continuous variable measured in completed years that is, age at last birthday.

Age squared: This is the square of age of the household heads to capture any life cycle effects or non linear effects.

Household size: This is a continuous variable measured as the number of people living together, answerable to the same head and who share a common source of food and/or income.

Share of female members: This variable is measured as the share of number of female members in total number of household members.

Dependency Burden: This is the share of nonworking household members in total working household members.

Marital Status of Household head: It is a dummy variable indicating whether household is married (1) or not (0).

B. Human capital

Educational Status: This measures the educational attainment of household head. The dummy variables representing educational attainment of household head are grouped into three.

Primary Education: That is whether the highest level of education of household head is primary school (1) or not (=0).

Secondary Education: Whether the highest level of education of household head is secondary (1) or not (0).

Tertiary Education: Whether the highest level of education of the household head is tertiary (1) or not (0).

C. Occupational variables

Primary Occupation: This is a dummy variable which indicates whether the occupation of the primary income earner in the household is farming (1) or not (0).

Years of Experience in Primary Occupation: This variable is continuous, representing years of experience in primary occupation.

D.   Physical capital

Land size: This variable is measured as the total land area owned by household members (in hectares) whether farmland, pasture, fallow or other land.

House ownership: This is a dummy variable which indicates whether a household owns house (1) or not (0).

E.   Social Capital

Membership of local group/association: This is a dummy variable indicating whether the household belongs to a local group/association (1) or not (0).

F.   Financial Capital.

Household access to credit facilities: This is a dummy variable, which measures whether a household has access to credit facilities (1) or not (0). The credit could either have been taken in the form of cash or of in-kind goods, such as agricultural inputs and it could have been obtained from either a formal source or an informal source such as a relative or local money lender.

Household access to remittances: This is a dummy variable indicating whether household receives money from relatives or friends not resident in the community (1) or not (0).

G.   Living Condition Characteristics

Construction material of outside wall: This is a dummy variable which indicates whether the construction material of outside wall is mud (1) or not (0). Mud includes all building technique that relies on earth or mud put over a frame or mixed with other materials for strength.

Room ratio: This is a continuous variable measured as the total number of habitable rooms (excluding toilets, bathrooms, storerooms and garage) divided by the household size. That is the number of rooms per person in the household.

Access to Sanitary Means of Excreta Disposal: The type of toilet facility used is an important indicator of the household's hygienic conditions. Sanitary means of excreta

disposal according to NBS are flush toilets, covered latrine and VIP latrine while unsanitary means include bucket, bush and uncovered latrine among others.

H.   Community Characteristics

Access to potable water: Safe water sources include piped, protected well, borehole and other protected sources while unsafe include open or unprotected sources like ponds, rivers and lakes which can potentially pose a health hazard. This variable is a dummy variable which indicates whether the household has access to potable water (1) or not (0).

Access to Electricity: This refers to whether the household has access to electricity either for cooking or lighting in the community (1) or not (0).

Distance to health facility: This variable is continuous and is used as a proxy for access to health care centres. The distance is recorded even if no one in the household uses it.

CHAPTER FOUR

SOCIO-ECONOMIC CHARACTERISTICS AND VULNERABILITY PROFILE OF RURAL HOUSEHOLDS IN SOUTH WEST NIGERIA

This chapter presents the results of the socio-economic and demographic characteristics with a view to providing the main characteristics of the respondents which are expected to eventually affect the welfare or standard of living of the households and their vulnerability to poverty. The chapter also presents the results of the determinants of expected consumption and vulnerability profile of rural households in South-West Nigeria.

4.1 Socio-economic Characteristics of Households

4.1.1 Sex, Age and Household Size of Respondents

The distribution of respondents by sex revealed that majority of the households in the study area are headed by males (79.6 percent) while female heads constitute only 20.4 percent. This reflects the importance attached to a male being the head of the family in Nigeria. The age distribution shows that while 45.5 percent of the household heads are between 40 and 59 years, a relatively large number of the respondents (32.3 percent) are also above 60 years. This implies that respondents in the study area are likely to be less productive because of their inability to go about their daily activities more actively in order to earn income to cater for their household needs. The average age of the rural household heads stood at 50.8±15.26 years while the household size of the respondents ranged from 1 to 25 persons. However, the average household size of the respondents stood at 5±3.29 with a larger proportion of the households falling between household sizes of 1-5 members. Only about 1 percent of the respondents had household size of more than 15 members. Table 7 aptly presents the distribution of households by sex, age and household size.

Table 7: Distribution of Respondents by Sex, Age and Household size

Variables	Frequency	Percent
Gender		
Male	463	79.6
Female	119	20.4
Total	582	100
Age		
<20	4	0.7
20-39	125	13.5
40-59	265	45.5
>60	128	32.3
Total	582	100
Household size		
1 to 5	359	61.7
6 to 10	194	33.3
11 to 15	22	3.8
>15	7	1.2
Total	582	100

Source: Field Survey, 2009

4.1.2   Educational, Marital and Occupational Status of Respondents

The educational status of respondents revealed that about 43 percent of the households have heads with no formal education. This is expected as being educated is not a requirement for fitting into the rural system/way of life. The percentage of respondents declined as the level of education increased with only 6.5 percent having tertiary education as shown in table 8. The respondents' marital status showed that about 73.0 percent of the respondents were married, 16.0 percent widowed and the remaining 11 percent either single, separated or divorced. This implies that married household heads are the majority in the sampled population. Highlights of the occupational status of respondents as expected showed that more than half of them were engaged in farming as their primary occupation. This can be attributed to the fact that for many households in Nigeria, especially in the rural areas, agriculture is the primary source of livelihood. The distribution of years of experience in primary occupation indicated that 58.4 percent of the households had heads with 0-10 years of experience in their primary occupation while 38.5 percent of these households were headed by persons with 11-30 years of experience in their primary occupation. Household heads with above 30 years of experience constituted only about 3 percent. The average number of years of experience in primary occupation in the study area stood at 10.2±8.22 years.

Table 8: Distribution of Respondents by Educational, Marital and Occupational Status

Variables	Frequency	Percent
Educational Status		
No formal education	250	43.0
Primary	172	29.5
Secondary	122	21.0
Tertiary	38	6.5
Total	582	100
Marital status		
Single	39	6.7
Married	426	73.0
Widowed	92	16.0
Separated/Divorced	25	4.3
Total	582	100
Occupational Status		
Farming	322	55.3
Trading	127	21.8
Salaried job	76	13.1
Artisan	57	9.8
Years of Exp. Pry. Occup.		
≤ 10	340	58.4
11 to 20	135	23.2
21-30	89	15.3
31 and above	18	3.1
Total	582	100

Source: Field Survey, 2009

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4.1.3 Farm size and Distance of Farm to Market

Table 9 revealed that households in the study area with farm size of less than 1 hectare constituted about 59.8 percent while about 28.5 percent cultivated between 1 and 2 hectares. Those with more than 2 hectares constituted the minority. The low hectarage can be attributed to the fragmentation of landholdings (mostly due to inheritance) as well as lack of access to modern farming inputs to cultivate large expanses of land. The average farm size in the study area stood at 1.04 ± 0.84 hectares.

Household distribution with respect to the distance of the farm to the market showed that about 49.3 percent are located less than 2 km away from the market while about 24.2 percent are located 5km and above from the market. The average distance of farm to market is 3 ± 1.7km.

4.1.4   Land Ownership, Land Size and Method of Land Acquisition

The distribution of households according to ownership of land, land size and method of land acquisition presented in table 10 revealed that 63.2 percent of the households own land mostly of less than 1 hectare in size (57.9 percent) acquired mainly through inheritance (49.7 percent). However, ownership through gift and leasehold accounted for the smallest proportions of land holdings. The average land size in the study area stood at 1.64 ± 0.82 hectares.

Table 9: Distribution of Respondents by Farm size and Distance of Farm to Market

Variables	Frequency	Percent
Farm Size		
<1ha	348	59.8
1-2ha	166	28.5
>2 ha	68	11.7
Total	582	100
Farm Dist. to Market		
< 2 km	287	49.3
2-5km	154	26.5
> 5km	141	24.2
Total	582	100

Source: Field Survey, 2009

Table 10: **Distribution of Respondents by Land Ownership, Size and Method of Land Acquisition**

Variables	Frequency	Percent
Own Land		
Yes	368	63.2
No	214	36.8
Total	582	100
Household Land Size		
< 1ha	337	57.9
1 to 2 ha	114	19.6
> 2 ha	131	22.5
Total	582	100
Land Acquisition Method		
No land	214	36.9
Inheritance	290	49.7
Tenancy	47	8.1
Lease hold	7	1.2
Gift	3	0.5
Purchase	21	3.6
Total	582	100

Source: Field Survey, 2009

4.1.5   Malaria Incidence, Health Care Consultation and Distance to Health Facility

Health is a key determinant of household welfare. The results of health status of respondents showed that most of the respondents had suffered from various illnesses at one time or the other in the past one year and of those that suffered illnesses in the last year, malaria was by far the most common disease reported by them. Close to four-fifth of the respondents reported that they had suffered from malaria with each household having at least 1 to 2 household members who have suffered from the illness in the last one year. On the average 2 ± 1.6 persons in a household at the least suffer from the disease per annum. Other cases of illnesses reported in the study area ranged from typhoid to other ailments like common cold, catarrh and headache. In line with intuitive suggestions, sickness can limit welfare enhancing opportunities and can have other implications such as damaging traditional social support networks and increasing heath care costs, all of which make breaking out of the cycle of poverty even more difficult (Christiansen and Subbarao 2004; Lawson 2004).

Health care consultation distribution showed that more than two-thirds of the respondents (69.3 percent) consulted hospital/pharmacy/drug store. Although not as prevalent as hospital consultation, self medication accounted for 21.1 percent. Distribution by distance to health facility showed that 42.4 percent of the households live between 2 and 4km away from the health clinic. While 18 percent live less than 1km away from the hospital, 27.9 percent live beyond 4km away from the health clinic. This could be one of the causes of self medication and it could also be an indication of the absence of primary health care facilities especially in the remote rural areas. The average distance to the health clinic is 3 ± 2.67 km with a modal distance of 2km. Table 11 presents the distribution of respondents by health parameters.

Table 11: Distribution of Respondents by Incidence of Malaria, Health Care Consultation and Distance to Health Facility

Variables	Frequency	Percent
HH Member Suffered from Malaria in the last 12 months		
Yes	459	78.9
No	123	21.1
Total	582	100
Malaria Incidence		
0	123	21.1
1 to 2	282	48.8
3 to 4	131	22.5
5 members & above	44	7.6
Total	582	100
Main source of Healthcare		
Self treatment	123	21.1
Pharmacy /Drug Store	110	19.0
Hospital	293	50.3
Herbal/Traditional home/spiritualist	56	9.6
Total	582	100
Distance to Nearest Health facility		
< 1km	105	18.0
1 -2km	68	11.7
2-4km	247	42.4
4km and above	162	27.9
Total	582	100

Source: Field Survey, 2009

4.1.6   House Ownership, House Type and Room Ratio

House ownership and housing conditions of a household provide good indicators of welfare measurement. As can be seen in table 12, more than two-fifth of the respondents owned their accommodation with more than four-fifth of the households living in single room dwellings. Almost 14 percent of all the households occupied whole buildings. Also, the distribution of the households according to rooms available per member of households revealed that more than half of the households have less than half a room per individual while only 22.5 percent have 1 or more rooms per person. This is a reflection of the type of household dwelling as well as an indication of a low level of welfare that obtains in the rural areas. The average number of rooms per person is 0.58±0.49 in the study area.

Table 12: Distribution of Respondents by House Ownership, Type and Room Ratio

Variables	Frequency	Percent
Own House		
Yes	264	45.4
No	318	54.6
Total	582	100
Housing Type		
Single room	476	81.8
Apartment/Flat	26	4.5
Whole building	80	13.7
Total	582	100
Room Ratio		
Less than 0.5	299	51.4
0.5 – 0.9	152	26.1
>0.9	131	22.5
Total	582	100

Source: Field Survey, 2009

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4.1.7 Living Condition Characteristics

Excreta disposal, like the disposal of refuse, is a big problem that needs urgent attention as a result of its health implication. In the study area, more than three-quarter of the households did not have access to sanitary means of excreta disposal which include flush toilets connected to septic tanks, improved pit latrine and traditional pit latrines with cover. The implication of this practice is that households in these areas may be more vulnerable to attendant health risks. The most frequently used means of excreta disposal in the study area is bush.

The main materials used for wall construction in the study area as shown in the table are mud and cement/concrete, although the use of mud (54.3 percent) is greater than that of cement (37.3 percent). Households living in houses with wall construction made with iron sheets and burnt bricks constituted only about 1 percent. The primary source of lighting for households in the study area is kerosene used by more than half of the respondents. The proportion of households with access to electricity also accounted for 41.2 percent. This could be due to the high electricity coverage of most of the rural areas in Osun state as a result of their proximity to a major power station in Osogbo. The main source of fuel used for cooking in the study area is firewood which is used by four out of every five households. The rest either used kerosene or gas for cooking. The living condition characteristics are as shown in table 13.

Table 13: Distribution of Respondents by Living Condition Characteristics

Variables	Frequency	Percent
Toilet type		
Flush to septic tank	43	7.4
Pail/bucket	4	0.7
Covered pit latrine	92	15.8
Uncovered pit latrine	83	14.3
Bush	360	61.8
Total	582	100
Material of outside wall		
Mud	316	54.3
Burnt bricks	3	0.5
Cement/concrete	217	37.3
Wood/bamboo	44	7.5
Iron sheets	2	0.4
Total	582	100
Source of Light		
Kerosene	312	53.6
Gas	1	0.2
Main Electricity	240	41.2
Electricity from generator	14	2.4
Fire wood	1	0.2
Battery	14	2.4
Total	582	100
Main fuel cooking		
Firewood	465	79.9
Charcoal	35	6.0
Kerosene/oil	77	13.3
Gas	1	0.2
Electricity	2	0.3
Crop residues/Saw dust	2	0.3
Total	582	100

Source: Field Survey, 2009

4.1.8 Access to Community Infrastructure

Table 14 shows the access of households to community infrastructure in the study area. Access to improved water sources refers to water quality and proximity of water source (Akinyosoye, 2004). Water source and distance to water source in the study area showed that the major source of water is the well supplying water to two out of every three household. On the other hand, safe drinking water is classified as pipe water (treated or untreated) borehole and protected well. Going by this definition, not up to half of the respondents had access to safe water. As expected, the distance to source of drinking water for about 55 percent of the respondents was between zero to less than 1km while those with distance above 2km constituted about 27 percent. This is a reflection of their major source of drinking water which is well water. The average distance to source of drinking water in the study area was 1.29±0.93.

Distribution of households by type of waste disposal system indicated that about seven out of ten of the households disposed of their refuse in the bush. Only about 2.5 percent or two out of hundred disposed their waste in authorized dumping site. This has environmental and health implications as sickness spells have been found to be associated with being exposed to bad sanitary conditions. The distribution of distance to public waste dumping site however, showed that most of the households have to travel 1km and above to dispose their wastes. This could explain the reason for the unsanitary means of waste disposal such as within the compound and other unauthorized places. On the average, households will have to travel 2.69 ± 1.3km to the public waste dumping sites.

Table 14: Distribution of Respondents by Access to Infrastructure

Variables	Frequency	Percent
Source of Water		
Pipe borne treated	65	11.1
Pipe born untreated	7	1.2
Borehole/hand pump	45	7.7
Protected well	136	23.4
Unprotected well/rain water	251	43.2
River, Lake or pond	78	13.4
Total	582	100
Distance to Water Source		
0	133	22.9
< 1km	185	31.8
1-2km	107	18.3
2-4km	157	27.0
Total	582	100
Waste Disposal		
Unauthorized heap	136	24.0
Authorized Dumping site	14	2.5
Bush	413	70.1
Burn within compound	19	3.4
Total	582	100
Distance to Public Waste Dumping Site		
0	35	6.0
0.01-0.49	212	36.4
0.5-0.99	87	15.0
1km and above	248	42.6
Total	582	100

Source: Field Survey, 2009

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4.1.9   Membership of Association, Credit Source and Access, Remittances and Extension services

Table 15 revealed that a large proportion (seven out of ten) of the household heads are members of a local group or association while three out of ten were headed by persons that do not belong to any local group or association. Most of the respondents belong to these local groups or association as a form of social capital which gives them access to other institutions of the society upon which they can draw in pursuit of their livelihoods, thereby reducing their vulnerability when faced with shocks.

The distribution of household heads based on access to credit facilities showed that majority of the respondents (73.2 percent) had no access to credit. This implies that they may not be able to obtain necessary inputs for the expansion of their income generating activities and are likely to be vulnerable. On the other hand, 26.8 percent had access to credit. However, of those that had access to credit, 24 percent obtained it from informal sources. This may be due to timely access to informal credit compared with the lengthy appraisal of applications for formal credit and prohibitive requests for collateral made by financial institutions.

Distribution by access to remittances indicated that only three out of every ten households have access to remittances from relatives and members of household not resident with them. Similarly, access to extension services revealed that 10.5 percent of the households' heads had access to extension services while 89.5 percent had no access to extension agents. This implies that households in the study area (who are engaged in farming) may not likely access let alone adopt new and improved technologies and practices in agricultural production which could translate to increased yield and farming income. Consequently, these households are likely to be more vulnerable.

Table 15: Distribution of Respondents by Membership of Association, Credit Source and Access to Remittances and Extension services

Variables	Frequency	Percent
Membership of Association		
Yes	404	69.4
No	178	30.6
Total	582	100
Access to Credit		
Yes	156	26.8
No	426	73.2
Total	582	100
Credit Source		
None	426	73.2
Friends/Relatives	38	6.5
Cooperative	102	17.5
Commercial/Community Banks	16	2.8
Total	582	100
Access to Remittances		
Yes	175	30.1
No	407	69.9
Total	582	100
Access to Extension Agent		
Yes	61	10.5
No	521	89.5
Total	582	100

Source: Field Survey, 2009

4.1.10 Income and Expenditure Pattern of Households

The distribution of total monthly income of households in table 16 showed that majority (64.6 and 53.6 percent) of the households in the study area earned total monthly income of between ₦10,001 and ₦20,001 while 4.1 and less than 1 percent had total monthly income above ₦30,000 in the harvesting and lean periods respectively. The average total monthly income in the study area stood at ₦18,646.94 ± ₦12,481.03 in the harvesting period and ₦13, 243.44 ± ₦6212.21 in the lean period.

With respect to household expenditure, the main household expenditures are on food, health, transportation, accommodation and education. The food items vary from eggs, beans, meat, fish, rice, groundnut oil, palm oil to fruits and vegetables. The distribution of expenditure of respondents in table 17 clearly shows that about half of the respondents expended between ₦10, 001 and ₦20, 000 on food monthly for the harvesting and lean periods respectively. While approximately three out of every four households spent ₦10,000 or less on non food items for the two periods. On the average, the monthly expenditure on food and non food items was ₦11,788.08 and ₦6928.42 for the harvesting period and N13,730 and ₦7987.87 for the lean period respectively. This is in consonance with findings from other studies that households (especially poor households) spend most of their income on food (Omonona, 2001). The descriptive statistics of all the variables used in the study is presented in Table 18.

Table 16:   Distribution of Monthly Income of Respondents

Monthly Income ₦	Frequency	Percent
Harvesting Period		
0-10,000	106	18.2
10,001-20,000	376	64.6
20,001-30,000	76	13.1
> 30,000	24	4.1
Total	582	100
Lean Period		
0-10,000	198	34.0
10,001-20,000	312	53.6
20,001-30,000	69	11.9
> 30,000	3	0.5
Total	582	100

Source: Field Survey, 2009

Table 17: Distribution of Monthly Expenditure of Respondents on Food and Non-food

Variable	Food			Non-food		Total	
Harvesting Period							
Monthly expenditure ₦	Frequency	Percent		Frequency	Percent	Frequency	Percent
0-10,000	245	42.1		456	78.4	75	12.9
10,001-20,000	297	51.0		121	20.8	220	37.8
20,001-30,000	32	5.5		5	0.8	193	33.2
> 30,000	8	1.4		-	-	94	16.1
Total	582	100		582	100	582	100
Lean Period							
0-10,000	199	34.2		441	75.8	97	16.7
10,001-20,000	291	50.0		118	20.3	236	40.6
20,001-30,000	73	12.5		14	2.4	200	34.3
> 30,000	19	3.3		9	1.5	49	8.4
Total	582	100		582	100	582	100

Source: Field Survey, 2009

Table 18: Descriptive Statistics of all the Variables used in the Study

Variable	Mean	Std. Deviation
Sex	0.79	0.40
Age	50.8	15.26
Marital status (married)	0.73	0.44
Household Size	5.00	3.29
Dependency Burden	0.45	0.31
Share female members	0.51	0.21
Primary Education	0.29	0.45
Secondary Education	0.20	0.40
Tertiary Education	0.06	0.24
Primary Occup.(farming)	0.55	0.49
Years of Experience in Pry Occup.	10.2	8.22
No. suffered malaria in Household	1.98	1.63
Own House	0.45	0.49
Room Ratio	0.58	0.49
Farm size	1.04	0.84
Farm Distance to Mkt.	3.09	1.70
Land Size	1.64	0.82
Distance to Health Facility	3.00	2.67
Distance to Water Source.	1.74	0.82
Distance to Waste Disposal Site	2.69	1.30
Membership of Association	0.69	0.46
Access to Credit	0.26	0.44
Access to Remittances	0.30	0.45
Access to Extension Services	0.10	0.30
Access to Sanitary Waste Disposal	0.02	0.15
Access to Sanitary Excreta Disposal	0.23	0.42
Access to Potable Water	0.43	0.49
Access to Electricity	0.41	0.49
Wall Construction Material (Mud)	0.54	0.49
Income (1st Period)	18,646.94	12,481.03
Income (2nd Period)	13,243.44	6,212.21
Total Expenditure (1st period)	21,717.98	12,141.93
Total Expenditure (2nd period)	18,716.50	8,981.59

Source: Field Survey, 2009

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4.1.11 Poverty Lines for the Two Periods

Poverty lines were constructed for the two periods (harvesting versus lean periods). The mean per capita household expenditure (MPCHHE) for the respondents stood at ₦4970.36 ± ₦3274.25 while the two-thirds MPCHEE amounted to ₦3313.57 for the harvesting period. Likewise, for the lean period, the MPCHHE stood at ₦6140.43± ₦5113.94 while the two-thirds MPCHHE amounted to ₦4093.21 (Table 19). This means that any household that had mean per capita expenditure below ₦4093.21 or ₦3313.57 was considered to be poor for the first and second survey rounds respectively, while households with per capita expenditure equal to or above the amounts were considered to be non-poor.

Table 19: Derivation of Poverty Lines for the Two Periods

Item	Average Monthly Expenditure N(1st round)	Share in total expenditure	Average Monthly Expenditure N(2nd)round	Share in total expenditure
Food	11788.08	62.98	13730.10	63.21
Clothing and footwear	884.88	4.72	855.85	3.94
Rent	495.64	2.64	532.35	2.45
Health care	472.03	2.52	552.29	2.54
Education	1366.49	7.30	1635.21	7.52
Transportation	1218.40	6.50	1105.37	5.08
Communication	540.00	2.88	613.68	2.82
Fuel and Power	540.77	2.88	766.88	3.53
Others	1410.19	7.53	1926.25	8.86
Total(Non-food)	6928.42	37.02	7987.87	36.78
Total Expenditure (food+non-food)	18716.50	100.00	21717.98	100.00
Mean per Capita household Expenditure(MPCHHE)	4970.36		6140.43	
2/3 MPCHHE(Poverty line)	3313.57		4093.21	

Field Survey, 2009

Table 20 shows the extent of poverty of rural households in South West Nigeria for the 2 survey periods in 2009 using FGT indices of head count, poverty gap and poverty gap squared based on the moderate poverty line. All the indices showed that households were poorer in the lean period, in which about 44 percent of the respondents were below the poverty line compared with the harvesting period in which about 35 percent of them were below the poverty line. The poverty gap index which indicates the average gap or distance between expenditure of the average poor and poverty line and the severity of poverty index are also shown in the table. The poverty depth for moderately poor household stood at 0.27 and 0.39 in the first and second survey rounds respectively, thus implying the extent to which expenditure of the average poor lies below the poverty line in the two periods. Hence, the amount of expenditure required on the average by the moderately poor to cross the poverty cut-off point stood at ₦894.66 for the harvesting period and ₦1596.35 for the lean period. The poverty severity indices of 0.09 and 0.18 for the first and second periods respectively, imply a higher deviation of the expenditure of the poor households from the poverty threshold in the second period. This indicates a higher level of inequality among poor households in the lean period. In other words, the depth of poverty and inequality among the poor was higher in the lean period.

Table 20: Poverty Status of Households Based on Moderate Poverty Line

Poverty Measure	First period	Second period
Poverty Incidence (Po)	0.35	0.44
Poverty depth (P_1)	0.27	0.39
Poverty severity (P_2)	0.09	0.18

Source: Field Survey, 2009

4.2 Determinants of Rural Household Consumption in South West Nigeria

First, to correct for multicollinearity, a pairwise correlation analysis was carried out to remove explanatory variables that were collinear and to select those that were highly correlated with the dependent variable. Secondly, to correct for heteroscedasticity as indicated in the analytical framework, a three-stage Feasible Generalized Least Squares (FGLS) was used to estimate the variance and mean of the consumption function. The result of the third stage of the FGLS is presented in table 21.

Controlling for all other characteristics, male headed households were found to be associated with significantly higher means of future consumption. The coefficient of age of the household head was positive and that of its square negative and significant, indicating the non linearity relationship with the log consumption per capita. Hence households with older heads fare better, that is have higher expectation of future consumption. There was a negative relationship between household size and per capita consumption. This suggests that large household size tends to decrease expectation of consumption, thereby increasing household vulnerability. However, this negative effect weakens with the household size because the coefficient of household size squared was positive and significant confirming the non-linearity of relationship with log of consumption per capita. In general, analysis showed that the higher the dependency burden, the lower the expectation of future consumption. In this context, a household with more non-working members to working members tends to have lower log consumption per capita. A dummy variable on whether the household head is married was negative and not significant implying that the marital status of the head is not much related to per capita household consumption.

Education can affect people's standard of living through a number of channels: it helps skill formation resulting in higher marginal productivity of labour that eventually enables people to engage in more remunerative jobs. Hence it is expected that education is positively correlated with consumption levels of households, that is, the higher the level of education, the higher the households tend to consume and the lower the level of poverty. With illiterate household as the base case, the dummy variables on secondary education and tertiary education of the household head had positive and statistically significant coefficients while that of primary education was not significant.

Table 21: Generalized Least Squares Regression Results (stage 3)

Variable	Coefficient	t-value
Sex	0.296	4.10***
Age	0.017	4.49***
Age squared	-0.000	-4.70***
Household size	-0.211	- 14.05***
Household size squared	0.006	8.28***
Share female member	-1.431	-4.86***
Dependency burden	-0.220	-4.25***
Marital Status (dummy)	-0.112	-1.63
Primary Education Dummy	-0.023	-0.79
Secondary Education Dummy	0.183	4.87***
Tertiary Education Dummy	0.336	4.73***
Primary Occupation Dummy	0.059	1.60
Land size	-0.000	-0.10
Membership of Local group	0.088	2.75***
House ownership	0.096	3.41***
Access to credit	-0.031	-1.08
Access to remittances	-0.057	-1.51
Access to extension	0.021	0.36
Access to electricity	0.115	3.60***
Constant	8.831	72.10***

Source: Computer Print Out of FGLS Regression   *** Significant at 1%, ** Significant at 5%, * Significant at 10%

Observations   -   582
R. Squared   -   0.49
Joint significance $F(19, 563) = 154.14$
$Prob > F = 0.0000$

The coefficient of the variables also got larger for higher levels of education, which implies that consumption tends to increase as the household head's educational attainment rises. The result suggests that education is generally an important determinant of log consumption. However, a higher level of education is more important as a determinant of log per capita consumption. This basically conforms to other studies concluding that literacy and education attainment decrease poverty (e.g. World Bank, 2002). The coefficient of share of female members was negative and significant implying that larger share of female members tends to decrease household consumption. A dummy variable to capture infrastructure, that is, whether the household has access to power supply, was positive and significant indicating that easier access to power supply is an important determinant of household consumption. Not surprisingly, the variables on ownership of house and membership of association both had positive effects on per capita consumption.

4.3   Vulnerability/ Poverty Profile of Rural Households in South Western Nigeria.

The estimates obtained from the third stage of the generalized least square regressions in table 21 were used to generate indices of the probability that a household conditioned on certain observable characteristics will or will not be vulnerable to poverty. Adopting the standard vulnerability threshold of 0.5 (following Gaiha *et al.*, 2007; Imai *et al.*, 2009; Oni and Yusuf, 2008 among others), households were classified into their vulnerability status. However as stated earlier, the methodology of vulnerability as expected poverty is sensitive to the choice of poverty line. Accordingly, households were classified into their vulnerability status based on the relative poverty line, 80 percent of the relative poverty line, international poverty line of 1.25 dollars per day and the NBS (National Bureau of Statistics) national poverty line adjusted for 2009 prices. Table 22 presents the result of the sensitivity analysis of classification of households into their vulnerability status based on the 4 poverty lines.

The National Bureau of Statistic (NBS 2005), using her 2004 Nigerian Living Standard Survey (NLSS) data, obtained a relative poverty line (2/3 mean per capita household expenditure) of ₦23,733 per annum for Nigeria. The monthly poverty threshold of ₦1997.75 in 2004 prices when converted to 2009 current price using the composite consumer price index's raising factor of 1.7686, obtained by the ratio of 2009 consumer price index (CPI) to 2004 CPI gave a poverty line of ₦3497.97 in 2009 prices. This line is quite comparable to the poverty line of ₦3313.57 obtained for the harvesting period and ₦4093.21 obtained for the lean period in this study respectively. The difference of ₦184.40 and ₦595.24 represents a 5.57 percent decrease and 17.9 percent increase on the relative poverty line constructed for the study. The international poverty line of 1.25 dollars per day using the current dollar rate of ₦152 (as at the time of this analysis in May, 2010) stood at ₦5700 representing about 72 percent increase on the relative poverty line obtained in the study. This is expected based on the fact that the relative poverty line constructed for the study was entirely for rural communities of a region while the international poverty line was based on both urban and rural areas of developed and developing countries. Results of the analysis showed that about 324 (55.7%) households were vulnerable using the relative poverty line of ₦3313.57 estimated for the study.

Table 22: Vulnerability Distribution of Households based on Different Poverty Lines

Vulnerability status of the household	Relative Poverty line		80% of Relative Poverty line		International Poverty line (PPP $1.25 per day)		NBS Poverty line adjusted for 2009 prices	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Not Vulnerable	258	44.3	344	59.1	215	36.9	257	44.2
Vulnerable	324	55.7	238	40.9	367	63.1	325	55.8
Total	582	100	582	100	582	100	582	100

Source: Field Survey, 2009

This implies that a large proportion of rural households in South Western Nigeria are vulnerable to poverty. The NBS poverty line showed a similar trend (55.8%) with the estimated poverty line for the study area. With eighty percent of the relative poverty line, the number of vulnerable households decreased to 238 (about 41 percent) suggesting that government policies that would lead to a reduction in inflation will lead to a reduction in the number of vulnerable households. However, using the international poverty line, a greater proportion of the respondents (63.1%) were also found to be vulnerable to poverty. The result of this sensitivity analysis shows the extent of vulnerability in the region as a larger proportion of the households were found to be vulnerable to poverty irrespective of the poverty line used (except for when the poverty line was reduced). This suggests that poverty reduction efforts should include measures that will lower inflation and volatility of income.

In subsequent paragraphs, poverty and vulnerability in 2009 were decomposed by selected demographic, occupational and socio-economic characteristics to see how poverty and vulnerability differ among different groups or categories in rural households of South Western Nigeria. The resultant vulnerability/poverty profile for the region is presented in table 23. The discourse that follows is devoted to describing the findings.

A. Vulnerability/Poverty by Demographic Characteristics
Sex of Household Head

The distribution of household heads by sex in table 23 indicates that female-headed households are poorer but less vulnerable to poverty than their male counter parts, although both groups have high levels of predicted and observed poverty. The ratio of predicted poverty to the observed poverty level of 1.027 and 1.018 for male- and female-headed households respectively implies that for every hundred male-headed households that are poor now, 3 more are expected to be poor in the future while for female households, 2 more are expected to be poor. This is owing to the fact that female-headed households in the study area are mostly monogamous and made up of smaller household sizes. Specifically, most female headed households had household sizes made up of between 1 and 5 members and did not have household sizes made up of more than 10 members. Also, they had higher mean per capita expenditure compared with their male counterparts. This result, however, contradicts findings of Chaudhuri *et al*. (2002) and Oluwatayo (2007) in which female-

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headed households were found to be more vulnerable to poverty, but is consistent with findings of Oni andYusuf (2008) and Alayande and Alayande (2004).

Age of Household Head

Observed poverty incidence was found to be highest for households headed by persons less than 20 years of age and above 60 years of age and lowest for households headed by persons aged 20-39. The predicted poverty incidence showed a similar trend. The vulnerability to poverty ratio indicates that fewer numbers of households headed by persons between ages 20-39 are expected to be poor in the future compared with households in the other age groups. This can be attributed to the fact that persons within this age group are in their economic active age and are likely to be highly productive in their efforts to cater for their household needs. Interestingly, most of the household heads within this age group in the study area were not involved in farming as their primary source of livelihood and had the highest mean per capita expenditure compared to the other age groups. This pattern could also be attributed to the fact that the ability to undergo strenuous work associated with rural livelihood activities (mostly farming), decreases with increase in age as findings of this study revealed that majority of the household heads aged 40 and above (particularly those aged above 60) were engaged in farming as their primary source of income.

Marital Status of Household Head

The incidence of poverty by marital status indicates that widowed household heads have the highest level of both observed and predicted poverty while single household heads have the lowest level of both observed and predicted poverty. Specifically, for every hundred households headed by a widow/widower, seventeen more are expected to be poor in the future while two more are expected to be poor for households headed by a single individual. This is not unconnected with the fact that households headed by single persons usually have a smaller household size and hence a higher welfare status than those households headed by married individuals. The high level of vulnerability to poverty among widowed household heads on the other hand could be due to the death (shock) of the major income earner in the household which implies reduced household income, lower per capita

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expenditure and hence lower welfare status as the spouse is left to solely cater for household needs.

Household Size

The result of the decomposition based on household size shows that the incidence of poverty (both actual and predicted) increased with increase in household size. While households with more than 15 members had the highest poverty (actual and predicted) level, households with not more than five members had the least incidence of poverty. This confirms previous findings that there is an inverse relationship between per capita household welfare (per capita expenditure) and household size and is also consistent with evidence from earlier studies (Oni and Yusuf, 2008; Oluwatayo, 2007; Gaiha *et al.,* 2007). In other words, larger sized households are more vulnerable to poverty than smaller sized households. The impact of large family size is such that it reduces the per capita expenditure of the family thereby aggravating vulnerability to poverty in that household. For instance, findings of this study revealed that households with between 1 and 5 members have the highest per capita expenditure compared with other household size groups in the study area. Hence, for every 100 households with more than fifteen members that are poor now, 29 more are expected to be poor, whereas households with not more than 5 members are expected to move out of poverty in the future.

Dependency Burden

As shown in table 23, households with large number of non working members (dependants) to working members were found to be poorer and more vulnerable to poverty. The vulnerability to poverty ratio of 1.101 indicates that for every 100 households in which the dependency burden is greater than 5, 10 more people are expected to be poor in the future. This means that having a family which includes more non-income earning members, (indicating a higher dependency burden) increases poverty and the likelihood of being poor. This result corresponds to the findings of Chaudhuri *et al*. (2002) and Gaiha *et al*. (2007).

B.   **Vulnerability/Poverty by Human Capital Variables**

Educational Status of Household Head

Formal education is a form of human capital, the returns to which could reduce the incidence of poverty (observed and predicted). This is because formal education increases the opportunity of high returns to labour in the formal economic sector and has an indirect role of improving skill. Consequently, it can lead to increase in productivity, household income and welfare in the informal sector. Poverty (actual and predicted) decreased with increase in educational attainment. The relativity of predicted poverty to observed poverty level by educational status shows a similar trend. For example, the vulnerability to poverty ratio of 1.217 for household heads with no formal education implies that for every 100 households heads with no formal education that are poor now 21 more are expected to be poor in the future while households with heads that have tertiary education are expected to move out of poverty in the future (Chaudhuri, 2002; Oni and Yusuf, 2006; Gaiha *et al.,* 2007; Oluwatayo, 2007; Kasirye, 2007). An interesting finding in this analysis is the fact that households with heads that have primary education were also found to have a high level of observed and expected poverty. This suggests that higher education attainment has an increasingly large pay off. As suggested by Schultz's (1975) hypothesis, educated individuals are less vulnerable because they adapt increasingly to changing circumstances. That is, they have greater ex-post coping capacity even though education does not necessarily reduce their ex-ante exposure to risks.

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Table 23: Vulnerability /Observed Poverty Profile of Rural South West Nigeria

Variables	Vulnerability Index	Poverty Incidence	Predicted/Observed Poverty Ratio
Sex			
Male	0.667	0.649	1.027
Female	0.663	0.651	1.018
Age			
< 20	0.569	0.507	1.122
20 – 39	0.416	0.446	0.932
40 – 59	0.454	0.451	1.006
≥ 59	0.656	0.513	1.278
Marital Status			
Single	0.521	0.512	1.017
Married	0.613	0.546	1.122
Separated/Divorced	0.662	0.578	1.145
Widowed	0.721	0.615	1.172
Household size			
1 – 5	0.442	0.454	0.973
6 – 10	0.487	0.505	1.162
11 – 15	0.696	0.558	1.247
> 15	0.732	0.564	1.297
Educational Status			
No formal Education	0.722	0.593	1.217
Primary Education	0.718	0.599	1.198
Secondary Education	0.328	0.312	1.051
Tertiary Education	0.167	0.308	0.542
Primary Occupation			
Farming	0.691	0.635	1.088
Non Farming	0.525	0.598	0,877
Income Level			
< N10,000	0.782	0.637	1.227
10,001 – 20,000	0.719	0.616	1.167
20,001 – 30,000	0.558	0.512	1.089
>30,000	0.453	0.498	0.909
Land Size			
<1	0.714	0.679	1.051
1 – 2	0.572	0.567	1.008
>2	0.433	0.553	0.783

Room Ratio			
<0.5	0.615	0.558	1.102
0.5 – 0.9	0.563	0.534	1.054
>0.9	0.328	0.319	1.028
Distance Health Facility			
<1km	0.455	0.446	1.020
1 – 2km	0.564	0.526	1.072
2.1 – 4km	0.674	0.599	1.125
>4km	0.712	0.618	1.152
Membership of Association			
Yes	0.387	0.376	1.029
No	0.499	0.452	1.103
Access to Credit			
Yes	0.465	0.457	1.017
No	0.563	0.500	1.126
Access to Electricity			
Yes	0.389	0.372	1.045
No	0.595	0.536	1.110
Access to Remittances			
Yes	0.465	0.447	1.040
No	0.643	0.608	1.057
Dependency Burden			
0 – 2	0.526	0.509	1.033
3 – 5	0.563	0.534	1.054
> 5	0.674	0.612	1.101
Exp. In Pry.Occup.			
0 – 10	0.638	0.620	1.029
11 – 20	0.512	0.517	0.990
21 – 30	0.407	0.414	0.983
> 30	0.313	0.358	0.874
Sanitary Excreta Disposal			
Yes	0.452	0.468	0.965
No	0.548	0.514	1.066
Access to Potable water			
Yes	0.417	0.495	0.842
No	0.692	0.551	1.255

Source: Field Survey, 2009

C.   Vulnerability/Poverty by Occupational Characteristics

Primary Occupation of Household Head

The classification of households by their primary occupation indicated a higher level of poverty (actual and predicted) for households whose heads were primarily engaged in farming activities than those engaged in non-farming activities. This implies that farming households are poorer and more vulnerable to poverty than non farming households. It is also an indication that non-farming livelihood activities reduce poverty incidence in rural South Western Nigeria. This is expected as agriculture in the rural areas of Nigeria is largely characterized by low capital involvement, use of crude implements, poor infrastructural and storage facilities and human drudgery. This circumstance ultimately leads to lower average earnings.

Household Head Experience in Primary Occupation

The decomposition of poverty and vulnerability by years of experience in primary occupation of household head revealed that poverty and vulnerability rates decreased with increase in years of experience of the household head in primary occupation. This is logical as the household head is the major income earner and he is expected to have acquired relevant skills over the years to at least reduce the impact of a welfare reducing shock when it occurs. Hence, for every 100 households that are currently poor among households with not more than 10 years experience, 3 more are expected to be poor while household heads with more than 10 years of experience are likely to move out of poverty in the future.

D.   Vulnerability/Poverty by Physical Capital

Household Land Size

The categorization of vulnerability to poverty of households by land size revealed that households with less than 1 hectare of land were more vulnerable than those with more than 2 hectares of land. As shown in table 23, the vulnerability to poverty ratio of 1.051 for households with less than 1 hectare of land, indicates that for every 100 households that are poor now in this category, 5 more are expected to be poor in the future, while for those households with more than 2 hectares of land, 1 more is expected to be poor in the future. Generally, larger land is usually associated with more output and subsequently higher

income which increases the welfare of the household for households engaged in farming. Also, asset-rich household heads can sell their land to mitigate the impact of a shock when it occurs.

E.   Vulnerability/Poverty by Social Capital
Membership of Local Group or Association

As expected, the result of analysis on membership of association showed that both observed and predicted poverty (0.452 and 0.499) were higher among households whose heads were non-members of any local group or association than those who were members (0.376 and 0.387). The implication of this is that improved access to social capital is a viable poverty reduction strategy. This supports the findings of Chaudhuri *et al.* (2002) and Oluwatayo (2007).

F.   Vulnerability/Poverty by Financial Capital
Access to Credit

Credit is a measure of financial capital needed for acquisition of inputs to improve livelihood activities. Access to credit, therefore, translates to increased production level, increased income, improved household welfare and consequently, reduces poverty level. Also, availability of and accessibility to credit could help the poor to smooth consumption during periods of income shortfalls. The relativity of predicted poverty to the observed poverty level of 1.126 indicates that for every 100 poor household heads without access to credit, 12 more are expected to be poor in the future while for households with access to credit, 2 more are expected to be poor in the future. In other words, poverty incidence and the likelihood of being poor decreased with access to credit. Thus, a strong financial base for rural households might be a strong policy tool for poverty alleviation in Nigeria as it is expected to enhance the development of small and medium scale enterprises (SMES) in the rural areas, increase household income and consequently reduce poverty. This is consistent with findings of Oluwatayo (2007).

Access to Remittances

The distribution by access to remittance follows the same pattern as those of access to credit and electricity. That is, households who have no access to remittance are more vulnerable to poverty than households who have access. A likely reason is that remittance is additional income made available to households that have access to it. This brings about a reduction in poverty as consumption of commodities can be enhanced. Specifically, the vulnerability to poverty ratio of 1.040 for households with access to remittances implies that for every 100 households that have access to remittances and are currently poor, 4 more are expected to be poor while the ratio of 1.057 for households without access indicates that 6 more are expected to be poor in the future.

Household Income

From table 23, it is evident that observed and predicted poverty decreased with increase in income indicating that poverty and vulnerability to poverty decreased with increase in income. The vulnerability to poverty ratio of 1.227 for households earning less than ₦10,000 per month, 23 more are expected to be poor. On the other hand, households earning above N30,000 monthly are expected to exit poverty. This implies that respondents who earn more, have more to spend on basic needs, hence their likelihood of being poor is lower. This result confirms the findings of Oluwatayo (2007).

G. Vulnerability/Poverty by Living Condition Characteristics
Household Room Ratio

The profiling of poverty based on rooms available per person indicates that for every 100 currently poor households, 10, 5 and 1 more are expected to be poor in the future for households having less than 0.5, 0.5-0.9 and 1 room per person respectively. In other words, households with less room available per person are more vulnerable to poverty. In sum, the incidence and likelihood of poverty decreased as the number of rooms per person increased.

Means of Excreta Disposal

Excreta disposal, like the disposal of refuse, is a big problem that needs urgent attention because of its health implication. The distribution in table 23 shows that households without access to sanitary means of excreta disposal, which include flush toilets connected to septic tanks, improved pit latrines and traditional pit latrine with cover, are poorer and more vulnerable to poverty than households with access to sanitary facilities.

H.   Vulnerability/Poverty by Community Characteristics

Access to Electricity

Provision of infrastructure such as electricity is an important element of rural welfare as it has the potential of creating rural income generating capacities and gainful employment opportunities. The result on access to electricity presented in table 23 indicates that both observed and predicted poverty was higher among households without access to electricity than those with access to electricity. In other words, households without access to electricity are more vulnerable to poverty than households with access to electricity. This implies that provision of rural infrastructure is a viable tool for poverty reduction in South West Nigeria. This result also corresponds to the findings of Kasirye (2007) and Gaiha *et al.* (2007) in which households that reside in communities with electricity were found to be less poor and vulnerable than households that reside in communities without electricity.

Access to Potable Water

The analysis by access to potable water follows a similar pattern as that of excreta disposal. Hence, for every 100 poor households without access to potable water, a vulnerability to poverty ratio of 1.255 implies that 25 more are expected to be poor in the future while households with access to potable water are expected to move out of poverty in the future. This again points out the importance of provision of rural infrastructure as a viable tool for poverty reduction.

Distance to Health Facility

The ratios of vulnerability to poverty are 1.020, 1.072, 1.125 and 1.152 respectively for households located less than 1km, 1-2km, 2.1-4km and above 4km away from the health

clinic. This is an indication that the likelihood of being poor increased as the distance to the health clinic increased. This could be attributed to the fact that access to health care facilities reduces health care costs, thereby resulting in the use of limited household resources (which could otherwise have been diverted towards medical care) for more productive activities and consequently, increased welfare of the household. This fact is corroborated in this study as households located less than 1km and between 1-2km away from the health clinic have higher per capita expenditure compared with the households located farther away from the health clinic.

In summary, the vulnerability/observed poverty profile for Southwest region shows that poverty and vulnerability vary across groups. It can be noted generally, that a group with relatively high poverty rates tends to have high VEP while low poverty rates are associated with considerably low VEP. The results from this section also indicate that vulnerable households are large sized with high number of dependants and are characterized by under-aged or old, male- headed, widowed household heads. They are mostly engaged in farming as their primary occupation, have no or low educational attainment, are landless or have small landholdings of less than 1 hectare and therefore are low income earners. They are not members of any local group or association and do not have access to any form of financial capital or infrastructural facilities (i.e. credit, remittance, electricity, health facilities, potable water and sanitary means of excreta disposal).

This section concludes that vulnerability to poverty in the study area can be reduced or mitigated. This is possible if policy interventions are targeted towards the group of people with the identified characteristics which are synonymous to poverty and vulnerability.

DETERMINANTS OF VULNERABILITY TO POVERTY AND POVERTY TRANSITIONS IN SOUTH WEST NIGERIA

This chapter presents the results of the determinants of vulnerability (VEP), poverty and correlates of poverty transitions in rural households of Southwest Nigeria. The first section in the chapter examines the determinants of VEP while section two is devoted to the determinants of poverty separately for both periods as specified in the methodology. The last section focuses on the correlates of poverty transitions (that is, chronic and transient poverty) in the study area.

5.1   Determinants of Vulnerability as Expected Poverty (VEP)

The Chi-squared value of 861.79 of the model shows its overall significance at one percent while the pseudo R^2 value of 0.41 indicates that the model predicts VEP well. Most of the variables had significant effects on vulnerability in the study area. Of these, 2 were education related while 6 were demographic characteristics. Others are: 1 physical variable, 2 financial variables and 1 social capital variable. Also, 3 were related to their living conditions and 2 focused on their community characteristics. While secondary and tertiary education of household head, room ratio, membership of local group or association and access to remittances, credit, electricity, potable water and sanitary means of excreta disposal reduced vulnerability to poverty, age and gender of household head, household size, dependency burden, primary occupation of household head and quality of construction material of outside wall aggravated vulnerability in the region. The result of the Tobit regression is presented in table 24 (Only the marginal effects of each of the variables are presented in the table). A detailed discussion of the effect of each variable on VEP is as follows:

Table 24: Maximum Likelihood Estimates of Tobit Regression for the Determinants of VEP

Variable	Coefficient	Z
Sex	0.604	11.69***
Age	0.011	2.71***
Age squared	-0.000	-1.97**
Household size	0.058	10.58***
Dependency burden	1.283	20.64***
Household type	-0.052	-1.61
Primary Education	0.017	0.59
Secondary Education	-0.142	-3.72***
Tertiary Education	-0.231	-4.01***
Primary Occupation	0.098	2.44**
Years of Experience	-0.001	-0.86
Land size	-0.052	-5.84***
Member Local group	-0.718	-2.55**
Access to credit	-0.087	-3.06***
Access to remittances	-0.511	-13.73***
Dist. to Health Fac.	0.009	1.91*
Mud	0.080	2.68***
Room ratio	-0.273	-5.86***
Access to Sanitary	-0.068	-1.96**
Access Potable water	-0.024	-2.19**
Access to Electricity	-0.113	-3.55***

Source: Computer Print Out of Tobit Regression   Observations   582

*** Significant at 1%, ** at 5%, * at 10%

Pseudo R. Squared   0.4137

LR Chi^2 (21) = 861.79

Prob > Chi^2 = 0.0000

A. Demographic Characteristics

- **Sex of Household Head**: Table 24 shows that being a male-headed household increased vulnerability to poverty by 0.60. That is, male-headed households are more vulnerable to poverty than female-headed households. This result corresponds with earlier findings in this study and could be explained by the fact that a significant proportion of male-headed households in the study area are polygamous, made up of larger household sizes and have lower mean per capita expenditures compared with their female counterparts. This result corroborates the findings of Awel (2007).

- **Age and Square of Age of the Household Head:** With respect to the age of the household head, the positive coefficient implies that a year increase in the age of the household head increased vulnerability to poverty by 0.011. This could be attributed to the fact that as household heads get older, they become economically inactive which in turn affects their productivity, income and subsequently increase their vulnerability. Consistent with lifecycle effects, the coefficient of age squared was negatively correlated with vulnerability implying that the positive association of age with vulnerability will weaken over time. This result supports the findings of Gaiha *et al*. (2007) and Imai *et al*. (2009).

- **Household Size:** The size of the household was also a strong factor affecting vulnerability to poverty in the study area. Vulnerability increased with increase in household size. Specifically, an additional member of household increased vulnerability by 0.059. In large sized households, resources are spread thinly on maintaining a large number of people in terms of meeting their basic and other needs. With limited resources, some needs are hardly met satisfactorily while others are not met at all. Thus most members of such households are likely to experience severe deprivation thereby aggravating vulnerability to poverty in the household. Increased household size is also synonymous with more dependants who do not contribute to household income. This result is consistent with the findings of Awel (2007).

- **Dependency Burden:** The coefficient of dependency burden showed a positive relationship with vulnerability, implying that, an additional non-working member to the household increased vulnerability by 1.283. This is expected as these dependants

do not contribute to household income but rather reduce the household's welfare though a reduction in the per capita expenditure of the household (Gaiha *et al.,* 2007; Imai *et al.,* 2009). In other words, increase in dependency burden decreases per capita income in relation to needs and therefore increases the risk of poverty.

B. Human Capital

- **Educational Attainment (Primary, Secondary and Tertiary):** While vulnerability decreased with increase in educational attainment, the coefficient of primary education was not significant and was positively correlated with vulnerability. In this instance, a household head with primary education increased the likelihood of being vulnerable. This is, contrary to *a priori* expectation and findings of Gaiha *et al.* (2007) and Imai *et al.* (2009) but could be a function of the quality of primary education that obtains in the region. It however, agrees with findings of Kasirye (2007). Expectedly, the sign of the coefficients of secondary and tertiary education dummies were negative and significant. Specifically, secondary and tertiary education reduced vulnerability by 0.142 and 0.231. This is an indication that increased educational attainment of the household head strongly affects vulnerability by assisting household heads in getting good jobs and taking opportunities which otherwise would not have been possible. The overall effect of this is increased income which translates to increased per capita expenditure and consequently improved welfare and standard of living of household members.

C. Occupational Characteristics

- **Primary Occupation:** The coefficient of primary occupation of household head was positive and significant. This implies that households engaged in farming as their primary occupation are more vulnerable to poverty than those engaged in other income generating activities (e.g. trading, salaried job and artisans) as their primary source of income in the study area. For many households in Nigeria, especially in the rural areas, agriculture is the main occupation. However, previous and current analyses of poverty have shown that poverty is disproportionately concentrated among households whose primary livelihood depends on agriculture. This can be

attributed to the fact that farming is highly prone to natural hazards like drought, flood, pest and disease infestation and so on. These factors and many more (low prices during peak of harvesting, poor infrastructural facilities) contribute to a reduction in the returns that can be reaped from farming and invariably leads to a sizeable reduction in incomes of the individuals belonging to these households (Lawson *et al.,*2005).

D. Physical Capital

- **Land size:** Land size is negatively correlated to VEP which implies that a hectare increase in land size decreased VEP by 0.052. In other words, households with smaller land sizes or the landless are more vulnerable to poverty than households with larger sized land (Gaiha *et al*., 2007).

E. Social Capital

- **Membership of Association**: The negative coefficient of membership of association implies that household heads belonging to a local group or association are less vulnerable than those that do not belong to any association in the study area. In specific terms, being a member of a local group or association reduced vulnerability by 0.071. This is because membership of association confers some advantages like easy access to funds (loans) which can be used to expand production for farming households or business enterprise for non faming households. This will consequently lead to an improvement in the welfare of such households as they will be able to collectively mitigate the impact of welfare reducing shocks when they occur (Oluwatayo, 2007).

F. Financial Capital

- **Access to Credit**: With respect to access to credit, household heads with access to credit in the study area were found to be less vulnerable than those without access (Oluwatayo, 2007). Credit obtained (if appropriately utilized) for example, could be used to expand production through the purchase and use of modern inputs and consequently improve the welfare of such households.

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- **Access to Remittances**: Access to remittances was found to be negatively correlated with VEP implying that households with access to remittances are less vulnerable to poverty than households without access. Access to remittances reduced vulnerability to poverty in the study area by 0.511. This may be because remittances augment household income, leading to increased per capita income and consequently improved welfare of the household (Bhatta and Sharma, 2006).

G. Living Condition Characteristics

- **Construction Material of Outside wall**: The quality of material used for construction of outside wall of buildings is a reflection of the level of welfare of the households as it is usually determined by the level of income of such households. In other words, the non poor are more likely to live in houses constructed with permanent materials such as stone, bricks and concrete. Hence, the positive coefficient of 0.080 for households with mud as the construction material of outside wall implies that these households are more vulnerable to poverty in the study area.

H. Community Characteristics

- **Distance to Public Health Facility**: The positive effect of distance to public health facility connotes that an increase in the distance to the health facility increased VEP by 0.009. In other words, households with access to public health facilities are less vulnerable to poverty than households without access. Access to good and affordable health facility reduces health care costs, improves productivity and ultimately reduces vulnerability of the household to poverty (Omonona, 2001).

    Other living conditions and community characteristics, which include room ratio, access to sanitary means of excreta disposal and access to potable water, were all negatively correlated with vulnerability. This is a strong indication that sanitary living conditions and access to infrastructure are good indicators of welfare measurement. The implication of this finding is that households with higher room ratio, access to sanitary means of excreta disposal and potable water are less vulnerable than households with lower room ratio and without access to safe water and sanitary means of excreta disposal. This could be as a result of sickness spells

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which are usually associated with exposure to unsanitary living conditions. This not only reduces productivity but also results in the diversion of limited household resources towards medical care, reduced per capita expenditure and ultimately, reduced welfare of the household.

5.2   Determinants of Poverty

Table 25 shows the factors associated with a household's poverty status in the two periods. The statistically significant value of chi-square of 313.82 and 317.87 for the first and second periods respectively is an indication that the data set fits the model in the two periods. Similar sets of explanatory variables were used in each case. However, the estimated VEP index was included as one of the explanatory variables in the second period. The statistically significant coefficients in the probit model for the two periods are sex of household head, household size, dependency burden, secondary education of household head, tertiary education of household head, primary occupation of household head, years of experience in primary occupation, access to credit and distance to public health facility. These variables therefore, are the major factors influencing the probability of being poor in the study area. However, there were some other factors such as household head membership of local association or group, room ratio and access to potable water that were additional factors influencing the probability of being poor in the first period only, and factors such as access to remittances, sanitary means of excreta disposal, electricity and construction material of outside wall that only influenced the probability of being poor in the second period. The marginal effects of the probit model are reported as follows:

A.   Demographic Characteristics

- **Sex of Household head**: The negative coefficient of sex of household head implies that male-headed households have a lower probability of being poor compared with their female counterparts. This is consistent with earlier findings in this study. Specifically, being a male headed household reduced the probability of being poor by 0.188 and 0.377 in the first and second periods respectively. This could be attributed to the fact that a larger proportion of male-headed households earn higher

income than female-headed households in the study area. This result confirms the findings of Omonona (2001).

- **Household size:** With respect to household size, as reflected in its positive coefficient, a unit increase in household size increased the probability of being poor by 0.116 in the first period and 0.085 in the second period. This could be explained by the fact that large family size tends to reduce per capita expenditure which ultimately increases the level of poverty of the household. This result is consistent with the findings of Swanepoel (2005)

- **Dependency Burden**: The positive and significant coefficient of dependency burden implies that an increase in dependency burden (i.e. ratio of non working members to working members in the household) increased the probability of being poor by 0.163 and 0.724 in the first and second periods respectively. This is because the more the number of child or adult dependants in the household (that is, non working members of the household) the more the burden on those employed. This in turn aggravates poverty in the households, as such dependants do not contribute to household income but depend solely on household income for their upkeep (Gaiha *et al*., 2007; Imai *et al*., 2009).

- **Educational Attainment of Household Head:** The dummy variables on educational attainment of household head were negative implying that educational attainment decreased the probability of being poor. However, only the variables on secondary and tertiary education of household head were significant. Specifically, while secondary education of household head decreased the probability of being poor by 0.158 and 0.153 for the first and second periods respectively, tertiary education of the household head decreased it by 0.283 and 0.402 for the first and second periods respectively. This implies that at least secondary education is essential for a significant reduction in poverty in the study area. This result supports the findings of Awel (2007).

- **Primary Occupation**: The positive and significant coefficient of the dummy of primary occupation (that is, whether households were primarily engaged in farming activities) connotes that household heads engaged in farming as their primary occupation have a higher probability of being poor than those engaged in other

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income generating activities. Hence, being engaged in farming activities as a major source of income increased the probability of being poor by 0.164 and 0.209 for the first and second periods respectively. This can be attributed to the fact that agriculture can be adversely affected by weather related shocks resulting into low productivity and poor agricultural produce prices which coupled with inadequate infrastructure and limited access to credit and improved farm inputs can generate substantial income variability and ultimately translate into consumption short falls. This result supports the findings of Omonona (2001).

- **Years of Experience in Primary Occupation**: The coefficient of years of experience in primary occupation of the household head was negative and significant at 1 percent indicating that a year increase in experience in primary occupation reduced the probability of being poor by 0.012 and 0.007 for the first and second periods respectively. This is expected as experienced household heads are supposed to have acquired necessary skills to at least reduce the impact of poverty (Omonona, 2001).

Table 25: Regression Results of the Determinants of Poverty

Variable	Poverty (1st period)			Poverty (2nd period)		
	df/dx	Std,Err.	z-value	df/dx	Std.Err.	z-value
VEP	-	-	-	0.342	0.121	2.85***
Sex	-0.188	0.081	-2.45**	-0.377	0.062	-4.34***
Age	0.001	0.009	0.19	-0.005	0.009	-0.61
Age squared	0.000	0.000	0.17	0.000	0.000	0.34
Household size	0.116	0.016	7.89***	0.085	0.020	3.99***
Dep.burd.	0.163	0.091	1.75*	0.724	0.213	3.43***
Household type	-0.051	0.058	-0.85	-0.038	0.080	-0.49
Primary Educ.	-0.080	0.056	-1.38	-0.073	0.071	-1.03
Sec. Educ.	-0.158	0.060	-2.29**	-0.153	0.087	-1.71*
Tertiary Educ.	-0.283	0.032	-3.88***	-0.402	0.110	-3.19***
POccup.	0.164	0.082	1.92*	0.209	0.096	2.13**
YexpOccup.	-0.012	0.004	-2.90***	-0.007	0.004	-1.72*
Land size	0.013	0.019	0.69	0.028	0.022	1.24
Member.Assoc.	-0.113	0.058	-1.99**	-0.071	0.058	-1.19
Access credit	-0.135	0.047	-2.63***	-0.196	0.061	-3.08***
Access remitt.	-0.029	0.062	-0.48	-0.244	0.097	-2.52**
Dist.pub.Health	0.026	0.010	2.65***	0.039	0.011	3.32***
Mud	-0.520	0.058	-0.90	0.194	0.063	2.98***
Room ratio	-0.231	0.094	- 2.35**	-0.098	0.072	-1.36
Sanexcre	-0.042	0.059	- 0.70	-0.128	0.069	-1.86*
Pwater.	-0.098	0.048	- 1.98**	-0.011	0.054	-0.20
Electricity	0.070	0.060	1.19	-0.078	0.044	-1.71*

Source: Computer Print Out of Probit Regression   Observations   582

*** Significant at 1%, ** at 5%, * at 10%

Pseudo R. Squared	0.4193	0.4050
LR Chi^2 (21) =	313.82 LR Chi^2 (22)	317.87
Prob > Chi^2 =	0.0000	0.0000

- **Access to Credit**: The negative coefficient of 0.135 and 0.196 of the variable on credit access for the first and second periods respectively, implies that household head access to credit decreased the probability of being poor by these values. A likely reason is that funds obtained could be used to expand production (especially for farm families) and business enterprises by those not engaged in farming, through the purchase and use of modern inputs and technology which could help raise the level of income and welfare (Muyanga *et al.,* 2007).

- **Distance to Health Facility**: Similarly, the coefficient of the distance to health clinic was positive in the two periods implying that non- access to health facilities increased the probability of being poor. This could be as a result of the fact that households located farther away from the facilities are less likely to use them either due to increased transportation costs which also increases health care costs (Omonona, 2001). The additional significant determinants of poverty in the first period include:

- **Membership of Local group or Association**: Membership of a social group or association of household head decreased the probability of being poor by 0.113. This is expected as membership of social organization increases the probability of access to economic assets and opportunities and consequently reduces poverty. It also implies that improved access to social capital is a viable tool for poverty reduction (Omonona, 2001; Yusuf, 2008; Okunmadewa et al., 2007).

- **Room Ratio**: An increase in room ratio (that is, the number of rooms per person) decreased the probability of being poor by 0.231. This is expected as type of dwelling is an indicator of welfare (Omonona, 2001).

- **Access to Potable water**: Access to potable water also decreased the probability of being poor as depicted by the negative coefficient of the variable. This is because access to potable water reduces health problems associated with water, improves productivity and ultimately enhances welfare of the household (Oni and Yusuf, 2008).

In the second period as earlier discussed, estimated VEP index was included as one of the explanatory variables to test whether vulnerability in the first period influenced poverty in the second period. The coefficient of vulnerability of 0.342 implies that vulnerability translates into significantly higher poverty. That is, a unit increase of the *ex ante* probability

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of becoming poor increased the *ex post* probability of becoming poor by 0.342. The additional significant determinants of poverty in the second period include:

- **Access to Remittances**: The negative coefficient of access to remittances in the second period implies a reduction in the probability of being poor. Specifically, access to remittances reduced the probability of being poor by 0.244. This is an indication of the fact that remittances received from relatives or family members not resident in the household contributes to household income of those that have access to it. Consequently, this would enable them afford basic necessities that would improve their welfare and lead to a reduction in poverty (Omonona, 2001).

- **Access to Sanitary means of Excreta Disposal**: The variable on access to sanitary means of excreta disposal was also negative and significant at 10% implying that access to sanitary means of excreta decreased the probability of being poor by 0.128. This is because unconventional methods or unsanitary means of excreta disposal have health implications which increase health care costs, reduces productivity and ultimately increases the poverty level of the household (Oni and Yusuf, 2008).

- **Access to Electricity**: As expected, the variable on access to electricity had a negative and statistically significant coefficient implying that access to electricity reduced the probability of a household being poor. Specifically, it reduced poverty by 0.078. This could be attributed to the fact that having access to electricity connotes better infrastructure in the community and may allow for different kinds of productive activities which translate to increased income and ultimately reduced poverty (Imai *et al*.,2009).

5.3 Comparison of Determinants of Vulnerability and Poverty

In contrasting the determinants of poverty in the first period and estimated vulnerability in the study area, the study revealed that: first, the characteristics of the household head (that is, age and its square) were significant for vulnerability and not for poverty implying that households with older heads are more likely to be vulnerable; second, land size was negative and significant for vulnerability but not for poverty suggesting that households with small landholdings or the landless may not necessarily be poorer but are more vulnerable than households with larger landholdings. This is consistent with findings

of Imai *et al*. (2009). Third, the coefficient of gender of household head was negative and significant for poverty but positive and significant for vulnerability suggesting that female headed households are likely to be poorer but less vulnerable than their male counterparts.

Further, while coefficient estimates for access to remittances and sanitary means of excreta disposal, were negative and not significant for poverty, they were negative and significant for vulnerability. Also, while the coefficient of access to electricity was positive and not significant for poverty, it was negative and significant for vulnerability, suggesting that the remittance economy and access to infrastructure are significant tools for vulnerability reduction in the study area.

The coefficient of construction material of outside wall was positive and significant for vulnerability but not for poverty suggesting that households with poor quality of construction material of outside wall are more vulnerable. On the other hand, while years of experience in primary occupation variable was negative for both poverty and vulnerability, it was, however, significant only for poverty.

The results obtained above confirm findings from earlier studies (Gahia *et al.,* 2007; Imai *et al.*, 2009) that while poverty is very much associated with vulnerability, they are to some extent distinct as there are factors such as: age, land size, access to remittances, sanitary means of excreta disposal, access to electricity associated only with vulnerability not poverty and vice versa. This is an indication that examining poverty as a static situation could lead to ineffective policy prescriptions whereas examining the dynamics (vulnerability) might lead to potent policy prescriptions.

5.4   Vulnerability and Poverty Transitions

This section examines the relationship between vulnerability and poverty status of the respondents and discusses the level of poverty dynamics in rural South Western Nigeria based on the FGT poverty measure. The decomposition of poverty into its chronic and transient components based on the spells approach of poverty decomposition was further examined. As stated in the methodology, households poor in both periods were defined as chronically poor and those poor in only one period as transiently poor. Hence, the incidence by the probabilities of movements into and out of poverty (that is, poverty transitions) was investigated.

5.4 .1   Relationship between Vulnerability and Poverty Status of the Respondents

A classification of respondents into their vulnerability status based on their poverty status (table 26) showed that while not all the poor are vulnerable (12.5 percent), a significant proportion of the non-poor are vulnerable (33.2 percent). Thus, there may be some households whose vulnerability level may be high but who are nevertheless observed to be non-poor. Conversely, there may be some households who are observed to be poor, but whose vulnerability level is, nevertheless, low enough for them to be classified as non-vulnerable. These estimates appear to support the often-stated (and vaguely defined) claim that the observed incidence of poverty underestimates the fraction of the population that is vulnerable to poverty and simply reflects the stochastic nature of the relationship between poverty and vulnerability (Chaudhuri *et al*., 2002).

Table 26: Vulnerability Distribution of Households based on Poverty Status

Poverty Status in the first period	Vulnerability Status of the household		
	Non-vulnerable	Vulnerable	Total
Not Poor	185 (31.8)*	193 (33.2)	378 (65.0)
Poor	73 (12.5)	131 (22.5)	204 (35.0)
Total	258 (44.3)	324 (55.7)	582 (100.0)

Source: Field Survey, 2009   * number in parenthesis is cell percentage

5.4.2 Poverty Transition and Decomposition (Spells Approach)

The mobility of individual households in terms of their expenditures can best be described using poverty transition matrices. Therefore, a simple transition matrix between poverty and non poverty was constructed for the 2 periods based on the respective poverty lines for each of the period[4].

The poverty transition matrix in table 27 shows that 49.5 percent of the households were non-poor in both periods implying that a significant proportion of the respondents were non-poor in the 2 periods (65.0 percent and 56.4 percent respectively). This corroborates the findings of NBS (2005) in which Osun and Oyo states had relatively lower poverty incidence (32.35 percent and 24.08 percent respectively) when compared with other states in the South West zone. On the other hand, the percentage of households that were poor in both periods was 28.2 percent indicating that, approximately 78% of the households did not change their poverty status between the two periods. Table 28 shows the percentage of households in each poverty category based on the spells approach of poverty decomposition.

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[4] It should be emphasised that problems of measurement errors can influence poverty estimates and estimates of other relevant variables in studies based on household panel data (Alderman *et al.*, 2000; Baulch and Hoddinott, 2000). In particular, measurement errors in the variables of regression models can lead to imprecise coefficient estimates and omitted variable bias (Gujarati, 2003; Deaton, 1997). Previous studies analysing poverty dynamics also find that poverty transitions are often overstated due to measurement errors (Boozer and Goldstein, 2003). However, the issue of measurement error remains unsolved. In particular, it is not yet clear to what extent the observed income (or consumption) mobility is inflated by the presence of the measurement errors contained in the income (or consumption) data (Balisacan and Fuwa, 2004). Though these potential problems were recognised, this study however, did not attempt to investigate the effect of measurement errors on the poverty outcomes due to lack of validation surveys for household survey data in Nigeria.[4]

Table 27: Poor/Non-Poor Transition Matrix

1st Period		2nd period		
		Non poor	Poor	Total
Non Poor	Non Poor	288 (49.5)*	90 (15.5)	378 (65.0)
	Poor	40 (6.8)	164 (28.2)	204 (35.0)
	Total	328 (56.4)	254 (43.6)	582 (100)

Source: Field Survey, 2009

* Top number is cell frequency and number in parenthesis is cell percentage

The chronic and transient poverty rates were 28.2% and 22.3% respectively indicating a higher level of chronic poverty in rural South Western Nigeria, although a significant percentage (around one fifth) of the households in the region suffered from transient poverty. However, of the transient poor, while 6.8 percent exited poverty, a larger proportion (15.5%) moved into poverty (table 27). This result is in line with other African estimates reported by Baulch and Hoddinot (2000) of being at the high end in terms of the proportion of poverty that is chronic irrespective of inherent difficulties in comparing these studies such as different countries, levels of representativeness of samples, methods of calculating poverty lines, duration of spells and numbers of repeated observations. In sum, poverty is largely chronic in rural South Western Nigeria. Hence, poverty alleviation policies in Nigeria should focus on how to pull out the long run poor from their poverty trap, while giving due attention to the transient poor.

Table 28:   Poverty   Decomposition (Spells Approach)

Poverty Status	Nos. of Households	Percentage
Always poor (chronic)	164	28.2
Sometimes poor (transient)	130	22.3
Never poor	288	49.5
Total	582	100.0

Source: Field Survey, 2009

5.5 Factors Influencing Poverty Transitions

This section presents the multinomial regression results for the correlates of poverty transitions (chronic and transient poverty) in the study area. Similar sets of explanatory variables were used in each case. The dependent variables (following Lawson *et al.*, 2005; Baulch and McCulloch, 1999) in the multinomial logit model distinguishes four cases: the never poor, those poor in both periods; those poor in the first period and not in the second period (escaping/exiting poverty) and those non poor in first period but poor in the second period (falling into poverty). The determinants of chronic and transient poverty were interpreted in terms of the odds ratio of all other response categories relative to the base category. The base category in this case is the never poor households (i.e. the non- poor state). The results also presents the relative risk ratios (RRR) associated with the different explanatory variables. The Relative Risk ratio (RRR) shows how the predicted odds of being transient poor or chronic poor (compared to being non-poor) are multiplied per unit increase in the value of the associated explanatory variable when other variables are controlled for in the model. Hence an RRR value greater than one indicates a positive association between the explanatory variable and the outcomes under consideration while an RRR smaller than one represents a negative relationship. In other words, a positive coefficient implies that the probability (or odds) of respondents falling into the numerator category is greater than the probability of falling into the base category.

The multinomial logit model (table 29) passes the minimum requirement for robustness where the likelihood ratio of 511.76 based on chi-square test for overall model is significant at 1 percent. The model also explains well given the pseudo R^2 of 0.376.

Table 29: Multinomial Logit Regression Result for the Determinants of Chronic and Transient Poverty

Variable	Chronic Poverty			Exiting Poverty			Moving into Poverty		
	RRR	Coeff.	z-value	RRR	Coeff.	z-value	RRR	Coeff.	z-value
VEP	10.05	2.308	2.77***	1.621	0.483	0.48	1.802	1.820	2.22**
Sex	0.036	-3.299	- 4.52***	0.305	-1.187	-1.31	0.229	-1.471	-2.33**
Age	1.008	0.008	0.12	0.949	-0.051	-0.73	0.989	-0.010	-0.18
Age squared	1.000	0.000	0.04	1.000	0.000	0.93	0.999	-5.77E-06	-0.01
Household size	2.479	0.908	5.66***	0.017	-0.702	-3.59***	1.800	0.588	3.86***
Dep.burd.	221.371	5.399	3.52***	0.047	-4.193	-2.82***	6.026	3.968	2.15**
Household type	0.929	-0.073	- 0.16	1.264	0.234	0.41	1.225	0.203	0.46
Primary Educ.	0.020	-0.777	-1.81*	0.826	-0.190	-0.36	0.637	-0.456	-1.09
Sec. Educ.	0.411	-2.501	-3.09***	1.029	1.625	2.27**	0.659	-0.415	-0.84
Tertiary Educ.	0.459	-3.867	-3.53***	3.196	3.526	2.80***	0.910	-2.273	-2.95***
Pry Occup.	3.620	1.286	2.03**	0.889	-1.506	-2.06**	1.197	0.180	0.31
Yexp.Occup.	0.919	-0.084	-2.83***	0.929	-0.735	-1.97**	0.954	-0.046	-1.66*
Land size	1.146	0.136	0.97	0.998	-0.001	-0.01	0.700	-0.007	-1.90*
Mem. Assoc.	0.442	-0.815	-2.14**	0.522	-0.649	-1.40	0.724	-0.322	-0.86
Access to credit	0.417	-0.873	-2.23**	1.670	0.399	0.79	1.041	0.040	0.12
Access remitt.	0.640	-1.730	-2.64***	0.679	-0.387	-0.47	2.285	0.826	1.42
Dist.pub.Health	1.865	0.144	2.07**	0.826	-0.190	-1.76*	1.037	0.036	0.59
Mud	1.453	0.790	1.96**	0.874	-0.134	-0.26	0.617	-0.482	-1.26
Room ratio	0.483	-0.726	-1.14	0.284	-1.255	-1.38	0.751	-0.285	-0.62
Sanexcre	1.008	0.008	0.02	1.181	0.167	0.32	1.133	0.125	0.31
Pwater.	0.497	-0.699	-2.01**	2.799	1.071	2.56***	0.950	-0.050	-0.16
Electricity	0.941	-0.060	-0.15	2.204	0.790	1.50	0.782	-0.245	-0.62

Source: Computed from 2009 Panel Data   *** Significant at 1% , ** at 5%, * at 10%   Log likelihood -425.46
Observations   582   Pseudo R. Squared   0.3756 LR Chi^2 (66) =   511.76   Prob > Chi^2 =   0.0000
Dependent variable: poverty status (0=non-poor,1=chronic poor,2=poor-nonpoor,3=nonpoor-poor),with base category poverty status=0

5.5.1 Determinants of Chronic Poverty

Table 29 shows that VEP, sex of household head, household size, years of experience in primary occupation, distance to public health facility, membership of social group or association, access to remittances, dependency burden, primary occupation of the household head, access to potable water , construction material of outside wall (Mud), primary education of household head, secondary education of household head, tertiary education of household head and access to credit are the major factors influencing chronic poverty in the study area. While vulnerability, household size, dependency burden, primary occupation of household head, construction material of outside wall, and distance to public health increased the likelihood of being chronically poor, gender of household head, years of experience in primary occupation, membership of local group, access to remittances, potable water, credit and educational attainment of the household head reduced the likelihood of chronic poverty in the study area[5].

VEP positively impacted on the odds of being chronically poor by 10.05. In other words, the vulnerable poor are more likely to stay poor (Gaiha *et al.,* 2007). Similarly, an additional member of household and a unit increase in dependency burden increased the odds of being chronically poor by 2.47 and 221.3 respectively. This result is consistent with findings in the literature in other countries (e.g. Gaiha and Imai, 2003; Haddad and Ahmed, 2003; Gaiha *et al.,* 2007; Lawson 2004; Bhatta and Sharma, 2006). The positive effect of the variable of primary occupation on the odds of being chronically poor implies that being engaged in farming as primary source of income increases the probability of being chronically poor by 3.62 (Muyanga *et al*., 2007). Other variables that impacted positively on the odds of chronic poverty are distance to health facility and construction material of outside wall. On the other hand, being a male-headed household reduced the likelihood of being chronically poor, that is, male-headed households have lower odds of being chronically poor. This result is consistent with the findings of Muyanga *et al.* (2007) and Awel (2007). Similarly, household head membership of a social group or association, access to credit, access to remittance and access to potable water, negatively impacted on the odds of being chronically poor (Muyanga *et al.,* 2007; Bhatta and Sharma, 2006; Oyekale and

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[5] A larger number of statistically significant coefficients for chronic poverty indicate that the model is better able to predict chronic poverty than transient poverty. This is consistent with the findings discussed in Haddad and Ahmed (2003) ,Baulch and Hoddinot (2000) and Bhatta and Sharma (2006)

Oyekale, 2007). This could be an indication that social capital, the remittance economy and access to infrastructure might be playing a role in reducing chronic poverty in the study area.

The human capital variables (primary, secondary and tertiary education of household head) showed a significant negative relationship with chronic poverty. Specifically, while an additional year of primary and secondary education of household head impacted negatively on the odds of being chronically poor by 0.020 and 0.411 respectively, the RRR associated with tertiary education was observed to be 0.459 implying that tertiary education of the household head decreased the odds of being chronically poor more. Such results corresponds strongly with *a priori* expectations that education is very likely to have a fundamental influence on a households poverty status and highlights the strong role of human capital development in raising the long term welfare of households (McCulloch and Baulch , 1998; Gaiha *et al.*, 2007; Muyanga *et al.,* 2007). Therefore, the factors perpetuating poverty in the study area are: larger household size, higher dependency burden, no educational attainment, primary occupation (farming), and poor housing conditions.

5.5.2 Determinants of Exiting Poverty (Transient Poverty) in the Study Area

Table 29 also reveals the major factors influencing the odds of exiting poverty in the study. These are: household size, years of experience in farming, distance to public health facility, dependency burden, primary occupation (farming), access to potable water, primary and secondary education of the household head. While household size, distance to public health facility, dependency burden, primary occupation of household head decreased the odds of exiting poverty, years of experience in primary occupation, access to potable water, secondary and tertiary education impacted positively on the odds of exiting poverty in the study area.

The coefficient of vulnerability was positive but not significant for poverty exit (Lawson, 2004; Gaiha *et al.,* 2007). However, the effect of household size and as expected, dependency burden on the likelihood of exiting poverty was negative with a RRR of 0.017 and 0.047 respectively. This indicates that an additional member of household as well as an additional dependant to the household decreased the odds of exiting poverty in the study area. This result as earlier stated might not be unconnected with the fact that increased household size decreases per capita expenditure while dependants do not contribute to

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household income thereby aggravating poverty in the household. This result corroborates the findings of Haddad and Ahmed (2002). Similarly, the negative effect of the variable of primary occupation on the odds of exiting poverty implies that being engaged in farming as primary source of income decreases the probability of exiting poverty. However, contrary to *a priori* expectations, a year increase in experience in primary occupation of household head decreased the odds of exiting poverty by 0.929. This could be attributed to the fact that as the years of experience in primary occupation increase, the age of the household heads also increase. This will consequently lead to a reduction in productivity, income and ultimately increased poverty. Distance to public health facility also had a negative impact on exiting poverty by decreasing the odds ratio that the households will exit poverty by 0.826.

On the other hand, the RRR of 1.02 for secondary education and 3.19 for tertiary education implies that while both secondary and tertiary education of the household head had strong positive influence on the likelihood of exiting poverty in the study area, the latter increased the odds of exiting poverty more. Again this corresponds to findings that education is very likely to be a strong causal influence on household poverty status (Lawson, 2004; Baulch and Mcculloch , 1999; Gaiha, 2003). Although not significant, the negative effect of the head having primary education on the probability of household escaping poverty may seem counter intuitive, but this is probably picking up the effect that households whose head had completed primary school were less likely to be poor to start with (Lawson ,2004; Bhatta and Sharma, 2006). This is consistent with findings of Woolard and Klasen (2005), Bigsten *et al.* (2003) and Lawson (2004). Similarly, access to potable water increased the odds of exiting poverty, implying that access to infrastructure such as potable water is an effective tool for poverty reduction.

In summary, the poor would overcome poverty in the next period through smaller household size, access to healthcare facility, lower dependency burden, access to potable water, and education (at the secondary and tertiary levels). .

5.5.3   Determinants of Moving into Poverty (Transient Poverty) in the study area

Movement into poverty is a function of VEP, gender of household head, household size, land size, dependency burden, and tertiary education. While VEP, household size and dependency burden impacted positively on the movement into poverty, tertiary education,

land size, years of experience in primary occupation and gender of household head had a negative impact on movement into poverty.

As shown in table 29, vulnerability impacted positively on the movement into poverty by 1.82 implying that the vulnerable non-poor are likely to slip into poverty. This result corroborates the findings of Gaiha *et al.* (2007). The positive coefficient of household size and dependency burden also indicates that increases in household size and dependants in the household are strongly associated with moving into poverty (Gaiha and Imai, 2003; Haddad and Ahmed, 2003). Specifically, an additional member or dependant to the household increased the likelihood of slipping into poverty by 1.80 and 6.03 respectively. On the other hand, rural residents with higher number of years of experience in primary occupation and larger sized land were found to be less likely to fall into poverty. Similarly, male headed households decreased the odds of slipping into poverty by 0.229. Also, among all the human capital assets, only tertiary education of the head had a strong negative influence on the likelihood of a household moving into poverty. That is, tertiary education decreased the odds of slipping into poverty. This result is consistent with findings of Lawson *et al.* (2005) and implies that higher levels of education is crucial for sustained poverty reduction as it increases opportunity of gainful employment, access to skills which enhances productivity and consequently improves household income and welfare. Tertiary education is therefore a priority factor for moving out of poverty in the study area. Hence, the factors that prevent the non poor from slipping into poverty in the study area include: smaller household size, lower dependency burden, higher education and larger land.

5.6 Promotional and Protective Effects

The difference between coefficients of VEP for poor – non poor category (2) and poor – poor category (1) reflects the promotional effect. The greater coefficient of VEP for category 1 as shown in table 29 implies that the vulnerable poor are more likely to stay poor. In this wise, the promotional effect is lower. This result is consistent with findings of Gaiha *et al.*(2007) and corroborates previous findings in this study, that the vulnerable poor are more likely to stay poor. On the other hand, the positive coefficient for VEP in the non-poor–poor (category 3) relative to the base category implies that the probability of the vulnerable non poor slipping into poverty, relative to being non poor is higher (protective

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effect is lower). This result again corroborates previous findings in this study that the vulnerable non-poor are likely to slip into poverty. These results highlights the need for the Nigerian government to give due attention to the factors that help the poor overcome poverty and those that prevent them from slipping into poverty for targeting of anti-poverty interventions.

CHAPTER SIX

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

This chapter summarizes the findings of the study and concludes the thesis. It, therefore, presents recommended policies aimed at reducing poverty and vulnerability to poverty among rural households in the study area.

6.1   Summary of Major Findings

The summary of the main findings of the study are as follows:

- Majority of the respondents were males (79.6%), between the ages of 40-59 and married (73.0%). The average age and household size of the respondents stood at 50.8±15.26 years and 5±3.29 respectively. While a greater percentage of the respondents as expected had no formal education, highlights of the occupation analysis showed that most of the households (55.3%) were engaged in farming activities as their major source of income but have farms of less than one hectare (59.8%). A sizeable proportion of the respondents did not have access to infrastructural facilities. Also, on the average, the monthly expenditure on food and non food items was ₦11,788.08 and ₦6928.42 for the harvesting period and N13,730 and ₦7987.87 for the lean period respectively.

- Sex, age, secondary and tertiary education of household head, house ownership, membership of local group or association were associated with increase in expectation of consumption while household size, share of female members in total household, dependency burden, square of age and access to electricity were associated with significantly lower expectation of future consumption.

- The mean per capita household expenditure for the study area in the harvesting and lean periods was ₦4970.36 and ₦6140.43 respectively from where poverty lines of ₦3313.57 and ₦4093.21 equivalent to two-thirds of the mean per capita household expenditure (MPCHHE) were obtained. This gave poverty incidence of 35 percent and 44 percent for the harvesting and lean periods respectively.

- A large proportion of rural households in South Western Nigeria are vulnerable to poverty that is, have a high probability of becoming poor a period ahead in the region.

- While household size, dependency burden, primary occupation of household head and distance to health facility aggravated both vulnerability and poverty, factors such as being a male household head, age and construction material of outside wall also had significant positive effects on vulnerability but not poverty. On the other hand, factors that mitigated both vulnerability and poverty were secondary and tertiary education, membership of association, room ratio, access to potable water and access to credit. However, there were a few factors such as land size, age of household head, access to remittances, access to sanitary means of excreta disposal and access to electricity that reduced vulnerability but not poverty in the study area which suggests that that these factors might be key to reducing vulnerability in the region.

- Groups with relatively high poverty rate tended towards having high VEP while low poverty rates were associated with noticeably low VEP. However, higher vulnerability translates into significant poverty over time.

- While not all the poor are vulnerable, a significant proportion of the non-poor are vulnerable. Also, while some manage to overcome their poverty despite being vulnerable, their prospects of doing so are less likely than of remaining in poverty given the higher rate of poverty entry than exit in the region.

- Poverty in rural South West Nigeria is chronic, although, there is evidence of significant dynamics as one can infer from the transient component of poverty.

- Factors perpetuating poverty in the study area are: VEP, larger household size, higher dependency burden, primary occupation (farming), poor housing conditions and infrastructural facilities.

- The major factors influencing the likelihood of exiting poverty in the study include household size, years of experience in primary occupation, distance to public health facility, dependency burden, primary occupation (farming), access to potable water, secondary and tertiary education of the household.

- The variables that have strong influence on the likelihood of households moving into poverty in the study area are VEP, being a female household head, household size,

years of experience in primary occupation, land size, dependency burden and tertiary education of household head.

- While there is overlap between the determinants of chronic and transient poverty, there are a few factors associated with chronic but not transient poverty and vice versa. Primary education, membership of local group or association, access to remittance and credit and construction material of outside wall were significantly associated with chronic but not transient poverty. However, size of land was significantly associated with transient but not chronic poverty.

- Vulnerability of the poor tends to perpetuate their poverty implying that the vulnerable poor are likely to stay poor and vulnerability of the non-poor propels them into poverty implying that the vulnerable non poor are likely to slip into poverty. This is an indication of low promotional and protective effects in the study area.

6.2   Conclusion

Nigeria at the turn of the twenty-first century continues to be one of the poorest countries in the world despite various efforts of government to reduce the incidence of poverty through different poverty alleviation programmes and strategies. This high level of poverty characterising the country therefore, requires an urgent need to gain a better understanding of the persistence of poverty and poverty dynamics at the household level in Nigeria. In this study, poverty dynamics was studied using regional panel data.

Generally, vulnerable households are large sized with high number of dependants and are characterized by under aged or old, female-headed, widowed household heads. They are mostly engaged in farming as their primary occupation, have no or low educational attainment, are landless or have small landholdings and hence are low income earners. They are not members of any local group or association and do not have access to any form of financial capital or infrastructural facilities (i.e. credit, remittance, electricity, health facilities, potable water and sanitary means of excreta disposal).

While vulnerability to poverty of households indicates that on the average there is a 0.56 probability of entering poverty a period ahead, poverty was found to be chronic in rural households of South West Nigeria. However, there is a significant level of dynamism in the poverty status as can be inferred from the spells approach. Vulnerability aggravated both

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chronic and transient poverty in the region by increasing the odds of remaining and moving into poverty of poor and non poor households respectively. Hence, the vulnerable poor are more likely to stay poor while the vulnerable non poor are more likely to move into poverty in the next period.

Given the high level of vulnerability and movements into and out of poverty in the study area, a lot needs to be done to improve the factors that reduce vulnerability to poverty. Also, if it is possible to target the currently poor, a large proportion of the households will move out of poverty between one period and the other. However, with the imperfect overlap between the vulnerable and the poor, it cannot be assumed that policy interventions that help the currently poor will also lead to a reduced incidence of poverty in the next period ahead. This suggests that different policies may be needed for poverty reduction because focusing anti-poverty efforts on the correlates of current poverty status (which could be as a result of exposure to a shock at that time) may not have any significant impact on the probability of being poor in the future, but forward looking anti-poverty interventions that aim to prevent rather than alleviate poverty could be embarked upon. It must be noted that the poor are a heterogeneous group consisting of households who move into and out of poverty (transient poor) as well as households that are trapped in poverty (chronic poor). Hence, to achieve the right policy mix, the extent to which poverty is transient versus chronic should be an important consideration when designing policies aimed at reducing poverty (Jalan and Ravallion, 2001). Furthermore, these groups have different endowments and characteristics, which should guide policy proposals. The correlates of transient poverty especially can be useful in designing policies aimed at protecting non-poor households that are vulnerable to poverty.

6.3   Policy Implications and Recommendations

From a broad policy perspective, while there is a close correspondence between poverty and vulnerability, the two are distinct concepts. In fact, there is a case for a broader focus in anti-poverty interventions in Nigeria, as those who are poor are not necessarily the most vulnerable and vice versa. The policy implications of the above findings are notable: a focus on vulnerability underscores the centrality of social protection policy mechanisms as potent poverty reduction tools. In addition, the existence of significant numbers of transient

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poor might suggest that current poverty rates are under-reported or misleading as they would not adequately account for those who are not currently poor but are still at risk of poverty in the future. Since chronic poverty is predominant, then this may be suggestive of a more prominent role for structural problems such as poor infrastructure, low human capital, and underemployment. However, empirical evidence suggests that social protection may be necessary even to mitigate chronic poverty.

Based on the following premise, the following policy prescriptions are made:

- Adoption of Mixed Policy to Poverty Reduction: The fact that the chronically poor and the transient poor constitute 56% and 44% of the total poor (chronic plus transient poor respectively) means the government should have concrete policies to address both types of poverty. In the case of the transient poor policies are needed to help households smooth their consumption over time. While the actual interventions for achieving this goal would be context specific, they would generally encompass measures to encourage insurance schemes and safety nets (Haddad and Ahmed 2003). On the other hand, tackling chronic poverty would require policies (such as adequate access to microfinance) that assist households in increasing their assets.

- Provision of Sustainable Social Protection Strategy in Southwest Nigeria: Since poverty is largely chronic in rural Southwest Nigeria, the policy interventions in the region should focus on providing sustainable social protection strategies (for instance general price subsidies, cash and conditional cash transfers) to empower the households and assist poor households to accumulate assets through increased investment, diversification of their livelihood activities and employment generation that enhances their mean consumption level.

- Protection versus Promotion Programmes of Government on Poverty: Anti-poverty targeting criteria of these programmes must take into account the factors that prevent the poor from slipping into poverty while giving due attention to the factors that help them overcome poverty.

- Institution of Consumption Variability Reducing Policies: The evidence that there are more vulnerable households also call for policy interventions that reduce consumption variability through reducing exposure to risk or improving the *ex post* coping mechanisms of the vulnerable.

- Improvement in level of educational attainment: Since low level of educational attainment predisposes people to vulnerability and poverty in the region according to this study, it is envisaged that a Universal Basic Education programme (extending to SS3 level) will have a much bigger impact on vulnerability than the current one which prescribes a nine-year mandatory education for all citizens. This will enable people to acquire better education which can lead to improved income and by extension reduced vulnerability to poverty. This is amply demonstrated by the fact that those that have secondary and tertiary education are less vulnerable to poverty.

- Awareness on benefit of small family size: The positive coefficient of household size for vulnerability, chronic poverty and transient poverty suggests that larger family sizes increase the likelihood of future, chronic and transient poverty and consequently higher dependency ratios. Therefore, the Nigerian government's effort at controlling population growth should be intensified possibly through increased access for women to family planning services and increased female education particularly on the impact of large family size on households' vulnerability to poverty. This can be incorporated into the family planning activities.

- Access to credit facilities: Access to credit was found to reduce the chances of being vulnerable, poor and chronically poor, therefore, credit/loan facilities should be made available and accessible to target households at moderate interest rates to reduce the impact of income risks. This could include promotion of savings and credit cooperatives and credit non-governmental organisations. Also, government could assist through relaxation of any stringent guidelines in securing such assistance (especially in the case of formal credit).

- Provision of infrastructure: The significance of infrastructure such as electricity, potable water and public health facilities for VEP, total, chronic and transient poverty is a pointer to policy makers on which and where public resources should be targeted to reduce future poverty. This could be done through the Community Driven Development approach which is an integral part of effective poverty reduction strategy.

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6.4 Suggestions for further Study

Future research is suggested as follows:

- The usage of nationally representative panel data with more than two waves since this study could not cover all the geopolitical zones in Nigeria

- The information in the panel data should be enriched using some qualitative data at the household level and aggregate level data of the study area for each round of survey

- Future research should investigate specific policy responses required to address chronic and transient poverty as well as vulnerability to poverty in Nigeria.

- The use to which actual credit and remittance levels are put and how they influence poverty and vulnerability should be investigated.

- The impact of risks on inflation and exchange rate policies could also be investigated.

- Attempts should also be made to minimize measurement errors in collection of household survey data.

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APPENDIX 1   Government Efforts at Poverty Alleviation in Nigeria

Nigeria has a large economy characterised by rural, agricultural-based traditional sector and is enriched with natural and mineral resources (cocoa, rubber and oil). Regional distribution of poverty in Nigeria showed that poverty is a predominantly rural phenomenon. In other words poverty is evident in all rural communities in Nigeria although not evenly distributed. According to the *Poverty and Agricultural Sector in Nigeria Report* (FOS, 1996), in 1985, 51.4 percent of the population in the rural areas were poor. It declined to 46.0 percent in 1992 and increased to 69.3 in 1996. In 2004, 63.3 percent of the poor were living in the rural areas (Akinyosoye, 2004). The International Fund for Agricultural Development (IFAD) identifies factors such as neglect, disease and non-involvement in decision making as being responsible for the poverty situation in rural Nigeria (IFAD, 1993). These factors have resulted in inadequate access to education, health facilities, potable water, electricity and roads. The consequences are low literacy level and poor health standards due to undernourishment and diseases, as well as low economic productivity which constitute a major threat to the rural poor, increasing their vulnerability and putting at risk the entire asset base of affected households. All of these have aggravated the poverty situation in Nigeria, resulting in the migration of the rural populace to urban areas (Okoronkwo, 2007).

The concern over increasing poverty levels especially in Nigeria has led to the conceptualization and implementation of various poverty alleviation programmes by the government and donor agencies as a means of improving the standard of living of the people. The poverty alleviation measures implemented up to 2001 have focused more on growth, basic needs and rural development approaches. These measures were divided into three eras in a critical review by Ogwumike (2001) and Obadan (2001).

- **The Pre-SAP Era**

  In the era before the introduction of SAP, poverty reduction was not the direct focus of development planning and management. Government only showed concern for poverty reduction indirectly. For example, the objectives of the First, Second and Third National Development Plan in Nigeria included the development of opportunities in health, employment and education as well as improvement of access to these opportunities. If the

objectives had been achieved, it could have led to poverty alleviation. Similarly, the Fourth National Development Plan, which appeared to be more precise in the specification of objectives that are associated with poverty reduction, emphasized increase in real income of the average citizen as well as reduction of income inequality, among other things (Ogwumike, 1987 and 1998).

During this era, national development plans and many of the programmes which were put in place in Nigeria by the government (either wholly or in association with international agencies) had positive effects on poverty reduction although the target population for some of the programmes were not specified explicitly as poor people or communities (Ogwumike, 1995 and 1998). Examples are, the River Basin Development Authorities (RBDA), the Agricultural Development Programmes (ADP), the Agricultural Credit Guarantee Scheme (ACGS), the Rural Electrification Scheme (RES), and the Rural Banking Programme (RBP). Most of these programmes were designed to take care of such objectives as employment generation, enhancing agricultural output and income, and stemming the tide of rural-urban migration, which no doubt affected poverty reduction. Despite some significant degree of success made by some of these programmes, most of them could not be sustained. In fact, with time, many of them failed as a result of diversion from the original focus. For instance, the Rural Banking and the Agricultural Credit Guarantee Scheme at many stages failed to deliver the desired credit for agricultural and rural transformation because a lot of savings were mobilized in the rural areas only to be diverted to urban areas in form of credits/investments. Other notable poverty reduction related programmes that were put in place in Nigeria before the advent of the Structural Adjustment Programme (SAP) include Operation Feed the Nation (OFN) set up in 1977, Free and Compulsory primary Education (FCPE) set up also in 1977 and Green Revolution established in 1980. Both OFN and Green Revolution were set up to boost agricultural production and improve the general performance of the agricultural sector among other things. These programmes made some laudable impact: they enhanced the quality of life of many Nigerians. But the programmes could not be sustained due to lack of political will and commitment, policy instability and insufficient involvement of the beneficiaries in these programmes (CBN, 1998).

- **The SAP Era**

A conscious policy effort by government towards poverty alleviation began in Nigeria during the era of Structural Adjustment Programme (SAP). The severe economic crisis in Nigeria in the early 1980s worsened the quality of life of most Nigerians. The government made a determined effort to check the crisis through the adoption of SAP, the implementation of which however, further worsened the living conditions of many Nigerians, especially the poor who were the most vulnerable group. This made the government design and implement many poverty alleviation programmes between 1986 and 1993. Also, under the guided deregulation that spanned the period 1993 to 1998, more poverty reduction programmes were put in place by government. Many of these programmes had varied impact on poverty alleviation. For example, the establishment of the Directorate of Food, roads and Rural Infrastructure (DFRRI) in not only radically departed from the previous programmes, but also recognized the complementaries associated with basic needs such as food, shelter and potable water. This integrated approach to rural development, no doubt, provided the necessary basic infrastructures that could stimulate the growth of agro-allied small-scale enterprises in rural areas. Furthermore, DFRRI impacted positively on food production. However, DFRRI could not achieve many of its objectives owing to many factors, which include lack of standards for project harmonization and effective mechanisms for co-ordination among the three tiers of government, and between DFRRI and the levels of government.

The National Directorate of Employment (NDE) was the main organ for employment creation during this period. The objectives of NDE were to design and implement programmes to combat mass unemployment and articulate policies aimed at developing work programmes with labour intensive potentials. Given that poverty manifests itself in the form of unemployment and underemployment, the schemes/programmes of NDE could be said to have a poverty alleviation focus. For instance, the directorate has four main programmes that not only create jobs but also enhance the productivity and income earning potentials of the youths and other beneficiaries. These programmes include the Vocational Skills Development Programme (VSD), the Special Public works Programme (SPW), the Small Scale Enterprises Programme (SSE) and the Agricultural Employment Programme. However, the Directorate has not been adequately funded which is why it has not been

possible for it to cope with the needs of the ever increasing number of job seekers in the country (Ogwumike, 2001).

The Better Life Programme (BLP) was set up among its other objectives, to enhance the quality of life of rural women, as poverty in Nigeria is an essentially rural phenomenon with the rural women being the worst affected. This is owing to lack of basic skills and education necessary for gainful employment among this class of Nigerians. For this reason, the targeting of women in the fight against poverty should no doubt significantly reduce aggregate level of poverty in the country. The Better Life Programme, therefore, tried to harness the potentials of rural women, thereby impacting positively on their economic activities and incomes. The scheme improved the quality of life of many women through the distribution of various inputs, the granting of easy credits, and the establishment of various educational/enlightenment programmes. Based on available evidence, Ogwumike (1988) concludes that the BLP made tremendous impact with regard to poverty alleviation. However, the success of the programme was short-lived: not only was the programme hijacked by position-seeking individuals, but the resources earmarked for it were also diverted and used for personal enrichment.

The People's Bank of Nigeria (PBN), another poverty-alleviating initiative, was set up to encourage savings and provide credit facilities for the underprivileged in both urban and rural areas. Similarly, Community Banks (CB) were established to provide banking facilities for rural dwellers as well as to support micro-enterprises in urban areas (Oladeji and Abiola, 1998, Yusuf, 1994). These two banking schemes were established in recognition of the indispensable role of finance in poverty alleviation. Although the two banking schemes had some success, many of their goals and objectives were never realized. The schemes had been bedevilled with many adverse factors including corruption and gross mismanagement.

The Family Support Programme (FSP) was set up in to provide health care delivery, child welfare, youth development, and improved nutritional status to families in rural areas, while the Family Economic Advancement Programme (FEAP) was established to provide credit facilities to cooperative societies to support the establishment of cottage industries in both rural and urban areas. The latter programme was also designed to create employment opportunities at ward levels, encourage the design and manufacture of appropriate plants,

machinery and equipment, and provide opportunities for the training of ward-based business operators (Oladeji and Abiola, 1998). In summary, both FSP and FEAP were designed and set up to improve the quality of life of rural dwellers. Although the FSP recorded several remarkable achievements such as the establishment of many nursery and primary schools, construction of many public toilets and setting up of many vocational schools, many of these projects were not properly executed and could thus not be sustained. Consequently, many of the poor in these communities could not really benefit from these projects while they lasted. Other several programmes such as National Agricultural Land Development Authority (NALDA), the Agricultural Development Programmes (ADPs), and the Strategic Grains Reserves Programmes (SGRP) have in one way or the other impacted positively on the agricultural sector and by implication reduced poverty.

Similarly, in the health, education and housing sectors there were several poverty reducing programmes which were implemented. For example, the Primary Health Care Scheme and the Guinea Worm Eradication Programme (GWEP). Although GWEP recorded a tremendous success, the effectiveness of the primary health care programme was grossly reduced due to inadequate funding, lack of equipment; essential drugs and trained manpower (Egware, 1997). In the housing sector, the National Housing Policy brought about the national housing fund managed by the Federal Mortgage Bank of Nigeria. The Federal Housing Authority and various state governments have been involved in the direct construction of housing units. However, despite all these efforts, it is common knowledge that many Nigerians are homeless owing to lack of adequate housing facilities or the high cost of accommodation. The National Housing Scheme thus needs to be re-focused so as to make its loans/facilities accessible to majority of Nigerians. As stated earlier, on the whole, poverty alleviation programmes/efforts in Nigeria have failed to produce the desired results. The major reasons for this failure include: programme inconsistency, poor implementation, corruption of government officials and public servants, poor targeting mechanisms and failure to focus directly on the poor (Kankwenda *et al*., 2000; Ogwumike, 1998; and Egware, 1997).

- **The Democratic Era**

At the inception of the Obasanjo led democratic government, the Government embarked on the Poverty Alleviation Programme (PAP). The Poverty Alleviation

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Programme (PAP) was an interim measure introduced early in 2000 to address the problems of rising unemployment and crime wave, particularly among youths. It was ultimately aimed at increasing the welfare of Nigerians. Essentially, the primary objectives of PAP are three-fold: to reduce the problem of unemployment and hence raise effective demand in the economy; to increase the productiveness of the economy; and to drastically reduce the embarrassing crime wave in the society. To actualize the objectives of PAP, several measures were incorporated in the 2000 Budget as well as other policy documents. These measures included increase in the salary of public sector workers that had been decimated over the past two decades; improving the supervisory capacity within the nation's institutions; rationalization of organizations and methods within the system, particularly that of the existing 16 poverty alleviation institutions in Nigeria; encouraging and rewarding all deserving Nigerians for industry and enterprise; substantial reduction of avenues for easy and illegitimate acquisition of wealth; and the launching of Universal Basic Education Programme. However, in implementation, the programme appeared to be ad-hoc in orientation with little attention paid to the policy framework. The emphasis on massive construction and other public work projects made it look like a one-off affair rather than making it a revolving one. The programme also paid little attention to the framework of allocation of funds, sustainability aspect of the PAP and the needed collaborative arrangements for its success. The political connotation of the PAP served as an important threat to the success of the programme. The programme was portrayed as the ruling party's programme. Therefore, it had met with resistance from the chief executives of the states controlled by other political parties. This was quite noticeable in the launching of the programme at the state level in February 2000. Besides, the PAP also emphasized provision of credit to micro-enterprises and trading to the exclusion of income and employment generating projects (Ogwumike, 2001).

However, at the end of 2000 budget implementation, many Nigerians were yet to feel the impact of the programme. Several reasons may be advanced for this. One major reason has to do with including the failure to identify the poor, the nature of their poverty and those at the risk of falling into poverty. Sustainable poverty reduction will, therefore, require not only the proper identification of the poor (including their characteristics and survival strategies), but also a multi-pronged approach, given the multidimensional nature of the

poverty problem. The government took steps to rationalize the various agencies whose activities impact on poverty alleviation. Among the early activities of the Government were the launching of the Universal Basic Education (UBE) Programme, the Poverty Alleviation Programme and the constitution of the Ahmed Joda Panel in 1999 and the Ango Abdullahi Committee in 2000. The immediate concern of the Panel/Committee was the streamlining and rationalization of existing poverty alleviation institutions, and the coordinated implementation and monitoring of relevant schemes and programmes. These culminated in the introduction early in 2001 of the National Poverty Eradication Programme (NAPEP) and the establishment of the National Poverty Eradication Council (NAPEC).

The National Poverty Eradication Programme (NAPEP) was introduced early in 2001. Its focus is on the provision of "strategies for the eradication of absolute poverty in Nigeria" (FRN, 2001). The programme is complemented by the National Poverty Eradication Council (NAPEC) which is to coordinate the poverty-reduction related activities of all the relevant Ministries, Parastatals and Agencies. It has the mandate to ensure that the wide range of activities are centrally planned, coordinated and complement one another so that the objectives of policy continuity and sustainability are achieved. Upon consideration of the Joda Panel and Abdullahi Committee Reports,

Fourteen (14) core poverty alleviation Ministries were identified as follows: (i) Agriculture and rural Development (ii) Education (iii) Water Resources (iv) Industry (v) Power and Steel (vi) Employment, Labour and Productivity (vii) Women Affairs and Youth Development (viii) Health

(ix) Works and Housing (x) Environment (xi) Solid Minerals Development (xii) Science and Technology (xiii) Finance, and (xiv) National Planning Commission.

Similarly, thirty-seven (37) core poverty alleviation institutions, agencies and programmes were identified. The poverty reduction-related activities of the relevant institutions under NAPEP have been classified into four, namely:

(i) Youth Empowerment Scheme (YES) which deals with capacity acquisition, mandatory attachment, productivity improvement, credit delivery, technology development and enterprise promotion;

(ii) Rural Infrastructure Development Scheme (RIDS) which deals with the provision of potable and irrigation water, transport (rural and urban), rural energy and power support;

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(iii) Social Welfare Service Scheme (SOWESS) which deals with special education, primary healthcare services, establishment and maintenance of recreational centres, public awareness facilities, youth and student hostel development, environmental protection facilities, food security provisions, micro and macro credits delivery, rural telecommunications facilities, provision of mass transit, and maintenance culture; and

(iv) Natural Resource Development and Conservation Scheme (NRDCS) which deals with the harnessing of the agricultural, water, solid mineral resources, conservation of land and space (beaches and reclaimed land) particularly for the convenient and effective utilisation by small-scale operators and the immediate community. In effect, the current poverty eradication programme of the country is centered on youth empowerment, rural infrastructure development, provision of social welfare services and natural resource development and conservation.

The government of Nigeria prepared a Poverty Reduction Strategy Paper (PRSP) under the supervision of the Economic Policy Coordinating Committee. It contained a comprehensive poverty reduction plan and strategies to address it over a time horizon. A National Core Team which was inaugurated in February, 2001, was responsible for the technical preparation of the PRSP in two stages. The first stage involved the preparation of an Interim-Poverty Reduction Strategy Paper (I-PRSP), which dovetailed into the second stage of preparing the full PRSP. The I-PRSP was introduced to avoid delays in receiving international assistance which donors have predicated on the production of a PRSP. The I-PRSP includes a stocktaking of the country's current mechanism for poverty reduction and a road map of how the country will develop its full PRSP. The I-PRSP was completed in August 2001. The government also tried to reduce poverty through upward review of salaries and wages. For example, those who were pushed into temporary or transitory poverty, especially in the civil service and during SAP, were gradually being moved out of poverty through this process (Obadan, 2001).

The National Economic Empowerment and Development Strategy (NEEDS) 2004-2007 which is Nigeria's reform based medium-term plan for economic recovery, growth and development, was conceptualized in 2003 and launched in 2004, as a response to the numerous challenges facing the nation. Given the parlous state of the economy, an integrated and coordinated development approach was adopted, with the sub-national

governments developing complimentary medium term plans: State Economic Empowerment and Development Strategy (SEEDS). The NEEDS is the first Nigerian development plan that integrates economic development efforts at the federal and state levels. It does not confine itself to specific sectors or limit itself to addressing only the major challenges identified. Instead, it looks at the big picture, examining how the challenges identified in each sector affect one another. The conceptual issues on NEEDS/SEEDS are based on four goals of poverty reduction, wealth creation, employment generation and value re-orientation.

The framework for actualizing the goals of NEEDS was anchored on three pillars:

• Empowering people and improving social delivery;

• Fostering private sector led growth through creating the appropriate enabling environment; and

• Enhancing the efficiency and effectiveness of government, by changing the way government does its work.

It used the information and insights generated during the two-year effort to prepare the Interim Poverty Reduction Strategy Paper and the wide consultative and participatory processes associated with it. The International Monetary Fund (IMF), had earlier endorsed NEEDS as the Nigeria's Poverty Reduction Strategy Paper. However, it did correctly identify in the state's implementation of the program that more work needed to be done to better understand the nature and dynamics of poverty in Nigeria (Adoghame, 2007).

On August 1st 2007, The President Alhaji Umaru Musa Yar'Adua regime, enunciated a seven-point agenda to tackle the numerous problems facing the Nigerian economy. These include:

Power and Energy: The infrastructural reforms in the power sector would aim at the development of sufficient and adequate power supply to ensure Nigeria's ability to compete as a modern economy and achieve full industrialization by the year 2015. The President declared a national emergency on energy and power supply. The plan is to increase power supply to 10,000 megawatts (mw) in 2011 and 50,000 mw by 2015.

Infrastructure: At the core of the infrastructural reform is the need to move from an extractive industry fraught with corruption with no value added to the productive sector of the economy. The aim is to free resources currently deployed through joint venture cash

calls for development of the social sector institutions such as education and health. It will also end the attendant lack of transparency currently associated with NNPC operations.

Food Security: Food reforms is primarily agrarian based, anchored on the desire for wealth creation in order to make a shift from the undue emphasis on oil and gas. The emphasis would be on the development of modern technology, research, financial injection into research, production and the development of agricultural inputs. This is expected to revolutionalize the agricultural sector leading to a 5-10 fold increase in yield and food production. This will result in massive domestic and commercial outputs and technological knowledge transfer to farmers.

Wealth Creation: By virtue of its reliance on revenue from non-renewal oil, Nigeria is yet to develop industrial capacity. This reform is focused on wealth creation through the diversification of production, especially, in the agricultural and solid mineral sub-sectors.

Transport Sector: The transport sector in Nigeria, characterized by poor state and network of roads is an inefficient means of mass transportation of people and goods. Transport reforms would involve road and rail development. This would be kicked off with the rehabilitation and modernization of the Nigerian railway and the construction of new road network across the country as well as constant rehabilitation of existing ones. The goal is to modernize the Nigerian transport system.

Land Reforms: The main thrust of the land reform is to change the existing land laws and ensure the emergence of land reforms that will optimize Nigeria's growth through the release of land for commercial farming and other large scale business by the private sector. The final result will ensure unhindered access to land to boost output and improve capacity for wealth creation.

Security: The assurance of security of life and property is to improve the internal and external investment climate. Thus, security is seen as not only a constitutional requirement but also a necessary infrastructure for the development of a modern Nigeria. With its particular needs, the Niger Delta security issue is the primary focus; organize not with physical policing or military security, but through honest and accurate dialogue between the people and the Federal Government.

Education: The two-fold reforms in the educational sector are to ensure the minimum acceptable international standards of education for all. With that achieved, a strategic

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educational development plan will ensure excellence in both the tutoring and learning of skills in science and technology by students who will be seen as the future innovators and industrialists of Nigeria. This reform will be achieved through massive injection of both funds and human capital into the education sector.

However, the 7-Point Agenda was not presented as a development blueprint before his demise in 2010. President Yar'Adua had made promises like the other presidential candidates in the other parties. Having been declared winner of the elections and was being inaugurated, he made mention of his promises and reiterated his resolve to fulfil them to honour the people that elected him (Onyekakah, 2008).

Nigeria's Vision 20:2020 :The First National Implementation Plan (1st NIP), for Nigeria's Vision 20:20 20, (NV20:2020), covers the period 2010 – 2013 and has been formulated to serve effectively as Nigeria's 5th National Development Plan, as it contains both the Federal Government and State Governments' Investment Plans for 2010-2013 time-frame. The strategic framework for the 1st NIP is premised on the Vision of Nigeria as a nation built on strong democratic principles, economic efficiency and competitiveness, with a view to becoming one of the twenty largest economies in the world by the year 2020 with a GDP growth target of not less than US$ 900billion and a per capita income of US$4000 per annum.

The Vision is hinged on optimizing the country's key sources of economic growth, guaranteeing the productivity and well-being of our people and fostering sustainable economic development, under a free enterprise and private sector-led model that is facilitated by the public sector. The first four years of the Vision is expected to set the stage for the economic transformation of Nigeria, towards achieving the nation's long term vision. The vision 20: 2020 Economic Transformation Blueprint, which was developed in 2009, is the first of three four-year medium-term implementation plans. The theme for the 1st NIP is 'Accelerating development, competitiveness and wealth creation". This theme is in consonance with the nation's Vision of engendering rapid socio-economic transformation that will translate into substantial improvements in the wellbeing and quality of life of Nigerians. The 1st NIP is, therefore, a reflection of government's programme of action towards the actualization of the nation's aspiration.

The platform for the success of the Vision as outlined in the document includes: correcting the weaknesses of the revenue allocation mechanism (towards achieving a paradigm shift from "sharing the cake to baking the cake"), intensifying the war against corruption, establishing the mechanism for free and fair elections guided by democratic principles, expansion of investments in critical infrastructure and fostering private sector powered non-oil growth to build the foundation for economic diversification, investing in human capacity development to enhance national competitiveness, entrenching merit as a fundamental principle and core value, addressing threats to national security, deepening reforms in the social sector and extending reforms to sub-national level. The Plan has been articulated to eliminate the major constraints hindering growth and development in order to enable the economy to spring up and attain the desired growth rates. The key challenges to be addressed include the:

- dearth of critical infrastructure such as power and transportation network to support rapid economic development;

- high level of youth and graduate unemployment, a non functional education curriculum that does not equip the Nigerian graduates to be job creators and the eroding quality of education in Nigerian schools;

- overdependence on oil as major source of national income, which is a potential threat to sustainable development;

- poor accountability in government, which impacts the value our people get for money spent by government agencies;

- uncoordinated approach to addressing the development needs of our people, which accounts for the gap between planned and actual project outcomes;

- sub-optimal value creation in productive activities such as agriculture, oil and gas and manufacturing; and

- relatively high cost of production for manufactured goods partly due to the absence of a robust import substitution program to support local sourcing of manufacturing inputs; a very weak research for development and innovation culture across public and private institutions and disparities in income.

These are major constraints to economic growth and development, through their debilitating impact on productivity, investments in-flow, competitiveness, the cost of doing business,

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and peoples' confidence in the economy and governance. Achieving the GDP target by 2013 is directly linked to the government's ability to overcome these challenges and lay a solid foundation for growth and sustainability in priority sectors of the Nigerian economy (Nigeria Vision 20: 2020 implementation plan draft document)

Appendix II: State, Local Government Area and Enumeration Area Sampled

State	Local Government Area	Enumeration Area
Oyo	Surulere	Maya
		Ogala
		A.U.D Primary School
		Ogojo
		Ladokun
		Bungalow
		Sekengbede
		Apaana
		Elemuye
		Onipaanu
	Lagelu	Apatere Village
		Apostolic Faith Chur
		Alapake Mosque
		Hon.Olomowale
		Arikuyeri Village
		Alhaji Ajisegiri
		Yekeen Olawole
		Alhaji Ahmed Gafari
		Kajola Ejioku
	Iseyin	Salawu Adeleke
		Lasisi Omibike
		Budo Taju Area
		Adeoye Jacob
		Lasisi Ajani Mogaji
		Aba Obe 2
		Oyeniran Aro
		Rashidi Olaiya
		Baale Agbe Alajuba
		Koroyi Compound

Osun	Ejigbo	Alh.Gasali Adetokun
		Gaa Kelani
		Raji Ajao
		Gaa Ayuba
		Joseph Abegunde
		Abiodun Akinwale
		Akinyemi Ojeleke
		Adiatu Olosunde
		Abidoye Ojo
		Mustapha Olonade
	Egbedore	C.A.C.Church
		Chief S.A Akanni
		Chief Odofin
		Kehinde Ogundele
		Pa.Ramoni Oderinde
		Alhaja Sade Falomo
		Yusuf Oyewumi
		Rafatu Abegbe
		Laroyan
		Tiamiyu Olaniyan
	Orolu	Ipomu Village
		Daniel Ojo
		Chief Sunday Adeyemi
		Oyeniran Jimoh
		Ikimo Oloye
		Sanni Adedokun
		Akibu Oriade
		Alh.Azeez Asumo
		Pastor Emma Alani
		Azeez Aralamo

Source: National Bureau of Statistics EA Listing, 2009

Appendix III: Table of Analysis of Objectives of the Study

S/No	Objectives	Meaning of Objectives	Required Data	Analytical Tool
i	To generate a vulnerability profile of rural households in South Western Nigeria	To identify the characteristics of vulnerable households and examine how vulnerability differs among different groups or categories of households	Consumption expenditure of the households Socioeconomic/ Demographic characteristics of households e.g. household size, Dependency burden, Age of household head, gender of household head, Marital status of household head, educational status of household head, Occupational status of household head and Years of experience in primary occupation. Other variables include Land size, Income level, Distance to health facility, Access to credit, remittances, electricity, potable water and sanitary means of excreta disposal, Membership of association and Room ratio	Poverty line, Three-stage Feasible Generalized Least Squares, Cumulative density of the standard normal, Vulnerability threshold
ii	To examine the correlates of poverty and vulnerability to poverty	To investigate the factors influencing poverty and vulnerability in the study area.	Gender and age of household head, Household size, Dependency burden, Household type, Educational status of household head, Primary Occupation and years of experience in primary occupation of household head, Distance to health facility, Access to credit, remittances, electricity, potable water and sanitary means of excreta disposal, Membership of association, Room ratio and Construction material of outside wall.	Probit Model, Tobit Model, .

iii	To assess the relationship between vulnerability and poverty status	To examine whether being vulnerable in the first period translates to being poor or influences poverty status in the second period.	Gender and age of household head, Household size, Dependency burden, Household type, Educational status of household head, Primary Occupation and years of experience in primary occupation of household head, Distance to health facility, Access to credit, remittances, electricity, potable water and sanitary means of excreta disposal, Membership of association, Room ratio and Construction material of outside wall with the inclusion of Vulnerability as Expected poverty indices estimated for each household in the model.	Probit Model
iv	To examine the factors influencing poverty transitions in rural South west Nigeria	To investigate the shift and factors influencing the shift in poverty status between the two periods.	Same as in iii above	First Order Markov Model, Transition Matrices, Multinomial Logit Model

Appendix IV: QUESTIONNAIRE

DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF IBADAN, IBADAN, NIGERIA

Questionnaire on Vulnerability and Poverty Transitions among Rural Households in South Western Nigeria

Dear Respondent,

Your cooperation is solicited in providing reliable and accurate information on the following questions. The researcher is a student in the above named Department. `

The purpose of the study is strictly academic. All information supplied will be treated with utmost confidence.

Thank you.

SURVEY INFORMATION

Name of Enumerator:…………………………………………………………………………......

Date of Interview:……………………………………………………………………………………

State:…………………………………………………………………………………………………….

Local Government Area:………………………………………………………………………..

Name:…………………………………………………………………........................

Household (HH)No:……………………………………………………………………………

Name of Head of HH:………………………………………………………………………...

Address of Head of HH:………………………………………………………………………...

SOCIO- ECONOMIC/DEMOGRAPHIC CHARACTERISTICS

1. Gender of Household head (i) Male [   ]   (ii) Female [   ]

2. Age of Household head in years…………………………………………

3. Marital status of Household head (i) Single [ ] (ii) Married [Monogamous]   [   ]

     (iii) Married [Polygamous] [   ] (iv) Informal/ loose Union [   ]

     (v) Separated [   ] (vi) Divorced [   ] (vii) Widowed [   ]

4.   Number of person(s) in the household (i) Male……….….… (ii) Female …………..

5.   Number of children (i) Male…………… (ii) Female …….……………

6.   How many members of your household fall into the following age groups?

Age Range	Male	Female
0 – 5		
6 – 15		
16 – 35		
36 – 50		
51 – 60		
>60		

7.   What is the highest educational level completed by the household head?

(i)   None [   ] (ii) Primary [   ] (iii) Modern school [   ]

(iv) O'Level/SSCE [   ] (v) Vocational/Technical [   ] (vi) Tertiary [   ]

(vii)   Koranic   school   [   ]   (vii)   Other

(specify)…………………………………………………………………

8.   What is your primary/main occupation?

(i)   Farming [   ] (ii) Trading [ ] (iii) Government salaried job [   ] (iv)

Private business [   ] (v) Artisan [   ]

 (vi) Other (specify) …………………………………………………………………

9.   If Primary occupation is farming, how long have you been in farming?
………………………

10.   What is the size of your farm in hectares? ………………………………………

11.   What is the distance between your farm and the nearest market in km ………………

12.

Member of Household	Primary Occupation	Income from Primary Occupation	Secondary Occupation	Income from Secondary Occupation
Household head				
Spouse 1				
Spouse 2				
Spouse 3				
Spouse 4				
Others (specify)				

13.   Do you own land? (i) Yes [   ] (ii) N o [   ]

14.   If yes, how much land is owned by the household (hectares)?………

15.   How did you acquire the land? (i) Inheritance [   ] (ii) Tenancy [   ]   (iii) Leasehold   [   ] (iv) Gift [   ] (v) Other (specify) ……………..

16.   Do you have access to extension agent in your village? (i) Yes [   ] (ii) N o [   ]

17.   Which of these does your household possess? (i) Bicycle [   ] (ii) Motor cycle [   ] (iii) Motor vehicle [   ] (iv) Television [   ] (v) Radio [   ] (v) Other (specify) ……………..

HEALTH

18.   Which of these illness has any member of your household suffered in the last 12 months (i) Malaria [   ] (ii) Yellow fever [   ] (iii) Guinea worm   [   ]
(iv) Tuberculosis [   ] (v) Measles [   ] (iv) Chicken pox   ] (vii) Cholera [   ]
(viii) Other (specify) ……………..

19.   How many members of your household has had malaria in the last 12 months? ……………………………………………………………………………….……

20.   Where did you they visit mainly for treatment? (i)Self Treatment (ii) Pharmacy/drug store [   ]   (iii) Public hospital [   ] (iv) Private Hospital [   ]
(v) Herbal/traditional healing home   [   ]   (vi) Spiritualist [   ] (vii). Other (specify)………….

21.   What is the distance between your house and the nearest health facility in km? …….

HOUSING, UTILITIES AND AMENITIES

22.   Do you own a house? (i) Yes [   ] (ii) No [   ]

23.   What type of dwelling does your household live in

(i) Single room [   ] (ii) Apartment/flat [   ] (iii) Duplex [   ] (iv) Whole Building [   ] (v) Other (specify) ………………………………………………

24.   How many rooms does this household occupy? (exclude bathrooms, toilets, kitchen, store) ……………………………………………………….……………………

25.   What is the distance between your house and the nearest food market in km?………..………

26.   What type of toilet is used by your household? (i) Bush [   ]
(ii) Toilet on water [   ] (iii) flush to septic tank [   ] (iv) Pail/bucket [   ] (v) Covered pit latrine [   ] (vi) Uncovered pit latrine [   ] (vii) VIP latrine [   ] (viii) Other (specify)……………………………………………………………

27.   What is the main construction material of outside walls?
(i) Mud [   ] (ii) Stone [   ] (iii) Burnt bricks [   ] (iv) Cement/concrete [   ] (v) wood/Bamboo [   ] (vi) Iron sheets [   ] (vii) Cardboard [   ]
(viii) Other (specify)………………………..…………………………………..………

28.   What is the main source of drinking water for the household?
(i) Pipe borne water treated [   ] (ii) Pipe borne untreated [   ] (iii) Borehole/Hand pump [   ] (f) Protected well [   ] (v) Unprotected well/Rainwater [   ] (vi) River, lake or pond [   ]
(vii) Vendor, Truck [   ] (8) Other specify……………………………………..………….

29.   What is the distance between your house and the source of drinking water in km?………..………

30.   What is the main source of lighting for your dwelling?
(i) Kerosene [   ] (ii) Gas [   ] (iii) Mains electricity [   ] (iv) Electricity from Generator [   ] (v) Candles [   ] (vi) Firewood [   ] (vii) Battery [   ]

31.   What is the main fuel used by the household for cooking?

(i) Firewood [   ] (ii) Charcoal [   ] (iii) Kerosene/oil [   ] (vi) Gas [   ] (v)

Electricity   [   ] (vi) Crop residue (sawdust) [   ]

(vii) Animal waste [   ] (viii)

Other (specify) ………………………………….…………

32.   Where do you dispose your waste materials?...

33.   What is the distance between your house and the public waste dumping site in km?………..………

SOCIAL CAPITAL

34.   Are you a member of any local group or association?

   (i) Yes [   ] (ii) No [   ]

35.   Type of Association/Institution of household members,

Please tick as many as applicable for each member of household that is involved in local level institutions.

Association/Institution	Household Head	Spouses	Other members of Household (Please indicate the actual number)
Community Based Association			
Gender Association			
Age Group			
Religious group			
Occupational group			
Environmental Protection/Natural Resources Group			
Cooperatives societies			
Cultural groups			
Non Governmental Organizations			
Others specify			

36.   Please list the three most important associations to your household

(i) _____ (ii) _____ (iii) _____

37.   On the basis of the above, please use the table below to provide information on the three most important associations/institutions to your household

	Association	Association	Association
Do all members of the association live within the same area (yes/No			
Do all members belong to the same clan/family/lineage (Yes/No)			
Are all members of the same occupation? (Yes/No)			
Do members belong to the same income group? (Yes/No)			
Are members of the same religion? (Yes/No)			
Are the association members of the same sex (Yes/No)			
Do members belong to the same age group (Yes/No)			
Are members of the same educational qualification? (Yes/No)			
Do members trust one another (Yes/No)			
Do members have the same beliefs and cultural practices (Yes/No)			

38. How many times do the association(s) you belong to meet in a year and how many times do you attend?

Association	Actual number of meetings	Number of times attended per annum by Household head	
		Household Head	Spouse

39. Do you have access to any form of credit? (i) Yes [   ] (ii) No [   ]

40. If yes, what is the source of credit?

(i)   Friends/Relatives [   ] (ii) Cooperative [   ] (iii)Money lenders [   ] (iv) Commercial/Community Banks [   ] (v) Microfinance Banks [   ] (vi) Others (specify)…………………………….…………………

41. What is your main source of information about Government activities in your community?

(i)   None [   ] (ii) Relative/friends [   ] (iii) Community/Local paper [   ]
(iv) National Newspapers [   ] (v) Television [   ] (vi) Radio [   ] (vii) Groups or Associations [   ] (viii) Community leaders [   ] (ix) Agent of Government [   ]

(x)   Other (specify)………………………………………………………….………………………….

42. Do you have children or other relatives not resident with you, that send money to you?(i)Yes [   ] (ii) No [   ]

HOUSEHOLD CONSUMPTION

43. How much does your household spend on the following non food items?

Item	Amount Spent Monthly	Amount Spent Yearly
Clothing/Footwear		
Rent (housing)		
Furniture/household goods & Appliances		

(Chair, table, carpet etc)		
Health care		
Education (school fees, books, uniform and writing materials)		
Transportation		
Saving		
Communication (e.g. recharge cards)		
Toiletries (soap, detergent, tooth paste etc)		
Recreation		
Fuel and Power		
Water		
Repairs		
Remittances (gift and donation to others)		
Other (specify)		

44.   How much do you spend on the following food items?

Item	Amount Spent Monthly	Own Production
Maize		
Rice		
Guinea Corn		
Bread		
Yam Flour		
Cassava Flour		
Plantain Flour		
Wheat Flour		
Cassava		
Cocoyam		
Potato		
Plantain		

Yam		
Fufu		
Beans		
Vegetable oil		
Palm oil		
Fruits & Vegetables		
Meat (beef, chicken, pork)		
Eggs		
Fish		
Beverages (tea) etc		
Prepared Meals		
Soft Drinks		
Soya bean		
Groundnut		
Other (Specify)		

45.   How many times do you eat per day in this household?...........................

SHOCKS AND COPING STRATEGIES

46.   Have you experienced any of these adverse events in the last 12months? Please tick as many as applicable.

(a)   Loss of employment   [   ]

(b)   High price of input (e.g. fertilizer)   [   ]

(c)   Low agricultural production   [   ]

(d)   Loss of close relative   [   ]

(e)   Loss of Property due to conflict   [   ]

(f)   Accident   [   ]

(g)   Hard economic times/decline of our economy   [   ]

(h)   Fire outbreak   [   ]

(i)   Flood   [   ]

(j)   Business not doing well   [   ]

(k) Price fluctuation (especially of food)   [   ]

(l) Policy change (e.g. ban on importation of rice)   [   ]

(m) Ill heath   [   ]

(n) Theft   [   ]

(o) Pests & Disease outbreak   [   ]

(p) Rainfall shock(low rainfall)   [   ]

(q) Non payment of salary   [   ]

(r) Non availability of credit   [   ]

(s) Non availability of labour   [   ]

(t) Other (specify)…………………………………………………………………….

47. In times of need, people may need to cope in different ways. Among the following ways, which were the **THREE** most important ways in which you coped? **Write A, B.C in order of importance starting from the most important.**

(a) Piecework on farms belonging to other Household member   [   ]

(b) Other piecework   [   ]

(c) Substituting ordinary meals with fruits   [   ]

(d) Reducing the number of meals or food in-take   [   ]

(e) Reducing other Household items such as soap, tissue detergent [   ]

(f) Informal borrowing (friends, Neighbors)   [   ]

(g) Formal borrowing in cash or kind (e.g. Bank, Employers etc)   [   ]

(h) Help from religious or charitable organization   [   ]

(i) Pulling children out of school   [   ]

(j) Sales of Assets such as cattle, TV etc.   [   ]

(k) Petty trading   [   ]

(l) Personal Savings   [   ]

(m) Asking from friends, Neighbors etc   [   ]

(n) Begging from the streets   [   ]

(o) Trust in God   [   ]

(p) Others (specify)………………………………………………………………………