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Trends in Household Consumption Expenditure among the Six Geopolitical Zones in Nigeria

By

Ghazali Ado Jibril

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Supervisor: Dr Amiena Bayat

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Abstract

This study examined the trends in household consumption expenditure among the six geopolitical zones in Nigeria within the context of Engel's law of consumption. The study specifically set out to achieve the following objectives: to determine the trends in household consumption expenditure in Nigeria; to examine the food, health, education and non-food expenditures of households in Nigeria; to estimate the food share of total household expenditure through the estimation of the Engel curve for the six geopolitical zones of Nigeria; to determine if there are consumption economies of scale among households by estimating the Working-Leser form of the Engel curve; and, to examine consumption inequality among households in the six geopolitical zones of Nigeria.

The study used the Nigeria General Household Survey data wave 1 (2010-2011) and wave 2 (2012-2013) to estimate the Working-Leser form of the Engel curve to determine households' budget share for food consumption and the scale of consumption among the six geopolitical zones in Nigeria. The study used the Gini coefficient to measure consumption inequality among and between the six geopolitical zones.

The findings of the study revealed that there are economies of scale in food expenditure in Nigeria and that there is variation among the six geopolitical zones in terms of economies of scale, etc. Secondly, with respect to trends in consumption, the first trend observed in the data was that total household expenditure generally follows an upward trend with household expenditure in wave 2 being slightly higher than expenditure in wave 1, signifying an increase in total expenditure in Nigeria in the period of study. Also, annual mean expenditure on food was high in both wave 1 and wave 2, while mean expenditure on education, health and non-food was low. With respect to the individual components of household expenditure, the pattern shows a quantitative as well as a qualitative increase in food consumption in both wave 1 and wave 2 while the education, health and non-food categories of expenditure declined in both wave 1 and wave 2. Thirdly, with respect to expenditure, it was discovered that food expenditure accounts for the largest share of household expenditure in Nigeria in the six geopolitical zones, while there is low expenditure on health and education in Nigeria among the zones. Fourthly, the study revealed evidence of consumption inequality in Nigeria. At the national level, consumption

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inequality is high for health and education at 0.74 and 0.77 respectively, and at the level of the zones, the highest consumption inequality is in the North West geopolitical zone, 0.81 and 0.77 in health and education expenditure respectively. The study shows that not only are there more people poor in Nigeria, but that the gap between poor and wealthy has widened. However, urban-rural consumption inequality is generally low in Nigeria as consumption inequality in rural areas is lower in all categories of household expenditure except education and health. The findings of the study hold several policy implications for the federal government, including that the federal government should consider increasing the minimum wage in the country to help boost household consumption expenditure. Also, government policies should address consumption inequality among the six geopolitical zones in Nigeria, especially with respect to education and health expenditure. Government and the private sector should invest massively in both the health care and education sectors in order to bring about economies of scale to lower the costs of services and goods and increase human capital.

Keywords: Consumption expenditure, aggregate demand, inequality, poverty, households, Engel curve, Engel's law, geopolitical zones
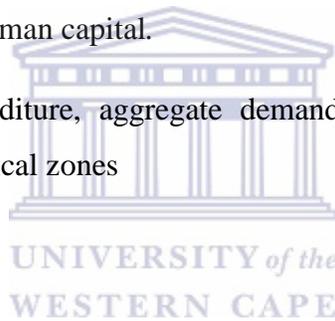
Declaration

I declare that *Trends in Household Consumption among the Six Geopolitical zones in Nigeria* is my work, that it has not been submitted earlier for the purpose of any degree examination in any other university, and that all academic resources consulted and used have been duly acknowledge as references**.**

Ghazali Ado Jibril   **August 2018**

Signed:………………………..

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CHAPTER ONE: INTRODUCTION

1.1   INTRODUCTION

The consumption pattern of a country depicts the aggregate demand for goods and services in the country. It constitutes about 60% of the total Gross Domestic Product (GDP) of Nigeria (Nigerian National Bureau of Statistics, 2011:10). Consumption patterns also depict the level of welfare and poverty that a nation is experiencing. In every country, an analysis of household consumption expenditure over time is very important because it gives a clear picture of the various components of consumption expenditure of households and consumption trends. Such analyses give insights into the living standards of people and the degree of inequality. This could help in designing appropriate policies related to the production and distribution of goods and services.

Economic prosperity in some countries may bring about affluence in the middle income group and this may change household consumption. Therefore, investigating household expenditure and consumption behaviour is considered to be key to monitoring and explaining inequalities and changes in material living standards and general welfare. Studying expenditure and consumption behaviour of households seems to be an important and promising strategy to extend and supplement mainstream approaches of studying inequality as a key topic of sociological and economic research. The rich spend more on goods and services in absolute terms, but they spend a lower percentage of income on food and other basic necessities. Poor households on the other hand, spend more of their income on food items and less on durable goods (Ngullie & Mishra, 2008:34).

Given the importance of household consumption expenditure as one of the components of GDP in the economy, the longitudinal analysis of the trends of household consumption expenditure has special significance. This is because it is an excellent indicator of the economic well-being of people. If the society is wealthy, proportionately higher expenditure will be made on secondary necessities such as comfort and luxury products and conspicuous consumption. On the other hand, if the society operates at a subsistence level, people will spend proportionately more on food. Engel's law states that the poorer the family, the greater the proportion of its total income it will devote to the provision of food (Chakraborty, 2009:14). In Nigeria, as in many developing

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countries, widespread consumption inequalities exist and persist among households and within the six geopolitical zones in the country. The demographic and socioeconomic characteristics of the household, such as income, size of household, education level, presence of children and geopolitical region contribute to the consumption inequality in Nigeria.

Nigeria is the largest economy in Africa and also the most populous country on the continent with a population of over 170 million people. Nigeria accounts for 47% of the West African population. It is the biggest oil exporter in Africa, with the largest natural gas reserves on the continent. This clearly shows that Nigeria has the largest number of households in Africa and hence a potentially fertile market where consumption of goods and services should be high. The Nigerian economy has enjoyed sustained economic growth. For example, in 2013 and 2014 the annual real GDP growth was 6.3% and 7% respectively. The oil sector has been the main driver of growth, with services contributing about 57%, and manufacturing and agriculture respectively contributing about 9% and 21% (World Bank, 2015:219). The economy is thus diversifying and is becoming more services-oriented, particularly in retail and wholesale trade, real estate, information and communication.

Demographically and socioeconomically speaking, huge regional disparities in income and social outcomes exist in Nigeria, with the northern region registering the highest levels of poverty and social deprivation, compared to the southern part of the country. Poverty is more intense in the North West (approximately 86%) and the North East (78%). Household members in the North West and the North East are four times more likely to have no education than those in the South South region (Ishola, 2014; Ojonta, 2015). The prevalence of malnutrition is highest in the North East and other north-eastern regions and lowest in the South East and the South South (African Development Bank, 2016:13). Overall the unemployment rate in Nigeria was 14.2% in 2016. There are regional disparities in unemployment rates in Nigeria, with rates ranging from 33% in the North East to about 8% in Lagos State (African Development Bank, 2016:14). Although the 15 to 35-year-old cohort accounts for only a third of the workforce in Nigeria, they account for almost two-thirds of the unemployed. Furthermore, in Nigeria there is variation in income across regions. The South West, for example, is the most industrialised among all the regions, hence income is very high in that region, while the North East is the least industrialised. In terms of population, the North West is the most populous followed by the South West, North Central, South East and the South South geopolitical zone, which is the least

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populous. Due to the large population, the northern parts of the country have larger household sizes, while in the southern part average household size is small. As they differ demographically and economically, variations in terms of consumption patterns by geopolitical zone were anticipated. In northern Nigeria with its larger population, for example, the household consumption expenditure, especially for food, will be higher than in the south. However, in the southern part of the country, as a result of higher income levels, expenditure on durable goods will be much higher than in the north.

Various studies have been conducted in Nigeria on household consumption expenditure such as Durojaye (1991), Arene and Anyaeji (2010), Effiong (2010), Olaniyi, Adepoju, Olarenwaju and Oyewole (2011), Olubukunmi, Yewande and Kayode (2015), and Kolawale and Auwudu (2014). It should be noted that most of these studies centred on the relationship between income and household consumption in Nigeria. The studies fell short of looking at the critical factors that shaped household consumption expenditure in Nigeria, such as the households' demographic characteristics. These studies also completely overlooked analyses of the levels of consumption inequality among the six geopolitical zones in Nigeria and variations that exist between rural and urban areas. Also, most research in the field of consumption in Nigeria have taken the macroeconomic perspective. However less research has been conducted on microeconomic aspects of consumption, especially from the perspective of Engel's law. Therefore, this study aims to bridge the research gap by providing a detailed analysis of household consumption in Nigeria from the perspective of Engel's law, using the General Household Survey data for Nigeria.

1.2   PROBLEM STATEMENT

In economic literature, consumption occupies a significant position because it is one of the major sources of consumer welfare and utility. In Nigeria, it accounts for about two-thirds of the Gross Domestic Product of Nigeria (Nigerian National Bureau of Statistics, 2015:20). The household consumption expenditure trends of a country represent a combination of qualities, quantities, acts and tendencies characterising a community's use of resources for survival, comfort and enjoyment. Hence, the need to study consumption arises from the fact that consumption, along with other determinants such as fair distribution and income as well as the availability of goods

and services to people, assists governments and policy makers to determine the well-being and standard of living of the people.

Therefore, the consumption trends of a country are normally an important variable that is considered by policy makers in formulating the social and economic policies of the country. Examining the household consumption expenditure trends of a country will provide valuable insight into the dynamics of household consumption expenditure of the country (Anyanwu, 1997:230). In a developing country like Nigeria, studying the trends in household consumption expenditure is necessary since consumption expenditure accounts for a relatively large share of household income, and the household consumption pattern or expenditure pattern is a very significant indicator of the levels of economic and business activities, as well as of poverty and the standard of living in the society (Marianne & Alexander, 2006; Tsenkwo, 2011).

It is worth noting that household consumption expenditure in Nigeria is skewed in favour of one component, food, since food accounts for about 55% of total household expenditure (Nigerian National Bureau of Statistics, 2010:6). In contrast, food consumption expenditure accounts for a negligible share of the household budget in high-income countries. For example, in the United States, it accounts for less than 6.8%. Food expenditure in the middle-income countries of Thailand, Malaysia and China stands at 25%, 20% and 26.9% respectively (Euromonitor International, 2015:3). The question arising from these statistics, which also hold true for all comparable countries is, why do households in the poorest countries in the world devote more than one-half of their budgets to expenditure on food, while in the rich countries food absorbs only 20% or less of household budgets? This consumption behaviour is usually explained in terms of Engel's law, which states that the proportion of income spent on food falls as income rises, even if the actual expenditure rises. The converse is true for the poor households, therefore the proportion of food expenditure accounts for the largest share of their household expenditure. This law has been confirmed many times.

The study set out to answer the following questions:

- What are the trends in household consumption expenditure in Nigeria?
- What are the shares of food, health, education and non-food expenditures of households in Nigeria?

- What is the food share of total household expenditure among the six geopolitical zones of Nigeria?
- Are there consumption economies of scale among households in Nigeria?
- To what extent is consumption inequality evident among households in the six geopolitical zones of Nigeria?

Population growth in Nigeria has the most direct impact on household size and there is a positive relationship between household size and consumption expenditure (Houthakker, 1959; Deaton, 1999). Apart from its influence on the pattern and size of demand one of the major concerns with the rising population in Nigeria and its impact on household size is that it will increase consumption inequality between rich and poor households, as well as among the six geopolitical zones in the country. This inequality in household consumption expenditure is manifested in terms of the volume, pattern, size and individual components of consumption expenditure. Although economists in the field of consumption studies have debated the existence of a relationship between households' size and their food expenditure per capita, it is however important to find out whether this effect is larger or not in Nigeria, especially looking at the population pressure in the country as well as the calorie and nutritional requirements of the household. Furthermore, it is also important to establish the relationships between household size and other categories of household expenditure such as health, education and non-food.

Given the above issues, it is imperative to investigate and examine the trends in household consumption expenditure in Nigeria. The existence of consumption inequality between rich and poor households and among the six geopolitical zones as well obscures a clear understanding of the various components of household consumption expenditure and their percentage share of household expenditure. Such analysis can help to determine if the prevailing consumption inequality in Nigeria is due to household demographics and socioeconomic characteristics (Abdulreza & Williams, 2012:4).

1.3 OBJECTIVES OF THE STUDY

The general objective of this study was to analyse the trends in household consumption expenditure in Nigeria. The study specifically sought to:

- Determine the trends in household consumption expenditure in Nigeria.

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- Examine the food, health, education and non-food expenditures of households in Nigeria.

- Estimate the food share of total household expenditure through the estimation of the Engel curve for the six geographical zones of Nigeria.

- Determine if there are consumption economies of scale among households by estimating the Working-Leser form of the Engel Curve.

- Examine consumption inequality among households in the six geopolitical zones of Nigeria.

1.4 RELEVANCE OF THE STUDY

Household consumption expenditure is the amount spent by resident households to meet their everyday needs, such as food, clothing, housing (rent), energy, transport, durable goods, health costs, leisure and miscellaneous services. It is typically around 60% of gross domestic product (GDP) and is therefore an essential variable for economic analysis of demand (Krugman, 2014:200). In the context of the growth performance globally during these past two decades, economists and policy makers have become interested in the trends in regional inequality during this period. Rising regional inequality can create economic, social and political problems within and between countries. Nigeria is a developing country with a serious income gap between households and between regions. Research is needed to understand the disparity in terms of consumption expenditure on consumer durables, housing quality, food and household amenities in the economy.

Secondly, household expenditure as a product of budget limitations on the one hand, and choices based on needs, demands and preferences on the other, may be regarded as manifestations of economic and social inequalities as well as cultural differences and social distinctions. Studying the patterns, disparities, determinants of household expenditures and their changes across time, with the use of panel data and population surveys, promises to provide insights into general consumption behaviour as a major source of human well-being, and respective choices and restrictions.

Thirdly, as consumption determines both the standard of living of a society and the poverty level, a key research question in this study deals with consumption inequality among households across the six geopolitical zones in Nigeria. The findings illuminate the extent of the inequality, as

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revealed by the variations in consumption, and will inform how policy makers may intervene to address the problem.

Fourthly, competition and the need for innovation have seen businesses use household spending data for the purpose of supply and demand forecasting. Supply and demand forecasting are powerful tools which help businesses to produce goods and services efficiently at the most favourable price. Hence, household spending information helps businesses to determine which products have the most value in the markets within the economy (Mansfield, 1975:187). Similarly, businesses can use the information to determine consumer needs in order to develop new products and to track the behaviour of consumers as a result of price changes. This promotes business development within the economy thereby attracting investment. This research will assist businesses to develop a deeper understanding of consumers (households) and their consumption patterns, allowing them to strategically target and position their products to increase household consumption, and thereby, economic growth.

Finally, the knowledge gap that the research addresses will stimulate further research in this very important area. It should be noted that this significant section of the economy has hitherto not been well exploited by researchers and academics since most of the research on household consumption expenditure in Nigeria is centred on income and other socioeconomic variables that affect consumption. Very little research has been conducted in the area of trends in household consumption expenditure as it affects inequality among households and the regions of Nigeria (Ekene, 2000; Tsenkwo, 2011; Olanrewaju, 2012; Adebisi, 2013; Kolawole & Auwudu, 2014).

1.5 OUTLINE OF THE DISSERTATION

The dissertation consists of seven chapters:

Chapter One provides a brief background on the trends in household consumption expenditure among the six geopolitical zones in Nigeria, followed by the problem statement, objectives of the study, research questions and scope and limitations of the study.

Chapter Two reviews the literature relevant to the study. The review covers the various theories related to consumption. The study is based on Engel's law, therefore the literature on Engel's law was reviewed, along with the Working-Leser version as well as some microeconomic theories. The chapter defines consumption and explains its importance.

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Chapter Three conducts an empirical review of all studies relating to Engel's law in both developed and developing countries. The review includes studies on elasticity of demand, equivalence scale and economies of scale.

Chapter Four discusses the methodology of the study. In this chapter the empirical and theoretical models are carefully explained. The regression equation is explained, and specified along with all the variables.

Chapter Five provides profiles of the six geopolitical zones in Nigeria. The chapter discusses the economic background of Nigeria as well as the socioeconomic profile of the zones**.**

Chapter Six analyses, evaluates and interprets the data. The study undertook descriptive analyses which involved cumulative distribution functions (CDF), Kernel density, Gini coefficient, Lorenz curves and mean analysis. Also the results from the estimation of the Engel curve and the Working-Leser form of Engel curve are interpreted.

Chapter Seven presents the major conclusions and findings derived from the research and makes recommendations based on the findings of the study.
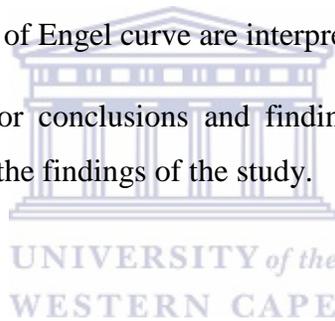
CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the theoretical literature relevant to the study and is divided into a number of sections in line with the key research question of the thesis. The next section deals with the definition of consumption and the third examines the importance of consumption in the economy. The fourth section deals with the main theory underlying this study, Engel's law, which is primarily based on microeconomic theory. This is followed by an examination of Engel's law and expenditure elasticities, Engel's law and economies of scale and Engel's law and equivalence scales, the Working-Leser form of the Engel equation, the Working-Leser version and demographic variables, and the Working-Leser version and expenditure elasticities. Finally, the chapter concludes by briefly examining pioneering macroeconomic theories of consumption.

2.2 DEFINITION OF CONSUMPTION

As the most important part of aggregate demand and a source of consumer welfare and utility, consumption occupies a vantage position in the economy as it accounts for about two-thirds of the GDP in most economies (Nigerian National Bureau of Statistics, 2010:10). This assertion is based on a considerable amount of research in both micro and macroeconomics devoted to the field of consumption (Fasarati, 2004:3; Alimi, 2014:22). In the view of Lury (2011), the consumption decisions among households in both developed and developing countries are influenced by factors such as income, demography and the socioeconomic characteristics of the households. Therefore it is imperative to analyse the household consumption expenditure of various goods and services as this provides greater insight into the socioeconomic condition of a country. For example, an increase in consumption in the economy may indicate a rise in the level of income or a change among the demographic variables within households. Similarly, a decrease in consumption may signify a fall in the level of income or, demographically, a declining population.

In the view of Frank and Bernanke (2007:210), consumption is the expenditure undertaken by individuals and families where goods and services are acquired with income and used for the

satisfaction of wants. By this definition, "everybody is a consumer because of choosing and using of goods and services, which are payable with earnings, savings, or credit". Slater (1991:121) is of the opinion that in the social sciences, the field of consumption occupies a relevant position, as a result of which significant theories and researches are dedicated to the field of consumption, not only in the field of economics but from scholars in other social sciences such as sociology, psychology and anthropology. But in the view of Ben (1985:34), consumption is simply an act of utilising various goods and services with the aim of satisfying endless human wants. This view stresses the importance of consumption from the welfare perspective because the aggregate household consumption expenditure on food, clothing and durables provides a means of satisfying human needs. Therefore the household that uses these goods is deriving satisfaction and invariably improving the welfare of the entire household.

3.   THE IMPORTANCE OF CONSUMPTION

The aggregate spending of households and individual consumers on an array of goods and services within a period of time in the economy is what forms the basis for the production of goods and services in the economy. Martha (2007:23) is of the opinion that households' consumer spending is a very important indicator of the level of confidence they place on the economy. According to Daniel,Miller,Schor & Julliet, (2011:35), the high levels of consumer confidence as indicated by consumption is a determinant of investment opportunities for the private sector. An increase in consumer confidence will likely boost the level of investment thereby leading to increased employment and a rise in government revenue. According to John (2006:55), in the neoclassical economist's view, consumption is the basis and foundation of all economic activities and therefore the ability of the economy to provide the needed goods and per-person services is the central yardstick for measuring the level of productive capacity. The importance of consumption in the economy is discussed below.

3.1   Determinant of economic activity

In a modern economy, there typically exists a close relationship between the producers and consumers. This relationship, as put forward by Key, Keen & Morris, (1984), is in formed of production and consumption, where producers produce various goods and services while consumers buy the goods and services to satisfy their needs, and this is what reflects as an economic system. Therefore, as the largest component of Gross Domestic Product (GDP),

consumption is seen by many economists as the major determinant of all economic activity. According to Robert (2007:12), it is consumption that signals and then triggers the production of goods and services commensurate with the needs and tastes of the consumers. Thus, consumption stimulates the economy and ensures that the needed goods and services are produced. In a free market economy, consumer choice and desires control the quantity and pattern of all productive activities throughout the economy. Robert (1985:43) is of the opinion that the success of all businesses in the economy depends on the level of satisfaction of the consumers with the goods and services offered to them. If the consumers are not satisfied with the goods and services offered to them by businesses to the extent of disliking them, the production of those commodities will certainly come to an end. Barry, Allen & Williams, (2008:72) is of the opinion that even the classical economists, proponents of the free market such as Adam Smith and David Ricardo, have advocated for the notion of consumer rationality, which assumes that the consumers of goods and services are acting on rationality, hence they spend their money in such a way that they get the maximum satisfaction from their consumption expenditure. The perspective of Galbraith (1958:21) on the economy and consumption justified an ever-increasing private-sector production of goods and services to satisfy the wants of the consumers but with limited government intervention (regulation and taxation).

3.2   Index for measuring standard of living, poverty and inequality

Consumption data is a powerful tool for measuring the standard of living, poverty and inequality. According to Pistaferri (2015:45), in every economy, the consumption pattern of a household depicts what they eat, what they wear, in which type of house they live and many other parameters of living standards. Hence, consumption data of households holds up a mirror in the economy, giving a true reflection of the living standard and quality of life of the households in the country. Gallo (2002:24) is of the opinion that consumption data can give an insight into the total amount of money spent within the economy and reveal how much is spent on various components of the consumption expenditure. A rise in the overall level of consumption expenditure may signify an increase in the standard of living of the entire population in the country while a decrease in the level of consumption expenditure indicates that the standard of living of the people has declined. In the view of Andrew (2007:50), until recently most economists and policy makers relied heavily on income data in measuring the levels of poverty and inequality in the economy. But there is growing doubt as to the accuracy and suitability of

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income data to measure well-being and inequality. Therefore, many economists are of the opinion that data from consumption provides a more useful and suitable yardstick to determine inequality and economic prosperity, especially among households. Their reasoning is based on the fact that, as a source of consumer utility, satisfaction is derived from consumption rather than income received.

3.3   A tool of fiscal policy

Fiscal policy is an important tool for achieving the macroeconomic policies of the government such as economic growth, balance of payments equilibrium and economic stability (Debbie and Hampton, 2010:61). It should be noted that the key considerations in formulating the fiscal policy of government are the intermediate variables which are essential in ensuring positive outcomes from the policies. According to Luigi, (2012:17), in formulating minimum wage policy and determining taxes on various goods and services, consumption is the most important variable taken into consideration by governments. In this case, data on the consumption patterns of individual consumers and households assists governments to determine the categories of goods and services where government taxes will be increased or decreased. David (1998:24) is of the opinion that aggregate consumption data also helps governments to determine the production of various goods and services in the country.

3.4   Theoretical perspective

Studying the consumption behaviour of individual consumers and households occupies a key position in microeconomics and macroeconomics. Studying aggregate consumption is relevant in the field of macroeconomics for two reasons. Firstly, in every economy consumption and savings decisions are undertaken jointly by households. As the determinant of savings in the economy, aggregate consumption is very important in the determination of aggregate saving which is the part of household income that is not used in consumption and that is used by the financial system in the creation of the supply of capital in the national economy. In view of this, "aggregate consumption and saving behaviour have a powerful influence on the economy's long-term productive capacity" (Davidson, Schuman & Haugtvedt, (2008:31). Secondly, since consumption expenditure is the major determinant of output in the economy, a clear understanding of how aggregate consumption expenditure operates in the economy will facilitate and enhance the knowledge of fluctuations in the business cycle. In microeconomics, various laws and theories that are directly related to consumption have been formulated. These include the Law of

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Diminishing Marginal Utility, the Law of Demand, and the Concept of Consumer's Surplus. Understanding consumption will enormously assist in the promulgation and formulation of economic principles (Shefrin and Thaler, 1988:60). According to Viviana (2005:55), studying consumption behaviour using consumption data will help to measure poverty, determine the level of households' readiness for retirement and test competition theories, particularly in retail industries. That is why in many countries there is a rich variety of household-level consumption data which allows economists to examine household spending behaviour in minute detail, which has also been utilised to examine interactions between consumption and other economic behaviour (Martha, 2007:20).

2.4 ENGEL'S LAW OF CONSUMPTION

In the field of microeconomics, Ernst Engel conducted the first empirical study to directly deal with household food expenditure in particular as well as general consumer behaviour. Engel, a German statistician, conducted a statistical analysis of family budgets in 1895. Based on the result of his study he formulated the observation that became known as Engel's law wherein he observed that a rise in income will cause the share of household expenditure on food to fall. The law simply stated means that the poorer the family becomes, the greater will be the percentage of its budget that will be committed to food, while if the family's income rises, the proportion spent on food would decrease, even if the actual amount increases (Engel, 1895). Engel's law describes a clear relationship between poverty and high expenditure on food, thus showing that allocation of a high share of a household budget to food expenditure is an indicator of poverty. Engel's law has made the analysis of the household budget an acceptable, useful tool for tracking poverty for policy makers and economists. Thus, where there is no generally acceptable method of calculating poverty, "it is desirable to use household expenditure as a yardstick of measuring incidence of wealth distribution and an indicator of poverty" (Martins, 2007:23).

Engel's law is built on the following assumptions:

1. With increase in income, the share of income that goes to food decreases although in a real sense the money spent on food increases.
2. As income increases the share spent on personal expenses increases.
3. The proportion spent on fuel, shelter, lighting and clothing will remain unchanged at all levels of income.

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It should be noted that Engel's analyses were not restricted to food expenditure alone but covered other components of household consumption expenditure such as housing and clothing. In the original text Engel makes reference to food share and a comprehensive population in terms of a given location, since the data he used in his study reflected consumption expenditure for Belgian working class families. In his attempt to explain the working of Engel's law, Engel developed the Engel curve, which follows the consumption of a commodity X when income of an individual changes. In a typical Engel curve income is presented by the x-axis while the amount of commodity X purchased is presented at y. From the preceding information, the curve that accompanies the amount of commodity X consumed due to increase in income gives the Engel curve. The Engel curve slope explains if a commodity in question is an inferior or a normal good. From the slope of the curve, if it is positive, the commodity is said to be normal because its consumption will increase with an increase in income. However, a negative slope signifies that the commodity is inferior because its consumption decreases with an increase in income. Similarly, it is possible to get an Engel curve from the Income Expansion Path. The income is provided by the Income Expansion Path. The quantity of commodity X purchased is indicated by the points of consumers' optimum on the budget constraint.

Figure 2.1: Income Consumption Path
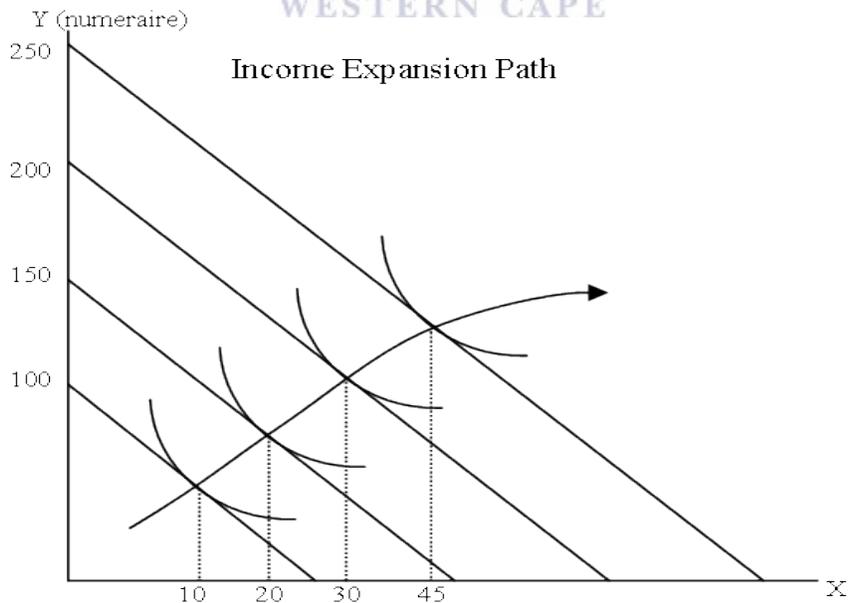
Source: Debertin (2012:78)

Figure 2.1 above gives an Income Expansion Path of commodity X and Y showing four points of consumer's optimum. The commodity Y is priced at 1, while all necessary points for drawing an

Engel curve appear on the right side of the Income Expansion Path. From information on the Income Expansion Path we will get two types of Engel curves, one for commodity X and the other for commodity Y. At the same time each of the curves can appear on different income values as signified by the budget constraints, as well as the respective values of the variables.

Figure 2.2: Engel Curve
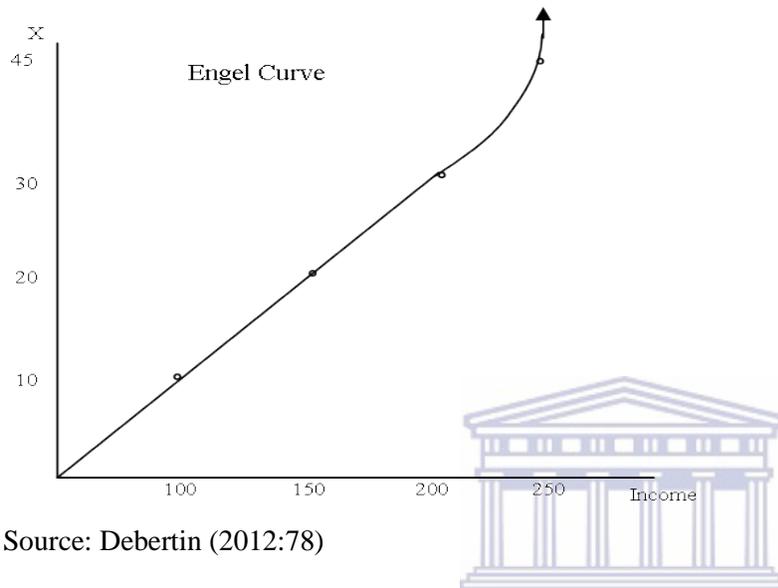
Source: Debertin (2012:78)

The Engel curve is created by plotting the quantity of commodity X consumed at the different levels of incomes as shown in the Income Expansion Path in figure 2.1. As income increases, the quantity of commodity X consumed continues to rise which means that the commodity is a normal good.

A good example of a commodity which has an Engel curve with normal as well as inferior good aspects is a grilled cheese sandwich. When at lower quantities, an increase in income will make an average low-income consumer increase his consumption. But as the consumer's income rises the consumer will be at an income level where grilled cheese will become inferior due to a decline in its consumption. As their incomes increase, the consumers will reach a level where they desire the commodity less making it an inferior good. The explanation for this is that the consumer has substituted the low-cost grilled cheese sandwiches with more expensive food due to their income having reached a level where they can afford a more varied diet.

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Figure:2.3: Engel Curve for Normal and Inferior Goods
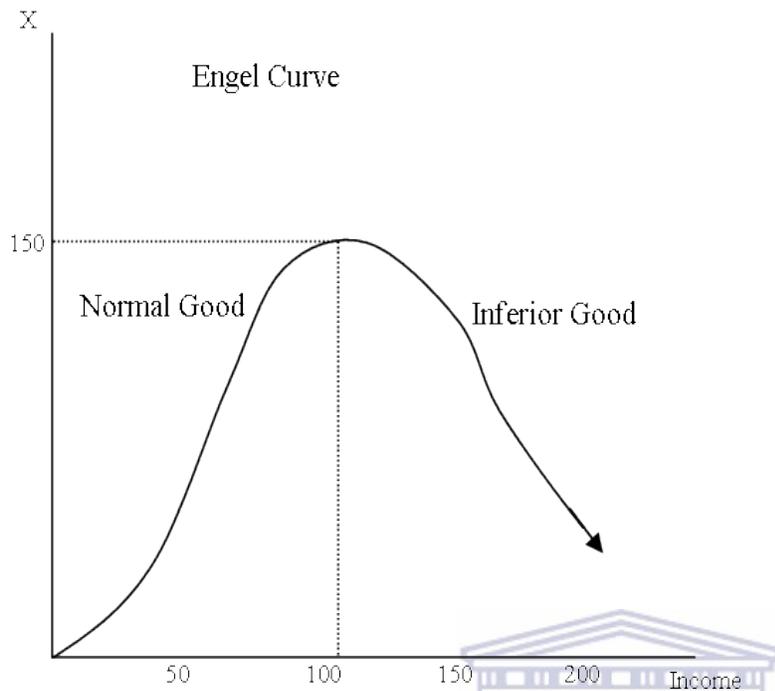
Source: Debertin (2012:78**)**

The diagram in figure 2.3 above shows Engel curves for two goods, normal and inferior. In the diagram, as the increase in income exceeds 100, the commodity changes from a normal to an inferior good and consumption declines.

2.4.1   The Engel Function

Engel's law in its crudest form states that the proportion of total expenditure spent on food items declines as total expenditure [which is a proxy for income] goes on increasing. Relationships existing between total household expenditure and expenditure on a particular component of household expenditure such as food, transportation, education or non-food are what is referred to as the Engel function, Engel's law or the Engel curve. The Engel function is stated below as:

$$Y = f\,[X]$$

Where:

Y= refers to household expenditure on a specific item such food, clothing or non-food

X = refers to the total household expenditure

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It should be noted that a change in Y because of change in X for a particular expenditure item is referred to as Marginal Propensity to Consume or simply known as the marginal effect. The degree of responsiveness of Y due to changes in X is referred to as the elasticity of Y with respect to X, popularly known as Engel elasticity. Sometimes both the sign and size of the Engel elasticity will be taken into consideration to be able to classify the goods/commodities into luxury or necessities.

2.4.1.1 Engel Law and Elasticity

There are various factors that determine the demand for goods and services by households the most important among which are the household's income, the prevailing price of the commodity and other goods, as well as the household's own characteristics such as household size and tastes. According to Chai (2007), demand represents the amount of goods and services that households can afford and are willing to buy from the market based on the existing prices. Consumption of goods and services by households signifies their spending, the patterns of which are determined by household composition, financial ability, their needs and tastes. Although economists are normally interested in the utility the households derive, which is the pleasure or happiness derived as a result of specific allocation of the household income to the various baskets of goods. The Engel expenditure elasticities are tools for the analysis of the behaviour of household expenditure with respect to changes in prices or income. According to Roy (2000:29), "within the context of microeconomics the variation from proportionality of a particular variable in terms of another variable is measured by the elasticity". This means that if an expenditure on a particular item is proportional to the household's income or their total expenditure, then the income elasticity of demand for that commodity, otherwise known as the Engel elasticity, is unitary. If the household's expenditure on a particular item rises in such a way that it is more proportionately relative to the household's income, the Engel elasticity in this case is greater than one. If the household's expenditure on a particular item among the categories of their expenditure rises less than is proportionate in relation to their income, the Engel elasticity will be less than one.

It should be noted that the analysis of the Engel elasticity does not stop at the coefficients alone but rather the concept is helpful in categorising the various items within the ranges of the household's expenditure. For example, a commodity can be classified as a luxury good if its

Engel elasticity is greater than unity, while it is normal if its Engel elasticity is one and it is considered a necessity when its Engel elasticity is less than one. These elasticity coefficients of different commodities within the households' total expenditures are estimated and a comparison of the results is made among different commodities as well as income groups. These results are essential because they form the basis to guide policy makers and governments in devising guidelines for implementation of policies in the areas of demand management, taxes, food consumption as well as other commodities in the country. The ability of any country to record significant progress and development in its economy must be based in its steadfast determination to ensure that consumption and the welfare of the people and households who are buying goods and services are protected with variations in the prices of the various goods and services.

There are many factors leading to elasticity. For example, the budget share is viewed by many as the major factor leading to elasticity and is affected by variation in income of the household. The budget share Engel curves "explains how the share of household expenditures on a particular good or service changes due to a change in income of the households" (Chai & Moneta, 2010:43). According to Witt (2001:46), the effect of income on elasticity is more psychological which eventually translates into expenditure. This is because as the income of the household rises, the household expenditure is psychologically suppressed which make the household buy less.

2.4.1.2 Engel Law and Economies of Scale

Economies of scale alludes to the notion that there is a benefit associated with large households whereby it is possible that if a household is large, the per person cost of consumption when it comes to maintaining a given living standard may fall due to a rise in the household size. According to Nelson (1988), "the existence or absence of economies of scale is essential in determining the level of income needed by various households based on their sizes and composition to reach as well as maintain a particular living standard".

In his attempt to lay a basis for economies of scale, Deaton (2007:34) suggests that a good method of approaching economies of scale is by recognising the existence of public and private goods among the goods that are used by households. The public goods are goods such as paintings, bathrooms and household durables which members of the household can share without affecting or infringing on the enjoyment of one another. Private goods are personal goods such as

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food and clothing that are exclusive in nature because the use of them by one person excludes another from using them. In the view of Lazear and Michael (1980:22) electric lighting in a room, the security provided by a lock on the door of the house and the beauty of an artwork hanging on a wall are all examples of public goods as are goods like furniture, household equipment and the cost of the house. In reality these goods are not likely to be pure public goods, because the extent of the usage of these goods depends on the flow of the goods or services to each member in the household who must share the good or services. The benefits from sharing the goods may come from "reduced excess capacity due to indivisibility" (Parker, 1990). In the view of Parker (1990:103) economies of scale in consumption among households occurs in a number of ways. Public goods such as a television, telephone, refrigerator or shower are normally largely idle. It is only when the family size expands that their utilisation rates can be raised to the optimal. Thus sharing some items within the household will drastically reduce the per person cost of maintaining the living standard of the family, since by sharing the goods there will be no need to purchase additional goods for each member. The household may have increasing returns in the area of production of goods and services. For instance, if an additional member in the household adds little or no additional time and cost to preparing a meal, an increase in household size will lead to a decrease in total time and per person meal expenses. Lastly, larger households may enjoy the benefit of bulk purchases and discounts and may take advantage of economy-sized products which are cheaper as well as bulk sale promotions.

The discussion on economies of scale in the literature is dominated by the Engel method. From the perspective of Engel, economies of scale in consumption among households is largely based on the argument that within the household there are public goods which members of the household can share. In order to measure economies of scale accurately without encountering the serious flaws associated with the Engel methodology, Deaton (2009:314) suggests an alternative approach which includes the direct utility function of the household. In order to construct the model he starts by discarding the existence of children and assumes that there is only *n* identical number of adults in the households. Children are not completely excluded because if there are children they will be converted to adults in the model using the child equivalent scale. Consider the following utility function. Consider the direct utility function *u (q_1, q_2, . . . ,qm),* which is assumed as the utility for a particular individual that uses q, unit of good 1, q2 unit of good 2, up to *qm* unit of good m. Therefore, to a household consisting of n individuals that share

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consumption equally, the utility function of each member is given by the utility function which can be applied to an nth of the household's consumption. In this case the total household utility is written as

$$u_h = nv \, (q_1 \, In, \ldots, q_m \, In) \tag{2}$$

It should be noted that equation 2 above assumes the absence of economies of scale. Also at a household of n number of people it generates no more welfare than n households of only one person each. Therefore let us assume instead that by some process, the needs for each good in the household do not change and remains the same with the number of people in the household increasing but less rapidly, in proportion to n $_\emptyset$ with some units $0 < \emptyset \leq 1$. This isoelastic form can easily be generalised, but little is gained by doing so. Therefore if $\emptyset = 1$, it is indicating that economies of scale do not exist, which means that each person in the household gets an nth of the total. However for $\emptyset < 1$, it is indicating that there are economies of scale, which means that everyone in the household is getting more than what is supposed to be his or her share of the total. This means that the quantity $1 - \emptyset$ is what actually measures the extent of economies of scale in the household. The preceding specification of household utility in equation 2 above is modified to

$$u_h = nv \, (q_1 \, In^\emptyset, \ldots, q_m \, In^\emptyset) \tag{3}$$

The above exercise aims to show that the maximisation of equation 3 above is subject to the budget constraint in which the total cost of purchases by the households is equal to x, which gives the demand functions below

$$\frac{pi \, qi}{x} = \frac{piqi/In}{x/n} = \emptyset \left(\frac{x}{n\emptyset}, P_1, \ldots, Pm \right) \tag{4}$$

In equation 4 above, the budget share for good i as well as for all commodities $i = 1, \ldots$ while function of total household expenditure and prices is m and it is deflated based on the household size to the power of 0. Therefore the household's indirect utility function has exactly matched equation 3 and 4 as signified by equation 5 below

$$u_h = n \, \varphi \, (x/n^\emptyset, p_1, \ldots p_m)$$

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Where

φ (x/n $^{\varnothing}$, $p_{1,}$…..p_m) represent the indirect utility of a single individual within the household utility. This is due largely because both the budget shares as well as the indirect utility are determined by the family size only through the term **x/n $^{\varnothing}$**. The welfare of the household is exactly indicated by the budget share of any good, hence households that have different sizes are equally well off if the structure of their budget shares is the same.

2.4.1.3 Engel's Law and Equivalence Scale

Jorgenson (1997:67) defines equivalence scale as "what the household spends divided by what a single person spends who enjoys the same living standard". The whole idea of equivalence scale arises because in every country, the needs of a household grow with an increase in its size arising from additional members. For example, the needs for space within the house, food, electricity, etc., will definitely be three times larger for a household that has three members than for a household that has a single person. Therefore by using the equivalence scales, it is possible to assign each household type the value in proportion to its need by taking into consideration the number of people in the households and their composition. In assigning a respective value to each household consideration must be taken of its size and the age of respective members, whether they are adults or not.

It should be noted that the decision to use a particular equivalence scale is based on the technical assumptions with respect to households' economies of scale and on value judgments in determining what value to assign to the needs of different members of the households, such as male, female, children or even the elderly. According to Forster (1994:43), the judgment can easily affect results. For instance, the poverty rate among the elderly members of the households will be lower while that of children will be higher when scales that give greater weight to each additional household member are used. This means that care must be taken in selecting a particular equivalence scale. Important factors that must be taken into account include for example, the effects of the scale on the level of inequality, ranking of the country and the size of the population which are poor within the country and their composition of households.

The equivalence scale coincided with Engel's law, which makes his one of the earliest methods for constructing equivalence scales. As early as 1857, Engel had constructed his own

equivalence scale which was directly based on the postulates and arguments encompassed by Engel's law. Following his invention of his method of calculating the equivalence scale, many other procedures were invented, notably by Rothbarth (1943) and Deaton and Muellbauer (1986). However to date, the Engel procedure for calculating equivalence scale is assumed to be the simplest, and it is currently still used. The Engel procedure for calculating equivalence scale is based on the assumption that what determines the welfare of households of different demographic composition and size is the proportion of the household budget devoted to food expenditure. Based on this assumption, both large and small households will equally be well off if the two households set aside the same percentage of their budget for food (Deaton, 1999:214).

According to Deaton (1999:216), the Engel equivalence scale is calculated by using an estimated food Engel curve. Using equation 1 below, an equivalence scale for the household will be calculated and it will provide the needed result. Using a household of two adults, the food share will be given as

$$w^0_f = \alpha + \beta \, \mathrm{I}nx^o + (\cap - \beta) \, \mathrm{I}n2 + \gamma_a 1 \qquad (1)$$

Where γ_a represents the coefficient for adults and that there is no difference between males and females in the household.

Also, γ_a is the y coefficient for adults, and any difference between males and females has been suppressed, and the other γ coefficients are absent, since all the household is assumed to be adult in which the ratio of the number of adults to the household size is of unity. For a household that has two adults and a child, the corresponding equation represents their equivalence scale

$$w_f = \alpha + \beta \, \mathrm{I}nx + (\cap - \beta) \, \mathrm{I}n3 + \gamma_a (2/3) + \gamma_c^{(1/3)} \qquad (2)$$

where γ_c represents the coefficient of the ratio for the appropriate child category. Therefore the compensating level for expenditure x^1 is obtained by setting equation 1 equal to 2 and solving for x. Hence,

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$$\text{In } \left(\frac{x1}{x0} \right) = \left(1 - \frac{\cap}{\beta} \right) \text{In } 3/2 + \frac{ya - yc}{3\beta} \qquad (3)$$

From the equation above if $\cap = 0$, then the household's food share is independent from the family size while holding the per capita expenditure constant, and if $Y_a = Y_c$ in such a way, when adults are switched for children it will have no effect on food consumption, while the family sizes is signified by the ratio of x^1 to x°, which in this case is 3 to 2. It should be noted that even if $\cap$ is 0, it will be expected to overstate the compensation needed because $Y_a > Y_c$ (adults eat more than children) and β is negative (Engel's law) so that the last term in equation 3 will be negative.

2.5 THE WORKING-LESER FORM

The most important contributions in the area of Engel's law are the studies made by Working (1943) and Leser (1946) which are jointly referred to as the Working-Leser form of the Engel curve. In their work they estimated a different form of Engel curve which deals with household budget shares as linear functions of the logarithm of total household expenditure. This form has the advantage that it satisfies the adding-up restriction automatically and is consistent with the observed non-linearity in the regression of food expenditure in total. The Working-Leser model has been used over the years in the consumption literature and was made popular by the work of Deaton and Muellbauer (1980a), who conceived the Almost Ideal Demand System (AIDS) in which the Working-Leser model was collapsed for cross-sectional data. Within the context of the Working-Leser model, household food expenditure share may be calculated parametrically through the estimation of a functional equation which will relate the household food expenditure to its total expenditure as well as other characteristics of the household. In the Working-Leser model the household budget shares are linear within the log of their total expenditure.

The Working (1943) and Leser (1963) version of the Engel curve can be written in the following form:

$$W = \alpha + \beta \text{ In } x + \varepsilon \qquad (1)$$

Where

w = is the share of expenditure for food in total expenditure

x = is the total household expenditure

α +β = are unknown parameters to be estimated

ε = is an independently, identically distributed error with a normal distribution of zero mean and standard deviation of sigma.

2.5.1 Working-Leser and Demographic Variables

The household's demographic characteristics occupy a very important position in the analysis of household consumption expenditure. However, for a long time, apart from income and expenditure, there was no attempt in microeconomics literature to include household size and other characteristics when specifying the Engel curve. However, on the basis that households' total expenditure and their sizes are correlated, Prais and Houthakker (1955) emphasised their inclusion. Therefore in an attempt to estimate the relationship between demography and household expenditure, choosing the most suitable functional form for Engel's law has been a major issue of interest. In this regard various functional forms, such as linear, double-logarithmic and semi-logarithmic, have been used to specify it. On their part, Working (1943) and Leser (1963) estimated a form of Engel curve which attempts to relate the household budget shares in a linear relation with the log of total household expenditure. In analysing household consumption expenditure, apart from household size and age, other variables like income, age of the head of household and occupation are equally important factors that determine household consumption expenditure. Crocket (1967:67) argued that household size is the most important factor that determines the total household expenditure and his argument was echoed by Brown and Deaton (1972:45) and Deaton and Muellbauer (1980b:56).

The Working-Leser specification with the effect of household's size on expenditure and can be written as follows:

$$W= \alpha + \beta \ln x+ \gamma \ln n + \varepsilon \qquad\qquad (2)$$

Where

n = is the household size and

γ = an unknown parameter to be estimated.

2.5.2 Working-Leser Model and Expenditure Elasticities

In any study involving the estimation of household consumption expenditure, calculating and determining elasticity is very important. To able to calculate the elasticity of demand if the household's expenditure on a particular item changes in such a way that it is more proportionately relative to the household's income or disproportionately relative, the Working-Leser function is used. The income elasticity of demand in the context of the Working-Leser form could be obtained by the function below:

$$e_i = 1 + B_i/W_i \qquad\qquad (3)$$

Where

e_i represents the elasticity coefficient

B_i represents the commodity elasticity

The function above implies that any commodity that has a B_i that is negative is a necessity, while any commodity that has a B_i that is positive is a luxury. Therefore a decrease in the budget share will of necessity decrease the income. It follows from (3), hence due to increase in the income, elasticity of commodities which are necessities will decrease, while the elasticity of luxury commodities will move toward unity. With the consumer becoming more affluent, all the commodities he is using will become less luxurious in the context of the Working-Leser model (Clements, 1987:22). Therefore, equation (3) satisfies the adding-up condition which shows that, $\Sigma a_i = 1$,

$\Sigma B_i = \Sigma m_i = 0$

These will be automatically satisfied when the Ordinary Least Squares (OLS) is used as a method of estimation.

2.6 MACROECONOMIC THEORIES OF CONSUMPTION

Although the study is based on Engel's law, which is generally part of microeconomic theories of consumption, in order to examine consumption from a broader perspective the study will also review some macroeconomic theories of consumption. The pioneer macroeconomic theories that were analysed and examined from their perspectives on consumption are the Keynesian Absolute

Income Hypothesis, Milton Friedman's Permanent Income Hypothesis and Franco Modigliani's Life-Cycle Hypothesis.

2.6.1 Keynesian Absolute Income Hypothesis

In macroeconomics, studies on consumption began with the emergence of the Keynes General Theory. In his popular book *The General Theory of Employment, Interest and Money*, published in 1936, Keynes describes what is seen as the modern theory of consumption. This theory is based on the functional relationship existing between consumption and income. The theory was not built on complex mathematical equations but rather Keynes entirely relied on intuition and common sense to explain the building blocks of his consumption theory. Keynes puts forward several subjective and objective factors which according to him determine consumption at both the individual level and the society. From the perspective of Keynes, of all the factors put forward, income level is the major factor that determines the consumption of individuals and the society. Keynes emphasises that the major determinant of consumption is absolute income and for this reason his theory is referred to as the Absolute Income Hypothesis. Keynes argues in the theory that the income consumption relationship is built on his principles of the Fundamental Psychological Law of Consumption, which states that whenever income increases, the increase in income will only bring an increase in consumption expenditure by an amount which is smaller. Keynes formulates a simple linear consumption function where consumption is assumed to be a positive function of disposable income. In an attempt to justify that consumption is a positive function of disposable income, Keynes presents a simple linear consumption as follows:

C= a + bY where a > 0, 0 < b < 1

Where

C = Current real consumption (Total or Household)

Y = Individual current real disposable and total real income

a = Autonomous consumption

b = Marginal propensity to consume which is accepted as

/greater than zero but is less than 1

Based on his linear consumption function, Keynes postulates three points. Firstly, absolute income of the current period is what actually determines consumption expenditure. Secondly, consumption is a function of the absolute level of current income. Thirdly, as income of the individual increases, there will be a corresponding increase in consumption expenditure within that period (Jhingan, 2002:200).

The characteristics of consumption function according to Keynes are as follows: Aggregate real consumption expenditure is a stable function of real income.

The marginal propensity to consume (MPC), otherwise the slope of the consumption function which is defined as dc/dy, must lie in between zero and 1, that is, 0<mpc,1

Figure 2.4: Keynesian Consumption Function
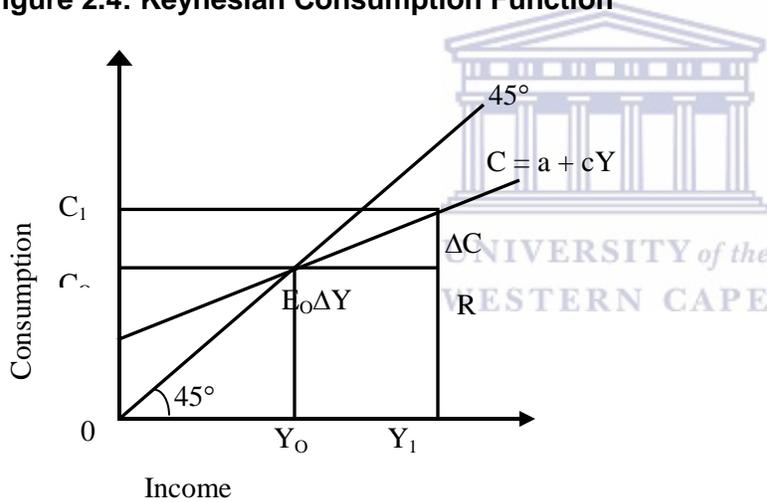
The diagram in figure 2.4 explains the Keynesian consumption function. In the diagram, the consumption function is signified by the equation $C = a + cY$. Point E on the C curve income level is at OY_1 and it indicated that APC > MPC where APC = OC_1/OY_1 and MPC = $\Delta C/\Delta K$ = ER/RE$_O$. The intercept a in the diagram indicates consumption level commensurate to a zero income level. When income level is at OY_0, that is where the curve C intersects the 45-degree line, while the APC = (OC_0 / OY_0) which is represented by point E$_0$. This means that consumption is more than income at a point below the income level and within that area, APC > 1. Above income level OY_0, the increase in consumption is proportionately less than the increase

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in income which makes the average propensity to consume (APC) to fall and becoming less than one.

2.6.2   Friedman's Permanent Income Hypothesis

As a step toward correcting the apparent contradictions in the Keynes Absolute Income Hypothesis, Friedman (1957) developed his theory of consumption called the Permanent Income Hypothesis, which meant to correct some of the important factors not accounted for in the Keynesian Absolute Income Hypothesis. In his theory, Friedman stresses the fact that people can smooth their expenditure through lending and borrowing. For this reason he rejected the idea of using current income to be the primary determinant of consumption expenditure. Thus, Friedman posited that what determines consumption is actually the long-term expected income, not the current income. He stressed that daily consumption is not determined by daily income but rather the average daily income that is earned within a period of time. For this reason income is divided into two categories, namely permanent and transitory. According to Friedman, permanent income is the amount of money a worker is expecting to get covering a period of time, which can change proportionately with the actual level of income, while transitory income is non-permanent and fluctuating income which a worker receives, where the amount he receives depends on how lucky he is and the amount of effort he makes. A transitory income can either be positive or negative based on whether actual income is above or below the permanent income. By rejecting the idea of using current income as the major determinant of consumption expenditure, Friedman divides both consumption and income into two components, permanent and transitory, in such a way that

Ym or $Y = Y_p + Y_1$ … (1)

and $C = C_p + C_1$ … (2)

Where

p = permanent

t = transitory

Y = income

C = consumption.

Therefore, permanent income is the amount a worker can expect to get constantly for a long period of time, Y being the consumer's measured income or current income, in any period. Such differences between measured and permanent income are due to the transitory component of income (Y_t) (Demoussis & Mihalopoulis, 2001:34).

The transitory income can either fall or rise as a result of an individual gaining or losing a windfall income or due to cyclical variations. If as a result of a windfall, the transitory income is positive, then measured income will be higher than the permanent income. On the other hand if, for example because of theft, the transitory income is negative, then measured income will be likely to fall lower than the permanent income. Where the transitory income becomes zero, then the measured income equals permanent income (Demoussis & Mihalopoulis, 2001).

According to Friedman, the measured consumption as in the case of income is divided into permanent consumption (C_P) and transitory consumption (C_t). Therefore the measured consumption – otherwise called current consumption – is likely to move away from or equal the permanent consumption based on whether the transitory consumption is positive, negative or zero permanent consumption (C_p) is a multiple (k) of permanent income, Y_p .$C_p = kY_p$

and k = f(r, w, u)

Therefore, $C_p = k$ (r, w, u) Y_p … (3)

Where

 K is a function of the rate of interest

 r =the ratio of property and non-property income to total wealth or national wealth

 u =the consumer's propensity to consume

Figure 2.5 Friedman's Permanent Income Hypothesis
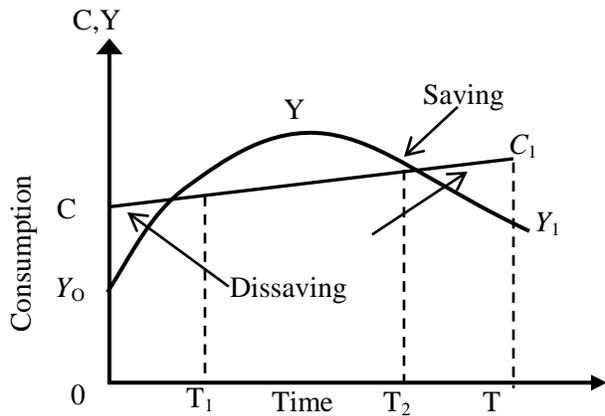
Source: Debertin (2012:78)

For every individual the early periods of life are characterised by the accumulation of very few assets or wealth and is similarly so during the final years of his life. The income from labour-income is equally low. But at the middle stage of life income earned from both labour and assets is high. Based on these factors, an individual's consumption level is volatile throughout his life, where in some periods it is somewhat constant while in others slightly increasing as indicated by the CC_1 curve in figure 2.5 above, with the Y_0YY_1 curve indicating the amount of income an individual consumer will get during his lifetime T. Therefore, T_1 in figure 2.5, shows the early period of life which is characterised by borrowing or dissaving signified by CY_0B, representing the money needed to enable him to maintain his consumption level CB which is almost becoming constant. T_1T_2 in figure 2.5 explains the middle years of life: his number of savings is BSY which will enable him to repay his debt. T_2T_1 shows his last years in life which are characterised by dissaving as represented by the SC_1T_1 amount.

In the Life-cycle Hypothesis, consumption function is stated as follows:

$C_t = f(V_t) \ldots$ (1)

Where V_t = total resources at time t

and $V_t = f(Y_t + Y^e_{Lt} + A_t) \ldots$ (2)

When equation (2) is substituted into equation (1) by making equation (2) a linear and weighted average of different income groups, aggregate consumption function will be

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$$C_t = \alpha_1 Y_t + \alpha_2 Y^e_L + \alpha_3 A_t \ldots \qquad (3)$$

Where

a_1 = MPC of current income

α_2 = MPC of expected labour income

α_3 = MPC of assets or wealth.

APC will now be

$$C_t / Y_t \; \alpha_1 + \alpha_2 Y^e_L / Y_t + \alpha_3 A_t / Y_t$$

From the above equations, we can see that, because part of income from labour within the income ratio and the ratio of the current income are constant due to the growth of the economy in the long run, APC is constant. This indicated that the APC was high. However the majority of the people belong to the high-income groups since they are in the middle years of their lives. Thus their APC was relatively low. In general, the APC was declining due to increase in income which indicates APC> MPC. The US data that was used in that period showed that the APC is constant at 0.7 over the long run.

2.6.3 Modigliani's Life-Cycle Hypothesis

The Life-cycle Hypothesis consumption theory was developed in the 1950s by Franco Modigliani in collaboration with his student Richard Brumberg. The theory was built on the notion that in making consumption decisions, people are guided by the resources available to them over their entire lifetimes as well as their present stage in life. According to Modigliani, at each stage in their lives people make rational decisions about how much they want to spend. They are restricted based on the flow of resources over the course of their entire lives. Therefore, since individuals who are working will find themselves building up and running down various assets at different stages of their lives, they will carefully plan the pattern of their consumption requirements at every stage in their lives, independent of their incomes. According to the theory, there are various factors which determine the consumption of an individual. These factors are the resources that are available to him/her, returns on capital, decision to spend, and the current age at which the plan is made. The value of the individual's current resources includes the income

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earned from assets or wealth or property as well as what is expected from current labour income. Therefore the resources of a person are the sum of his/her income and wealth.

The following are the assumptions of the Life-cycle Hypothesis:

1. Within the lifetime of the consumer price levels will not change.

2. The interest rate for assets is zero.

3. The assets of the consumer are obtained through savings but not inheritance.

4. His future consumption is determined by current savings.

5. She intends to consume her total lifetime earnings plus current assets.

6. There is no plan for bequests.

7. The consumer has certainty in both the future and present flow of income.

8. There is a conscious vision of life expectancy by the consumer.

9. The consumer has good knowledge of how his/her consumption spending is affected by the future emergencies, opportunities and social pressures.

10. Rationality of the consumer.

In consonance with the above postulations, the goal of every consumer is maximisation of his satisfaction within the period of his lifetime which largely depends on the volume of resources available to him within the span of his lifetime. Therefore the lifetime consumption of every individual is equal to her resources. However, the amount of resources that the individual decided to spend will be based on whether the spending plan was developed in the early or later years of her life. Hence as a rule, the average income of an individual is relatively low at both the beginning and the end of her life.

Figure 2.6: Modigliani Short-run Consumption Function
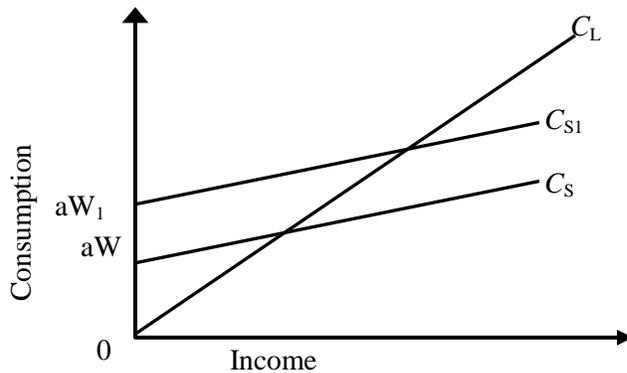
Source: Debertin (2012:78)

The Modigliani short-run consumption function is shown by the C_s. curve in figure 2.6 above. At any given point in time, the C_S curve can be considered as a constant and during short-run income fluctuation, when wealth remains fairly constant, it looks like the Keynesian consumption function. However, due to accumulation of wealth through savings its intercept will vary due to concentration of wealth through savings. Therefore, as wealth increases over time, the non-proportional short-run consumption function C_s shifts upward to C_{S1} to trace out the long-run proportional consumption function which is indicated by C_L, showing a constant APC as income grows along the trend. A constant APC arises over time due to the fact that both the share of labour income in total income and the ratio of wealth to total income are constant because the economy grows along the trend.

2.7 CONCLUSION

In this chapter a comprehensive review of literature was undertaken. The review provided knowledge of the current issues in the area of study to form the basis for an in-depth evaluation essential for acquiring adequate knowledge of the major theory used in the study. The study is on the trends of household expenditure in Nigeria based on Engel's law. This chapter reviewed all the relevant theories as well as conducted a theoretical review of related literature on household expenditure within the context of Engel's law. The Engel curve and the Working-Leser model discussed cover aspects of household food expenditure, budget share, elasticities as well as the impact of household size on expenditure.

It is noted that although Engel's law has covered many aspects of household expenditure, the greatest limitation of the theory is that it cannot measure inequality. For this reason the Gini coefficient will be used to measure consumption inequality among the six geopolitical zones of Nigeria. The review confirmed that there are very few studies carried out on household expenditure in Nigeria within the context of the Engel theory, which makes the study all the more important and relevant.

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CHAPTER THREE: EMPIRICAL REVIEW

3.1 INTRODUCTION

In every economy there is a direct relationship between its progress and development and the consumption of various goods and services by its citizens. This is because the welfare of all the citizens of the country can be measured by the amount of goods and services purchased by various consumption heads. Consumption stimulates business activities within the economy because businesses will only produce goods and services and invest in the economy according to the consumption pattern of the country, and consumption by the people in the country is determined by their income. The importance of consumption in economics theory has led to research being carried out in a number of countries, using a wide range of data and research techniques. According to Engel's law, as income rises the proportion of household spending on food declines, which signifies that income elasticity for food demand lies between zero and one. This implies that the increase in households' expenditure on food is less than the increase in their income (Timmer, Falcon, & Pearson, 1983). There are studies in both developed and developing countries that confirm the assertions of Engel's law with respect to the household's behaviour evaluation. These studies have validated Engel's law, particularly its potency in predicting the household's consumption behaviour. For example, studies have shown that households in developing countries consume more food and less of non-food items, while households in developed economies like the United States and Europe spend less on food and more on non-food and services (Nayga, 1994:12).

Therefore in this chapter a review will be undertaken of related empirical literature with the aim of forming the basis of achieving the objectives of the study as well as supporting the theoretical framework and the methodology. A review of empirical literature helps in identifying research gaps in the subject and the need for the present study.

3.2 ENGEL'S LAW AND HOUSEHOLD EXPENDITURE

3.2.1 Analysis of Food Share using the Working-Leser Model

A household's expenditure on food reflects its access to nutrition and food security. In view of this, there are many studies in economics that focus on the household's food expenditure to determine the various factors associated with it (Deaton, Ruiz-Castillo & Thomas, 1989; Muhammad & Williams, 2012; Abayomi, 2014; Rehman, Jian & Runqing, 2014; Maki & Ohira, 2014). Although Engel postulated that the proportion of what the household spends on food is inversely related to total income, there are many factors that determine the expenditure patterns of households. As a result, there are differences between patterns of household expenditure which are largely a reflection of income differences and other factors. Given this, the proportion of household expenditure that goes to food is usually of great interest to economists because food expenditure is a yardstick for assessing the general welfare of the households through consumption. Engel observed that there were a significant number of households that, due to increasing income, had a higher propensity to spend a significant proportion of the household's food budget on a diversified diet, thereby enhancing the nutritional position of individual household members.

3.2.1.1 Evidence from Developed Countries

Unlike in developing countries, developed economies are characterised by high per capita income, lower prices and smaller household size. Therefore while income, prices and household size exert a significant influence on household expenditure in developing countries, in developed economies prices and household size have very little influence in determining demand for food and other items, because income is high and therefore taste preferences hold sway. Lazarus (2012:30) states that in developed economies, because people are more affluent, household size and prices have less significance in determining food purchasing decisions among the people, but decisions are rather governed by preference, taste and diet awareness. Allen (2015:67) stresses that food demand is surrounded by the complexity of modern food choice processes that put a lot of weight on demand for food as significant numbers of new food products (72%-88%) continue to fail largely due to low consumer satisfaction. Also, a rising trend in consumption of meals away from home raises concerns for obesity and serious concerns about genetically modified

food. All these must be accounted for by food companies in order to increase the chances of product success.

Ever since the publication of the work of Engel in 1857, which is based on the proposition that a lower fraction of more prosperous households' expenditures (or income) is spent on food and that the income and consumption expenditure elasticity of food is less than unity, statistical and microeconometric research have shown that food expenditure and its budget share have been declining continuously in the last few decades in developed economies as well as in many high-income countries. This is contrary to trends in developing economies where the proportion of food share of the total household expenditure is very high. There are various factors responsible for the decline in food expenditure in developed economies. Bawley (2011:43) observes that high income, changing lifestyles and demographic trends contribute to this phenomenon. Furthermore, he stresses that decline in households' size and an increase in the number of families where both parents work have led to a rising preference for eating meals away from home.

The rising income in developed countries has led to the decline in the food expenditure share coupled with accompanying changes in the structure of household expenditure. In his study of Spanish household expenditure, Stevens (2013:70) observes that as income increases, household expenditure shift from the cheap staple food to more expensive commodities such as vegetables, milk, meat and fruit. Furthermore there is an increase in the proportion of expenditure on processed food and takeaway meals. Kemsley (2005:41) correlates the income growth among households to expenditure and the results of the study show that food share not only declined but the pattern of household expenditure changed. For example, the consumption of meat has tripled, while fruit, vegetable and milk consumption have all doubled. Bertola, Foellmi and Zweimüller (2014:21) used the 2005 and 2006 household expenditure surveys in Italy to examine changes in the pattern of household behaviour and find that, while the proportion of food expenditure has declined among Italian households there is an increase in healthy diet awareness as indicated by high expenditure in organic foods, vegetables and fruit. Also, the results show lower absolute values in the coefficients estimated through conditioning of the level of household food expenditure relative to total consumption recorded in the extreme quintiles. The results indicate that for poor or lower income households, especially in developing economies, food is considered a necessity. As a result, the proportion of what is spent on food in the total household

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expenditure is very high. However, in developed economies where income is very high, the proportion of food in the family budget is very low and expenditure is characterised by other items such as health, education, leisure and non-food. It should be noted that in developed economies, apart from the decline in the proportion of food within the household budget, there is a change in the pattern of expenditure to preferences for luxury food, healthy food, takeaway meals and sometimes processed food, due to lack of time to prepare the food at home.

Another issue raised within the Engel literature with respect to household expenditure in developing countries is the impact of household size on expenditure, equivalence scale and economies of scale in consumption. These three variables are interrelated, hence they are generally discussed together in the literature because it is very difficult to discuss one without mentioning the others. The relationship and the question of whether household size is positive or negative with respect to household expenditure originated from the work of Deaton and Paxson (1998), who find that the relationship between household size and food expenditure per capita is negative and that the effect is larger in poorer countries where the need for nutritional and calorie requirements among family members are more likely to be under-satisfied. In his attempt to test whether larger households are better off due to economies of scale, Michael (2014:67) estimated the food share equation for households in Germany. The results show that, since high-value foods form a significant proportion of the households' food budget due to high income, when the Engel food share equation was estimated it was found that per capita demand for all foods falls with increase in household size, which is in line with what is put forward by Deaton and Paxson (1998). Alderman (2000:26) obtains similar findings in his study of household expenditure and household size in the Netherlands, which shows that aggregate food expenditure is not affected by household size using 1998 data. However, when the 1999 household expenditure data was used the result showed a positive relationship between household size and economies of scale, indicating a negative relationship between per capita expenditure and household size.

3.2.1.2 Evidence from Developing Countries

In his attempt to explain how a household's purchasing behaviour of goods such as food varies due to variation in the level of a household's total resources of income or total expenditures, Engel used the concept of the Engel curve, which is a functional relation that describes how household expenditure on some goods or services changes due to certain household characteristics such as income, household size, age and prices.

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In developing countries the linear relationship existing between household food consumption expenditure and household income as postulated by Engel's law has been found to be practical. This is because in many developing countries, food expenditure accounts for a significant part of the household budget. In their attempt to examine the importance of food among low-income households in developing countries, Çağlayan and Astar (2012:318) report that expenditure on food is the largest component which dominates the household budget and that the share of food expenditure decreases with a decrease in the household income. Their results are in line with the results of Engel's study, which showed that income increases the proportion of what households spend on food within the total expenditure. Ademola's (2012:45), study on Engel's law and household food expenditure in Nigeria found that an increase in income of the household will have a tendency to distribute household consumption expenditure to no other expenditure but food. Furthermore, within the period of this study, which covers household data for four years, food expenditure was the largest component of the household expenditure. This shows that in Nigeria as a developing country, the household consumption expenditure is largely dominated by food expenditure. The policy implication of his study is that low-income earners would possibly be affected more by tax policy on food than on any other commodity.

According to the UN (2015:56), most of the 11 billion people that will inhabit the world by 2060 will be living in developing countries, which will witness the fastest growth of population. This will certainly pose a threat to food expenditure because household sizes will have increased. In economic terms the implication of a growing population is viewed in terms of the consequences of increasing the household size. In most consumption literature, especially those that relate to Engel's law, household size is considered as a very strong variable which can influence the size and pattern of household consumption expenditure. Rehman et al. (2014:34) predicted that household size and income in Pakistan determine and influence household expenditure in rural and urban areas. The results of the study also indicates that all the income and household size in the study area are positive and significant at a 1% level of significance, which shows that urban food consumption in large households is very high compared with smaller households. Also, the findings of the study showed that food consumption in the urban area is higher than rural food consumption, and larger households are more food responsive than smaller households. This clearly shows that expenditure elasticity and household expenditure are significantly affected by the household size. But Mock and McLean (2011:56) question the idea that there is always a

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negative relationship between household size and expenditure. The findings of their study show it is misleading to believe that larger households' families tend to be poorer than smaller households in developing countries. Their findings are also consistent with the findings of Idahosa (2014:65), whose results downplayed the negative fear that larger household size reduces consumption and household welfare. The findings indicated that a larger household will experience lower food poverty as household size increases due to economies of scale, because of the decline in the food poverty line among children because they consume less than adults. Another advantage of larger households is that there is the possibility of savings in public goods consumption, in housing as well as food preparation and purchase. The study is of the opinion that economies of scale exist in Nigeria in housing and food expenditure. A further study by Osita (2015:56) on household size, poverty and inequality using the Working-Leser model indicated that per capita poverty lines are declining with household size. However, headcount rates rise with household size. The results also show that if there is no allowance made for size economies, there is a tendency that the poverty rate will increase rapidly with household size. The result shows that a household with over 8 members will have a 27% poverty rate. But if the household size economies is estimated from the 10th percentile group using the Deaton-Paxson specification of (s= 0.22), the smallest household will have a poverty rate of 17%. This clearly shows that in terms of poverty rate there is not much difference between larger and smaller households, an indication that household size is not a problem in terms of poverty and the welfare of the household. Case & Paxson (2010:42), whose study focuses on economies of scale, household size and food expenditure, found that if total household expenditure per capita is held constant, with an increase in household size, expenditure per head on food will fall. The result seems to have a general application because it appears not only in the United State but also in the United Kingdom and France. Surprisingly, this aspect of the result is applicable in developing countries like Pakistan, Taiwan and Thailand, as well as among households in Africa, particularly South Africa. Similar results were found by Onoma (2015:56) in West Africa. There is a large effect of economies of scale due to household size in Ghana, Nigeria and Benin. For these developing countries the estimate shows that, with PCE held constant, a 1% rise in the log of household size will lead to a fall in the budget share of food expenditure by 5% and lead to a decrease in per capita expenditure on food by more than 10%.

From the preceding discussion it seems obvious that household size is a major factor that has a significant influence on household expenditure and invariably the standard of living in developing countries. However, despite all these results there is no acceptable way of measuring economies of scale of household size. In their attempt in this regard, Deaton and Paxson (1998:213) propose a model to measure the effect of household size on food expenditure share. They propose that what actually determines the economies of scale effect in household size is the result of a fall in the relative price of non-food family public goods due to the increase in family size. But this approach has its shortcomings because, while it emphasises public goods within the household it fails to consider the existence of private goods within the households which display limited substitution effect. In measuring household size the Engel method is popular due to its simplicity. Blow, Leicester and Oldfield (2004) employed the Engel method to determine the welfare of various households of different sizes by using food budget share. Several studies on household equivalence scale have indicated that larger families have a bigger budget share of necessities, more than smaller households on a similar income level. Pendakur (1999:21) finds that the equivalence scale of adults depends largely on the utility functions of the family; hence he uses utility to compare welfare between households. This finding is based on the assumption that a large household with a high income is as well off as a smaller household with lower income if the two have similar demand and utility functions.

3.3   ENGEL EXPENDITURE ELASTICITY

Expenditure elasticities are a powerful research tool meant to determine the variation in the proportionality between income and expenditure in household expenditure. This relationship helps in categorising expenditure components as a luxury, necessity or convenience. The most important point of divergence is on the very factors that determine households' expenditure elasticities. Some economists are of the opinion that prices and household size are the major factors that determine expenditure elasticities while others see it from the perspective of the urban-rural divide among households. In this regard Rehman et al. (2014:23) examine rural-urban expenditure and household size. The study uses double logarithmic regression models to estimate household expenditure and household size in Pakistan using the Ordinary Least Squares (OLS) technique. The estimation of the regression shows the existence of a relationship between households' food expenditure and household size elasticities in rural and urban regions. The results show that household size elasticities and food expenditure in both rural and urban areas

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are significant at a 1% level. It should be noted that the elasticity coefficients demonstrated a sort of cyclical fluctuation among numerous income cohorts. Another finding of the study is that the elasticity of household expenditure is less than one, signifying that the commodities in focus are necessities. Also, in rural and urban areas, food expenditure at the beginning increases due to an increase in income but declines steadily due to further increases in income of the households. The results show that the urban food consumption is higher within the upper income group, while households in the other income cohorts in the rural areas are relatively more food responsive and sensitive.

This finding validates Engel's law of food expenditure because the estimate of the elasticity expenditure is less than unity and as income rises its value also decreases. In order to determine economies of scale, household size was used as an independent variable. The results show that economies of scale may be experienced in the food category as household members can share some food items. There is also the possibility that larger households may receive discounts on their expenditure due to bulk purchases because the demand is larger, unlike smaller households.

Arguing from the perspective of household size in relation to elasticity, Gibson (2006:58) analysed the Engel curve, food demand, household size and economies of scale in households' food expenditure. The study used OLS to estimate a model based on the method of Deaton and Paxson (1998). Since two methods of data collection are used, the model is estimated separately for the sample of households whose expenditures were recorded in diaries and those whose expenditures were simply recorded by interview. Since the study uses two types of data, the result showed that, by using the Engel curve to estimate the household expenditure with data collected using the recall survey method, a 1% increase in the log of household size will lead to a 5% fall in food expenditure if the data was collected through respondents reporting expenditures by the diary method. The results show that with respect to household size the per capita food expenditure elasticity by recall is -0.184, but when using household data expenditure collected by diary report the elasticity will fall to -0.067.

Finally, the study finds that there is measurement error in the food expenditure data collected with the recall method with respect to household size. This is because with the increase in household size, it becomes increasingly difficult for the respondents to accurately remember their expenditures on food due to a rise in the level of transactions. However expenditure on non-

food is easier to recall because the purchases are made sporadically. The implication of this error in the measurement of expenditure data will bring a negative bias within the coefficient of the Engel curve on household size. In the end there will be a problem with the Engel method particularly when it comes to measuring household-size economies of scale for the expenditure of large households. The effect of household size on expenditure elasticity is very high on certain expenditure categories. For example, food is a necessity therefore food expenditure is more sensitive when compared to non-food. In their attempt to measure the impact of household size and composition on various categories of household expenditure, Burney and Khan (1992) examined household expenditure in Pakistan for the period 1990-1992, and used the Ordinary Least Squares method to estimate the models. On commodities elasticity the results show that household effects, food and drinks, footwear as well as personal effects are necessities irrespective of the income level of the household, while transport, durable goods, housing, communication and education are luxuries at all levels of income group. It is however found that the commodities differ in terms of the pattern of their elasticity. There are commodities whose expenditure elasticities will first all fall and rise and eventually fall and rise again, and there are those commodities whose elasticity will first rise and fall and eventually rise and fall again. In the first category are clothing, food and drink, health, housing and personal effects. The second category includes durable goods, transport, communication, household effects, fuel and lighting. The cyclical pattern of commodities' elasticities can be attributed to income volatility because the desire of every household is that, given its income to purchase a particular commodity, it will purchase it up to a particular minimum expected level. However, if that minimum desired level is not achieved by the households then they will continue to spend on that particular commodity as long as there is an increase in their income. If the household reaches the desired level, the share of household expenditure for the commodity will decline as the household's income increases. If income continues to increase, the households will change their expenditure to better commodities and thus expenditure on the commodity will rise again. This kind of cyclical pattern will be repeated as income continues to rise, thereby causing volatility in expenditure and elasticities.

Another finding of the study regards the impact of household composition on expenditure patterns; the effect is captured by the parameters ð, w, r in equations. The three coefficients show the effects on household expenditure on jth commodity as a result of the increase in the number of *i*th kind of household member, if both household income and household size are held constant.

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This means that, for a given income and household size, the change in the household's expenditure on *i*th commodity is indicated by the coefficients due to additional persons in the households. The coefficient is likely to be negative. Although in most cases the coefficient is negative, despite being negative, they are statistically insignificant. This indicates that in the study area, the composition of households has no significant impact on the consumption expenditure pattern.

Bergantino (1997:67) estimates the expenditure of transportation in the UK in order to distinguish the difference for instance between private and public transport. In order to be able to fully illuminate the behaviour of the households' transport expenditure, the transport expenditure was divided into three categories, namely public, private and miscellaneous transportation, and all the categories were regressed based on the total transport expenditure component. The result gives the following values of elasticities 1.016 and 0.998 for public and private transport respectively which, based on the result, classify the component of transport expenditure as luxury and necessity. But while the result of the one tail t-test supports the classification of public transportation as a luxury, the result rejects the classification given to the private transport sub-category. Also, based on the calculated values the result reveals that for all the functional forms of Engel curve the commodities food, fuel, tobacco and alcohol are necessities, while clothing and leisure are luxuries. However, based on the model estimated, the values of the elasticities calculated have changed significantly. As a result of this there have to be different classifications for the housing and transport commodities based on the model used. In order to determine the exact consumption behaviour of households with respect to the transport expenditure, point elasticity of different weekly expenditure levels of transportation values were calculated. Since expenditure elasticity depends on households' characteristics and total expenditure, it is possible to see some significant variations across households. The private transport category of the household expenditure switches from being a luxury good to being a necessary good at the same income level, £225. Naturally, the mean elasticity calculated with the OLS estimates is higher than that calculated with the estimates, which are 1.003 and 0.955 respectively. Finally, the study finds that economies of scale exist in transport expenditure because as the household size increases the family spends less on transportation, because the presence of additional children neither diverts nor increases expenditure on transportation. Also,

the presence of additional children increases the share allocated to private transportation and negatively decreases the allocation to public transportation.

3.4   HOUSEHOLD CHARACTERISTICS AND CONSUMPTION

Consumption decisions by households are not taken in isolation because there are many factors that potentially influence the volume and direction of household consumption expenditure in an economy within a given period of time. Apart from changes in income and prices, households' demographic and social characteristics have a great impact on the structure and size of household consumption expenditure. In every society, demographic factors have an overbearing influence in shaping and influencing the patterns of consumption of households by determining what they buy and how much they buy. These factors may include family size and age structure, educational level of the household head, as well as culture and religion, which can vary from one household to another. The household's demographic characteristics are important parameters of consumption decision making because they have a strong influence on the magnitudes and structures of commodities consumed. The estimated values of demographic scaling parameters indicate that there exists an economy of scale for family size in consumption expenditure. For example, analysis of household consumption expenditure will reveal how family size, children's age in the household, and the household head's gender and educational level can all have a significant influence on consumption expenditure.

The pioneering work of Barten (1964) has contributed greatly in the area of incorporating households' demographic variables in the analysis of demand for goods and services by the households. In his study, he analysed the effect of household composition and size to derive price elasticity of demand from wide-ranging goods and services. The study considered four commodity groups within the household expenditure, namely food, durables, transportation and leisure. The findings of the study showed that as family size increases, food and transportation have a tendency to become income inelastic while durables and leisure become income elastic. Building on the contribution of Barten in the area of the household demographic characteristics on consumption Perre (2012), in his study on household consumption and demography, found in a comparison of households of different characteristics such as size, ages and gender, that the food budget share is significantly affected, *ceteris paribus*, by household size changes, age, gender as well as the city where couples live. Also, the results of the study revealed that for a

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given level of a household's expenditure, there is a similarity of consumption of goods such as clothing, recreation and transportation for all households, irrespective of their size. Arguing in a similar direction James (2014), made an attempt to integrate the variable 'household composition' in the analyses of demand as a way of calculating the cost of maintaining children and how much of the household resources to effectively allocate between children and adults in the household. Also, the result of this study showed that household size has a significant effect on the food budget share while it has no effect on durables and clothing.

In their study, Begum, Khan, Farooq, Begum and Shah (2010:25) examine socioeconomic factors affecting food consumption patterns in the rural area of Nowshera district in Pakistan. The study used the Ordinary Least Squares (OLS) method to analyse the data. The first finding of the study shows a very high literacy rate of 94% which is higher than the national average of 55%, indicating a zeal for education among the people as an important variable for enhancing the quality of life of the people. The study also finds that average monthly income of households was Rs.8,917.00 ranging from Rs.3,000 to Rs.49,000 per month, but 50% of the households had a monthly income of less than Rs.10,000.00, while 47% of the households have monthly incomes ranged from 10,000.00 to Rs.25,000.00. Finally, the study finds that there is a strong relationship between household size and food items, namely wheat flour, milk, rice, vegetables, sugar, fats and tea. There is a significant effect on monthly income at P=0.05 level. However, expenditure on the following food items are not affected: meat, milk, rice, pulses, fruit, sugar, tea and edible fats.

Varlamova and Larionova (2015) conducted a study on the demographic factors affecting household expenditure in Organisation for Economic Cooperation and Development (OECD) countries. The study uses household consumption data for 34 OECD countries covering the 2012 period and multiple regression models based on the Ordinary Least Squares method were used to analyse the data. Based on the data analysis, the study makes the following findings. Firstly, changes in import and inflation levels have a significant influence on the volume of household expenditure. This is because a rise in the share of imports affects consumption in a negative way by creating pressure on domestic goods, which generally leads to prices being low and invariably leads to a reduction of household expenditure. Secondly, the results show that inflation has a positive relation with household consumption expenditure because a rise in the inflation rate

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leads to higher prices which leads to a corresponding increase in household consumption expenditure in order to maintain a similar quantity of goods to that which the household was buying with its income. Also, the study finds that two important opposite variables affect household spending. These are tax on goods and services as a means of raising government revenue, and old age support as a measure of government spending.

Radivojevic and Vasic (2014) undertook a study on household age structure and consumption in Serbia. The study considers individual consumption as a representation of the entire consumption of all the members of the household, and the age of the head of household is the age variable in the study. The study found firstly, that within the household life cycle, the total volume and amount of household consumption expenditure are changing. At the early stage the priority of the households is to try as much as possible to improve the quality of their lives by satisfying their basic needs, which are housing and food. After the basic needs are satisfied other items will follow such as communication, clothing, transportation, travelling, socialising, as well as other goods and services, including cosmetics. The study finds that expenditure on utilities accounts for the highest share of the household budget in the early stage, then eventually decreases with age. The relative share of these expenditures in the overall household consumption expenditure stood at 14.7% in 2007. However, this particular consumption category indicates a strong negative correlation with household head age at -0.853.

Çağlayan and Astar (2012) conducted a study on the microeconometric analysis of household consumption expenditure determinants for both rural and urban areas in Turkey. The study used household consumption expenditure data from the Turkish Statistical Institute for the period 2009. The study also used a survey dataset obtained from the household budget survey in a sample of 5,658 households between the period 1 January to 31 December 2009. Analysis of the data revealed the following findings. Firstly, consumption expenditure of women is higher than the consumption expenditure of men at all quantiles, and income has a significant and positive influence on consumption expenditure. Secondly, the region variable proves to be statistically significant because consumption expenditure of urban households is by far higher than consumption expenditure of rural households at all quantiles. Thirdly, the study finds that the educational level of the head of the household has a significant influence on consumption because consumption expenditure of households who are illiterate and do not have primary education, and secondary education, are lower than the households that have higher education.

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The consumption expenditure of a household composed of immediate family such as mother, father and children is higher than that of households composed of a single adult. Fourthly, the study finds that households that have a single head have higher consumption expenditures than married, widowed and divorced heads of households by 14 %, 21% and 23% at the 10th, 50th and 90th quantiles respectively. There is a variation between the consumption of a person paying rent and one who owns a house. The consumption expenditure of a person paying rent is low when compared with a person not paying rent such as an owner of a house at the 10th, 50th and 90th quantiles by 9%, 5% and 45% respectively. Age was found to be significantly and positively affecting consumption expenditures and it also shows similarities with household size. The impact of the age factor on consumption is also decreasing in the upper quantile. Finally, the study finds that income has a significant and positive impact on consumption in the study area.

Kiran and Shivam (2015) undertook a study on the impact of family size on savings and consumption expenditure of industrial workers. The data for the study was collected through a random sampling design from a sample of 100 industrial workers engaged at steel firms in the Indian city of Chandigarh. The technique of analysis in the study was a Single-Factor Multivariate Analysis of Variance (MANOVA). In order to describe the pattern of savings and consumption behaviour of individual workers in the study area, computation was conducted for each of five family-sized groups of the mean values of savings, consumption expenditure and income of the workers, the ratio of average saving to average income and the ratio of average consumption expenditure to average income. Based on the analysis of the data, the study yields the following results. The average monthly savings of workers with a family size of 3 members is highest at Rs.1,541.67, while the lowest was Rs.316.67 for workers whose household had 7 members. This shows that the bigger the family size, the lower the saving rate, thereby implying that the savings of the workers decrease with a rise in family size. The study finds that there is a positive relationship between family size and consumption because as family size increased from 3 to 5 members, the average consumption expenditure rose from Rs.4,791.67 to Rs.6,464.28. The increase in consumption due to the increase in family size arises because of the need to fulfil the additional demand. The study finds that as family size increased to 6 and 7 members, the average consumption expenditure of the workers fell from Rs.5,701.56 to Rs.4,600, respectively. This is due to the lower average monthly income levels of workers having a family size of 6 and 7 members as compared to the lower member family groups (< than 6 members). Finally, the

analysis of the data using MANOVA revealed that there is divergence between the mean values of both monthly savings and consumption expenditure among various households across five groups of varying family size.

Sekhampu and Nyimbanira (2013) conducted a study on the impact of factors influencing household expenditure in South African townships. The data for the study was generated from the South African household survey statistics. In order to analyse the data a multiple regression model was developed to determine the impact of demographic and socioeconomic factors on household consumption. The study finds that household characteristics significantly affects total household consumption expenditure in the study area. The study finds that larger households in the study area are associated with increases in consumption expenditure. Finally, the study finds that household income is an important determinant of household consumption expenditure in the study area.

In their work, Abdol and Williams (1993) conducted their study on demographic and lifestyle determinants of household consumption patterns. The study finds that among the socioeconomic and demographic variables affecting consumption, age, marital status, income and occupation significantly affect consumption. The study also finds that household consumption patterns are multi-dimensional because they vary from one household to another.

Alexander and Bick (2014) studied the effect of household size on consumption over the life-cycle. The study attempted to compare the two widely used versions of the life-cycle model of consumption namely, the single agent model and demographic model, and then measured the level of their influence on consumption. In the study, the two models were analysed from different perspectives. In the single agent model, the household size factor is constant over the life-cycle and the model was calibrated with a per-adult equivalent income. By contrast, the demographic model was calibrated using household income and household size changes deterministically over the life-cycle and impacts on the marginal utility of consumption. The study finds that, although theoretically the single agent model generally produces different predictions of per-adult equivalent consumption than the demographics model, in the demographics model, due to economies of scale in consumption and direct preference over household size, there is a general change in family size as well as shifts in the relative price of consumption across periods. This channel is by construction absent in the single agent model.

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When the demographics model is specified such that this relative price does not change, the two approaches predict the same per-adult equivalent consumption profiles.

Philips (1985) studied household food consumption in the Dominican Republic. The study analyses the effect of income, price and family size on consumption. The parameter estimate, standard error and goodness of fit of the consumption function estimate show a higher specification in terms of the R^2 statistics. Based on analysis of the data the study yields the following findings. Firstly, there is a general decline in food spending among the households in the study area. However the decline is faster for small families than for large families. The finding clearly demonstrates a positive relationship between family size and consumption expenditure on the one hand, and on the other, the impact of family size on food expenditure. In this regard, the study finds that approximately half of the households in the study area spend 60% or more of their budgets on food. By contrast, families with per capita incomes higher than the poverty line spend less on food, about 40%. Another finding of the study is on consumption of food of vegetable origin and non-vegetable origin which shows that family size affects the consumption of food of vegetable origin, but does not seem to affect consumption of a number of animal products. The finding appears to be consistent with the notion that if family size increases within a given income the priority of the household will be to obtain much more calories which are shared among the members of the household. The study also finds that, due to household size increase, the middle-aged households often reach the peak of first priority expenditures. These households have the largest number of children with their ages ranging from 0 to 14 years. As a result, most of the household budget is directed toward the important expenditures of food, health, education, and recreation and culture. Another finding of the study is on the consumption of old households which shows the largest share of consumption expenditure goes to consumption of food, medical treatment and utilities, which accounted for almost 70% of total household consumption. However, their pattern of expenditure will decrease after retirement, except for health expenditure, because income level will have fallen. Finally, the findings of the study show that household consumption expenditure is significantly affected by the age structure and formation of the head of the household. This is because the age of the household head has a significant influence on income level as well as the family size, the factors that in turn affect household consumption.

3.5 STUDIES ON CONSUMPTION INEQUALITY

In every society, the living standard of people is very important to government and policy makers because with fair distribution and income, the availability of goods and services to people are factors that determine the well-being and living standards of the people. However, the greatest threat and a major obstacle to the ability of people to earn a decent income and spend it on various goods and services that improve their standard of living and well-being, is inequality. Unfortunately, although both income and consumption inequality prevail in developing countries, the attention of most development economists is usually focused on income rather than consumption inequality.

In many developing countries at present, inequality of income and material wealth are the topical issues of discussion among economists and policy makers due to the role played by income inequality in determining the direction of economic opportunities among the people. While the emphasis is on income inequality, many households in both developed and developing economies experience inequality directly in terms of the goods and services they buy. Such consumption inequality can occur in the form of variation in household consumption expenditure based on income, geographical location and household size. According to Olaniyan and Awoyemi (2005), household consumption inequality is a deprivation of equal privilege of households to have or participate in certain social and economic rights such as employment, education, security and infrastructure that can deny them the ability to buy goods and services. Thus expenditure inequality tends to vary between households depending on the level of educational attainment, household size and social standing.

According to Lise and Seitz (2011:328), the issues of income and consumption inequality exist even in the developed economies in a form of dichotomy between rich and poor households, rural and urban households as well as between regions. Various studies have been conducted in the area of consumption inequality, some of which are reviewed below.

Brezinski and Kostro (2010:21) conducted a study on income and consumption inequality in Poland. The data for the study came from the yearly micro-data of the Household Budget Survey (HBS) covering the period 1998-2008. Since the study set out to measure income and consumption inequality, household net disposable income was used as the main parameter for income, while for consumption the study adopted total household consumption expenditures on

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health care, food, transportation, education, communication and recreation. The study finds that within the period 1998 to 2003, there was slow but steady growth in both consumption and income inequality. The growth of income and consumption ranged from 8.7% to 19.6% for income and 6.5% to 12.3% for consumption expenditure. The study found the rate of income inequality was faster in rural areas than in the urban areas. Of the three major Polish cities analysed, Warsaw is the most unequal. The study found that based on the Gini index for consumption expenditures, inequality in Warsaw grew from 1.8% to 12.3%.

Assad and Ahmad (2011) studied growth and consumption inequality in Pakistan. The study used micro-data from the Household Integrated Economic Surveys (HIES) conducted by the Federal Bureau of Statistics of the government of Pakistan, covering the period 1990-1991 to 2004-2005. The study finds that within the period 1990-1991 to 1996-1997, all measures of inequality decreased but then continually increased up to 2004-2005. Similarly, during the period 1992-1993 to 2004-2005, the Gini coefficient, Theil index, mean log deviation, Atkinson index, coefficient of variation and decile dispersion ratio increased by 12.41%, 20.00%, 16.36%, 21.43%, and 10.28% respectively. The study finds that from 1990-1991 to 1996-1997, consumption inequality declined but the decline was for a short period and eventually increased. However, within the period 1992-1993 to 1998-1999, rural and urban sector inequalities in consumption almost seem to have declined. In general, within the period 1996-1997 and 2004-2005, the Gini-coefficient in Pakistan overall shows that inequality has increased by 5.70% and 12.41% respectively in the urban sector. The Gini coefficient for the rural sector was 8.27% for the period 1992-1993 to 1996-1997 and 8.15% for the period from 1990-1991 to 2004-1905. The Gini-coefficient in rural sectors shows that inequality decreased by 8.27% from 1992-1993 to 1996-1997 and from 1996-97 to 2004-2005 it increased by 8.15%. Finally, the result of the regression analysis to determine the overall inequality in Pakistan revealed that inequality is negative in the entire country and that consumption inequality is more intense in urban than in rural areas.

In his study, Gosh (2006) examines rising consumption inequality in Bangladesh. The study uses household consumption expenditure data from the Bangladesh Bureau of Statistics for the period 1973-2005. In analysing the data, the study uses average monthly consumption expenditure and average monthly total expenditure using both linear and linear log models. The study finds that when the log-linear model is used there is 97% variation between average monthly consumption

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expenditure and average monthly total expenditure for rural and urban areas, while at national level there is 100% variation. Based on these results there is an indication that, with average monthly consumption expenditure, one can determine monthly total expenditure of both rural and urban households as well as the national level with certainty. Another finding of the study is that inequality exists in terms of the various food items consumed in both urban and rural areas. For example, cereals, vegetables, edible oil and clothing are treated as necessities in both rural and urban areas, and pulses and beverages are necessities in urban areas. Eggs, fish, meat and sugar are luxury goods in both urban and rural areas. The study found that in both rural and urban areas of Bangladesh, household size has a positive impact on their consumption patterns. Consumption patterns of both rural and urban areas in Bangladesh have differences and these differences are due to demographic, income and social factors. These differences in consumption are not only restricted to urban and rural areas but rather occur among the various income and social groups.

Muhammad and Assaud (2007:14) studied regional consumption inequality in Jordan. The study used household panel data on consumption expenditure in Jordan's regional governorates for the period 1997-2002, generated by the Jordanian Central Bank as a means of analysing the data to test the homogeneity of variances by commodity group of consumption expenditure, with the assumption that independent groups are taken from a population with the same variance. The result for the 1997 period based on Levant Statistics showed the following: 19.240 for housing, 4.269 for food, and 6.012 for clothing and footwear, and had a significance of 0.2%, 0.0%, and 0.1%, respectively. This clearly shows that the real per capita consumption of the mentioned commodities has very low probabilities. In other words, the variances of real per capita consumption on these commodity groups are not homogeneous. This is applicable for the entire consumption expenditure in Jordan in 2002 as well as for each commodity group. Examination of the values of the Levant Statistics and their corresponding significance, clearly shows that there is a significant difference among the variance of consumption expenditure indicating that there is a presence of a strong consumption inequality between governorates. The study found that within the 1997 period, inequality existed among the governorates based on the statistical difference between governorates in consumption inequality with respect to expenditure in the transportation, health and education categories of consumption expenditures. Similarly, the study finds that there was an increase in inequality in all the governorates in the periods 1997 and

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2002, which is indicative from the perspective of the result by the respective values of the calculated F. After all the tests and necessary comparisons between the various governorates with respect to the average per capita consumption, the test of the result yielded 21 significant differences among the governorates of Amman-Balqa, Amman-Irbid and Maan-Aqba in 1997, and 33 significant differences in 2002 in the Amman-Balqa, Amman-Zarka and Karak-Maan governorates. This empirical result is a clear manifestation of the existence of rising inequality among the governorates in Jordan as some governorates are dominated by the poor while some are dominated by the rich.

Mickey and Pal (2010) conducted a study on the relationship between household consumption and inequality in the Indian states. The study used data from the Indian National Sample Survey (NSS) to determine relationships between consumption and initial period inequality order of integration. The study finds that there is a relationship between higher rural (urban) inequality and higher average rural (urban) consumption, and that initial rural (urban) consumption level is determined by the urban (rural) consumption by a significant proportion. Also, the study finds that there is a strong impact of the period of initial inequality with subsequent average growth rates of consumption. And with respect to inequality, rural inequality is a much more important yardstick than urban inequality for explaining annual change in rural consumption and similarity. Another finding of the study is on the effect of contemporaneous and lagged consumption on inequality, based on non-linear inverse terms. This result clearly shows that higher rural (urban) consumption is a phenomenon that can be linked to higher rural (urban) inequality. Therefore, while higher urban (or rural) consumption is associated with lower rural (urban) inequality, redistributive development expenditure will be an effective tool that will help in lowering inequality in rural areas, although the effect is insignificant for the urban sector. Finally, based on the result of regression of the average annual rate of change of sectoral inequality, initial consumption is an important measurement of consumption inequality in rural areas but this is not applicable to the urban areas because there is no significant corresponding relationship.

Jappelli and Pistaferri's (2009) study on the relationship between consumption inequality and income inequality used data from the 1980-2006 Survey of Household Income and Wealth (SHIW) conducted by the Bank of Italy. The study used additional data from stylised facts on labour supply, income, consumption, wealth and several measures of consumption and income inequality drawn from the Bank of Italy's SHIW between the period 1980 to 2006. The study

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finds that between the 1970s and 1980s, consumption inequality declined but grew dramatically in the 1990s and remained at a higher level until very recently. After declining through most of the 1970s and 1980s, income inequality in Italy grew dramatically in the early 1990s and stayed at this higher level until very recently, although the inequality is a transitory phenomenon and the major factors responsible for inequality are arrays of economic factors that led to the increase in the degree of instability of earnings and incomes as opposed to shifts in the wage structure, which appear either to be episodic or pick up only in the most recent years. The study shows that although consumption inequality is on the rise in the study area, it is however occurring at a slower rate when compared with the increase in income inequality. This phenomenon can be explained within the context of a standard life-cycle permanent income hypothesis framework, which states that consumers are likely to respond strongly to permanent shock and much less to a transitory shock. The results of the study indicate that there is no change in the variance of permanent shocks within the sample period, while there is an increase in the variance of transitory shocks. The implication of this result is that although there is an increase in consumption inequality in the study area, the increase is not as much as it would have grown if most of the increase in income inequality had been due to changes in the wage structure.

Mei (2012) conducted a study on the effects of inequality of distribution of income on aggregate consumption in the United States. The study covers the period 1967 to 2009, and all the data for the study was in annual form. The study measures consumption as the natural logarithm of real personal consumption expenditure, while the real algorithm for personal consumption expenditure is consumption. In addition to these, three dummy variables were also incorporated in estimating the equation to capture the oil crises of 1970, 1980 and 2008. The study finds that while the Gini Index is not statistically significant and all the other significant variables have the correct sign, disposable income on the other hand is also not significant in the long run. This finding is in sharp disagreement with the arguments put forward in both the life-cycle hypothesis and the permanent income hypothesis. Another finding of the study indicates that the error correction term has a correct sign as well as is significant. In addition, its value is also within the expected range 1>. Finally, the study finds that, of the three variables of disposable income, only one variable with three lags is significant. This is because it takes a little period of time before the consumer adjusts his consumption after his income changes. Consumption that has one and two lags is insignificant while consumption with three lags is significant. The coefficient of the

significant consumption variable is negative, which indicates the existence of a correction mechanism in consumer spending.

Clementi, Dabalen, Molini and Schettino (2014) conducted their study on the consumption pattern of Nigeria and the extent of economic polarisation. The study used National Living Standard Survey (NLSS) data of the National Bureau of Statistics for the wave 1 (2011-2011) and wave 2 (2012-2013) survey periods. The study finds that apart from growth of real mean and median consumption expenditures, there is a decrease in the consumption share for the poorest percentile of the population with 7% and 9% within one survey wave to the next, while the share of the richest percentiles recorded an average increase of around 6%. The study finds that the full distribution of total per capita consumption expenditure of Nigerian households in wave 2 is relative to the reference wave 1 distribution. Also, the study finds that there is a significant change with respect to distribution of consumption which is indicated by the generally positive slope of the relative density, an indication that household expenditure is significantly decreasing below the wave 1 median expenditure. With respect to variation in consumption expenditure among the six geopolitical zones, the study finds that almost all the geopolitical zones witnessed an increase in both mean and median expenditures from one survey wave to the next, but this change did not affect the North East geopolitical zone, that witnessed a decline by two measures in real terms of 7% and 10% respectively. Consumption shares for households living in the North Central, North West, South East, South South and South West did not remarkably change for both bottom and top groups. Consequently, inequality and polarisation indices showed only insignificant variations for these zones. Conversely, households living in the North East, especially those in the upper tail of the consumption distribution, spent a bigger fraction of their resources in wave 2 than in wave 1, while those in the bottom tail spent a smaller amount. This may explain the significant rise in the inequality and polarisation indices observed for this zone. Another finding of the study is that households living in North Central, South South and South West witnessed a significant rise in consumption expenditures while households living in the North East saw a downshift in their consumption expenditures. The relative densities for two of the most populous geopolitical zones, North West and South West, give a different picture. In the North West zone a convergence toward the centre of the distribution seems to emerge, because of the shift of both the lower and upper tails toward the middle. The growth in consumption in the South West geopolitical zone was partly offset by an increase in the lower-middle mass.

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Finally, the study finds that consumption distribution of households in Nigeria has seen a significant change, particularly with respect to a general upshift of the distribution that creates a tendency to polarisation. This is demonstrated in the rise of the median, a clear sign of the increase in the level of polarisation, which means that the distributional movements observed in the 2010-2013 period succeeded in hollowing out the middle of the Nigerian household consumption distribution as well as increasing concentration of the mass toward the high and lowest deciles. However, this pattern of distributional change does not apply to the entire country but is changing from one geopolitical zone to another.

Attanasio and Pistaferri (2016) used data from the United States Bureau of Labor Statistics for their study, covering the 2006-2016 period. They found that there is evidence of inequality in food consumption due to a decline in spending at the bottom. Despite the existence of consumption inequality there is little or no evidence to show that there is inequality in calorific intake among the households. The study finds that inequality in food consumption is rising and most of the increase derives from a decline in spending at the bottom. While inequality in food consumption has increased, there is little evidence of growing inequality in calorific intakes partly as a result of assistance provided by government programmes which supplement private spending. Another finding of the study is that there is a greater intergenerational mobility in income than in consumption. This is because from the result, the slope of the local regression line for the income gradient seems to be higher than that for consumption. This shows that in reality, consumption is more equally distributed than income and evidence likely suggests that the increasing disparity in income is manifested in the growing disparity in consumption. The study also finds there is rapid convergence in terms of ownership of major durable goods between low and high permanent income households. These goods are known to help immensely in raising the living standards of the household. Finally, the study finds that in general there is a significant increase in the consumption of leisure among individuals with low social status, much more than what obtains among the well-educated individuals.

3.6 THE USE OF CONSUMPTION DATA IN MEASURING INEQUALITY AND POVERTY

There has been growing interest and concern among economists and policy makers in recent years at the rate at which poverty and inequality are rising, especially in developing countries. As

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a step toward reducing poverty and inequality, economists need to be able to measure and identify the level of poverty or inequality. This is not possible without the right tool that can be used to measure them with accuracy. At present, there are conflicting views among economists with respect to what can be used to accurately measure inequality and poverty. Traditionally, most economists subscribe to the view that income is the most accurate tool and the generally accepted standard to measure poverty and inequality. As a result of this notion, income data is always available and there are many tools available for analysing trends in income. Within the sphere of government, income data is prepared the most in terms of policy analysis and reporting. Despite the priority and emphasis on the use of income data for measuring inequality and poverty, a strong view now exists among economists on the need to use consumption data as well to measure inequality and poverty, especially in developing countries. The reasoning behind this view is that consumption is important to all households, for whom the purpose of working to earn income is not to accumulate wealth and assets but instead to use the income for consumption of goods and services as the source of utility and the determinant of living standards.

Unfortunately much of the research in poverty and inequality still emphasises income inequality. Income has some limitations as a measure of poverty and inequality. For example, in many countries where government welfare programmes are functioning it will be difficult for income data to capture their impacts on the standard of living of the people. Also, income data cannot appropriately capture income earned by vulnerable groups and informal businesses, which are prevalent in large numbers in developing countries. In view of the limitations of income data as a resource for measuring poverty, inequality and well-being, many scholars and researchers suggest a shift in approach from income data to the use of consumption data to measure economic well-being. This argument assumes that people derive satisfaction (utility) from consumption of various goods and services but not from the income. Consumption should be the yardstick for measuring inequality and well-being (Deaton, 1997).

There are various studies that emphasise the importance of using consumption data in measuring inequality, poverty and well-being in the economy other than income data. These studies are reviewed below.

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Hasset and Mathur's (2012) study used data from two sources, the CEX data generated by the Bureau of Labor Statistics, and RECS data generated by the United States Energy Information Administration. Based on data analysis, the study made several findings. Firstly, in the 1980s, consumption inequality increased marginally and the marginal increase could be attributed to a rise in household consumption expenditure at all levels. The study finds that during the 2007 to 2009 period economic recession made consumption inequality narrow significantly. The reason for this was that rich households that had high income and that had invested their wealth in the economy suffered serious economic losses which prevented them from smoothing their consumption. Despite this setback in terms of the level and volume of their consumption expenditure, examination of some income-inequality measures such as the data release by the Current Population Survey shows that levels of inequality are still very high even within the period of economic recession. With respect to ownership and use of household electrical goods such as computers, printers, refrigerators, microwaves, dishwashers and other home appliances the study finds a significant increase in terms of ownership of electrical appliances among low-income households. Many low-income households can afford to possess more household items such as air conditioning, heating appliances and ownership dwelling spaces. The finding of the study clearly suggests that there was a significant narrowing of the consumption gap between low-income households and high-income or middle-income households.

Johnson et al. (2005) studied economic inequality through the prism of income and consumption. The study used income and consumption information from the United States Consumer Expenditure (CE) Interview Survey data. The study finds that in both 1981 and 2001, children with single mothers as the heads of households had absolute levels of consumption that were more than the income level. The study finds that if the lives of household members, especially children, are deteriorating due to consumption inequality and the mobility of the children among consumption quantiles is high, then there is a tendency that those children can become consumption poor for a short period of time. Another finding of the study is in the area of distribution of home ownership as it affects the relative consumption status of both old and young members of the household. Housing as a component of consumption expenditure has a large adjustment for the service flows, and there are a significant number of elderly people who own their own houses, much more than families with children and particularly the single parents. Also, the study finds that within the period 1981 to 2001, household consumption expenditures

for shelter, vehicles and medical needs increased significantly as a share of the overall consumption expenditure. In 1981, they accounted for 29% for couples with children and 35% for single elderly and non-elderly, while by 2001, they had increased to 39% for couples with children and 42% for single elderly and non-elderly.

In terms of using either income or consumption to measure the well-being of people, the study finds that there are conflicting results when using either income or consumption. This is because when income is used it makes adults look relatively more advantaged than the general population, while the use of consumption makes the elderly appear more advantaged than the general population. Hence the finding of the study that selection of either income or consumption as the measure of well-being may have real consequences for how government policies are evaluated, especially for the elderly. The study finds that when imputed income or consumption is added to the measure of household resources it will make a significant difference to the measurement of annual growth rates in living standards. Whenever inequality is measured with consumption, the result will show that inequality and relative poverty grew less rapidly. Thus the data revealed that consumption at the bottom grew more strongly than income in the 1980s, and consumption at the top grew less strongly than income in the 1990 and 2000s. Finally, the study finds that for income and consumption, all the odds ratios are significantly different, especially among single adults with or without children. This is indicative in the fact that the risk of being in the bottom decile group of consumption indicates a steeper gradient – particularly in years of full-time education and the number of children – compared with the risk of being in the bottom decile group of income.

Brewer and O'Dea (2012) measured household living standards with income and consumption using data on household spending from the Living Costs and Food Survey (the LCFS was known between 2001 and 2007 as the Expenditure and Food Survey, and as the Family Expenditure Survey for the period 1978 to 2009). The study finds that consumption is a superior measure of inequality compared with income because, for example, a household's low recorded consumption is a better guide to its actual living standard than the household having a low reported income. A handful of estimates are positive for some measures for some family types, but the vast majority of the estimates are either negative and significant, or insignificantly different from zero. Another finding of the study shows that in 2009, when Gini coefficient was used to measure inequality, there was inequality in Households Below Average Income (HBAI)

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income (and broad income), and it was statistically significantly higher than in the periods 1978, 1986 and 1995. However, when consumption was used it produced a different result which showed that inequality in consumption in the 2009 period was statistically significantly higher than only in 1978, and statistically significantly lower than in 1986 to 1993. Again, the study finds that in the 1988 period, when Gini coefficient is used, inequality in HBAI income was statistically significantly higher than in the 1978, 1986 to 1995 period, but was statistically significantly lower than it was in 1999; this is similarly applied to inequality in broad income. However, in terms of inequality in consumption in the 1988 period it was statistically significantly higher than in the period 1978 to 1985, but higher than in 1989, 1993 to 1995, 1997, 1999, 2001 to 2004 and 2009. Here, all measures of income and consumption confirm that inequality grew between the late 1970s and 1980. Finally, the study finds that within the period 1978 to 2009, there was a conflicting account of the actual condition of inequality. In terms of measuring inequality, both income and consumption give a different perspective of inequality. For instance, if inequality is viewed from the perspective of consumption it fell drastically and if it is viewed from the income perspective it rose.

Mayer and Sulvian (2003) conducted their study on the quality of income and consumption measures of material well-being in Italy. The study used data from the Consumer Expenditure Survey (CE), the Panel Study of Income Dynamics (PSID) and the Current Population Survey (CPS). The study finds that the best measure of material well-being for the poor is consumption rather than the income. This is because consumption captures the variables as they relate to people's well-being. For instance, consumption can conveniently capture permanent income, better accommodates illegal activity and price changes, reflects the insurance value of government programmes and credit markets and at the same time is a tool to reflect private and government transfers. The study finds that with respect to the argument for reporting, income and consumption are evenly split. The arguments in favour of income are that it is easy to collect income data, they can often be collected for larger samples and it is easier to report given administrative reporting. However, when it comes to analysis of families with few resources, income is less valid, their non-response rate is very high and they are likely to be under-reported. The study also points out that there is evidence of measurement error and under-reporting associated with income, particularly among the poor and poorly educated single mothers because their expenditures greatly exceed their reported income. This is indicated in their income and

expenditure percentiles distribution and when it is compared with the average expenditure and income of uneducated mothers. Another finding of the study is that some of the most commonly used household surveys have a tendency for substantial under-reporting of key components of income. For instance, an analysis of weighted micro-data from some surveys, when compared with data on administrative aggregates, clearly reveals that government transfers and other income components are seriously under-reported and the degree of under-reporting has changed over time. A comparison of survey micro-data with administrative micro-data for a given household indicates a lot of under-reporting of government transfers in survey data. And in some rare instances, there is also some under-reporting of expenditures. However, since expenditures often exceed income, the concern should be about over-reporting of consumption, of which there is little evidence. Finally, the study finds that in order to report as well as measure the real material hardship condition or serious adverse condition for households and those with very low consumption or income, consumption is the most appropriate measurement for capturing well-being of disadvantaged families.

3.7   TRENDS IN HOUSEHOLD CONSUMPTION EXPENDITURE

Analysis of trends and pattern of consumption is very important in the economy. This is because consumption data is not static but rather dynamic and volatile because it changes from time to time due to the influence of so many variables, such as price, income, as well as household social and demographic characteristics. According to Lorrez (2009:31) there are various reasons why understanding trends in consumption is important. Analysis of trends in household consumption expenditure helps governments to determine the volume of consumption expenditure in the economy and to know whether it is increasing or declining over time. Also, through analysis of trends in consumption expenditure governments will be able to estimate the total budget or spending of households on various components of consumption expenditure, such as food, health care, education and services. Furthermore, analysis of trends in consumption will help to determine if there is inequality between households and what is responsible for the inequality. The section below reviews the studies on trends in household consumption expenditure.

Blow, Leicester and Oldfield (2004) conducted a study on trends in household spending in the United Kingdom using household consumption data obtained from the UK Household Survey data for the period 1978 to 1979. The study finds that in the 1978 period, there was a significant

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growth in consumer spending such that it far outstripped inflation in all categories of goods except food and tobacco – this clearly indicated growth in total household spending. The major components of household expenditure that witnessed the largest increase were education and holidays; however the latter witnessed an increase from a low to a high base. Another finding of the study was that Britons spend much of their money on expenditure on non-basic items rather than spending on the three most important basic goods; food, clothing and fuel. The study found that there was an increase in expenditure on services at the expense of non-durable goods. This happened despite unfavourable price changes, indicating that the demand for many goods seemed to be inelastic. In terms of categories of goods that have smaller expenditure, the study finds that while household spending on private transport witnessed significant growth in recent years, spending by the household on public transport has continued to decline significantly. Also, households in the United Kingdom currently spend more on buying food that is prepared and less on food that they prepare at home as was the case 25 years previously.

Lux (2000) carried out a study on changes in consumption of households. The study used data from the Family Budget Survey 1990-1997. The study finds that although the relative food expenditures decreased slightly, they remained on a relatively high level of more than 28%. Also, the study finds that although housing expenditures increased very sharply, they are still on a relatively low level in comparison with the situation in the EU countries, and this increase was not connected with the structural changes in the housing market. The study also finds that a rise in nominal necessary expenditure was compensated for mostly by the decrease of expenditures in the spheres of clothing and transport but not in leisure time activities, indicating signs of consumerism especially among the highest-income households. Another finding of the study was the apparent trend of an escalation in social inequalities between the periods 1990 and 1997, especially in the sphere of leisure time expenditures. The standard of living among older households (pensioners) remains very low. Although it cannot be confirmed in this hypothesis that 'meritocratic' factors (income, education) have strengthened and demographic factors (family size, age and household size) have weakened their influence on explaining the variability of the basic consumerisms proposition, the results from multiple regression analysis on merged data files demonstrate that, in the sphere of relative housing expenditures, there is an apparent trend towards the strengthening of demographic factors (age, family size, residence size); education is not significant for explaining variability in housing expenditures.

Mark and Barker (2000) studied the trends in household consumption in China using data from the National Bureau of Statistics of China. The study finds that household disposable income fell in the period studied and this led to a decline in the level of consumption expenditure by many households. The decline in the level of household disposable income is largely attributed to the economic conditions of the country. The study finds that due to differences in the level of income among households, the pattern of consumption expenditure among most households differs significantly.

Sherma, Sharma and Gupta (2006) looked at the changing consumption pattern in Himachal Pradesh. The study used National Statistical Survey secondary data for the periods 1987-1988, 1993-1994 and 1999-2000. The study finds that household consumption expenditure on non-food items increased from 21.39% to 57.8%, while expenditure on cereals among the food components grew significantly by 28.70%, making it the largest item of household expenditure, followed by milk and milk products that accounted for 14.07%. The study also finds that there is an increase in household expenditure on milk and milk products due to an increase in expenditure level, except in the case of the items under Group 4. There is a decline in total expenditure on cereals, pulses and vegetables due to an increase in expenditure. Another finding of the study shows that food items are the major components of consumption in rural areas, which exhibited a decreasing trend within the period, having stood at 65.66% in 1977-1978 and then decreasing to 56.00% in 1999-2000 for the overall situation. Among all the expenditure items, cereals is the most dominant expenditure item in the food expenditure followed by milk and milk products, while in the non-vegetarian food items, the items that received very low preference from consumers within the period were fish products, egg and meat. The overall expenditure under these items significantly declined from 1.57% in the period 1977-1978 to 1.19% in the period 1993-1994; it however marginally grew to 1.28% in the period 1999-2000.

Also, the study finds that, consumption expenditure on non-food items grew from 34.34% in the period 1977-1978 to 44.00% in 1999-2000. Among the non-food items, the following items accounted for the largest portion of the expenditure: miscellaneous goods and services such as entertainment, toiletry articles, conveyance and sundry articles, followed by clothing, fuel and light and durable goods. The items exhibited an increasing trend with a rise in the level of household expenditure, which is attributed to a rise in income level in the state. On the annual trend on consumption, the study finds that in the 1987-1988 period, there is a general increase in

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the percentage expenditure on meat, fish, eggs and fruits which all increased as a result of the increase in the general expenditure level. However, in the case of milk and milk products, the percentage in expenditure stood at 53% for Group II items, that increased to 59.4%. However, for Group III it dropped afterwards. Finally, the study finds that there is a general change in overall consumption expenditure which increased from 42.04% in 1977-1978 to 68.08% in the period 1999-2000. In the non-food category, miscellaneous goods and services is the largest component of consumer expenditure in the entire period under study and expenditure on durable goods exhibited serious fluctuations within the period studied.

Kiran and Shivam (2015) studied the changing consumption expenditure pattern of the Haryana district in India. Their study used survey data on rural and urban households. The study found the existence of a disparity in household consumption expenditure based on the average per capita monthly consumer expenditure, which was established as Rs.1,510 for the rural sector and Rs.2,321 for the urban sector. From this amount, Rs.809.36, accounting for 53.6%, was spent on food items while Rs.700.64, accounting for 46.4%, was spent on non-food items in the rural sector. A decline was found in the share of food by about 10 percentage points to 53.6% in the rural sector and by about 16 percentage points to 40.7% in the urban sector within the period of 22 years, while the share of non-food rose by more than 15% in the urban sector and by about 10.4% in the rural sector over the 22-year period. The study shows that the trend of consumption expenditure changed for both rural and urban households. In particular, food consumption shows a slight significant difference between the rural and urban households in the average monthly per capita consumption. The monthly average per capita non-food expenditure as well as the total expenditure was higher in urban households than in the rural households. From the result its f value was found to be significant in the situation of both total expenditure and non-food expenditure; the significant t value shows that the mean consumption of both rural and urban households was different. With respect to consumption, there was no significant difference between rural and urban households in the average monthly per capita consumption. This is because average monthly per capita expenditure on non-food items as well as the total expenditure was higher in urban households compared to rural households. The t value was also found to be significant in the case of both total expenditure and non-food expenditure. There was no significant difference between the rural and urban households as far as food expenditure was concerned but a significant difference was seen in the case of non-food expenditure and total

expenditure. However, for non-food items like clothing and footwear, the consumer has become more conscious about the design, trends and brands. Discounts and offers also influence the consumption pattern of food and non-food items to a greater extent. Finally, on what actually drove consumption in the study area, the findings reveal that apart from various social, economic and demographic factors that strongly influence the consumption behaviour, there is a strong effect of income on consumption of food and non-food items while only items like cereals, eggs, meat and education do not have any effect on the consumption pattern of the households. The variables which were influenced by the income level were pulses, milk and its products, pan and tobacco, clothing and footwear, and entertainment.

Zhangye, Peter and Arnold (2012) conducted their study on food consumption trends in China using data collected from the China State Statistical Bureau for the period 2000-2010. The study finds that within the period 2000 and 2010, there was an increase in nominal expenditure on food items which more than doubled in the rural and urban areas. But within the same period, there was a decline in the percentage share of food expenditure from total consumption expenditure, which declined from 49% in 2000 to 41% in 2010. The rural areas accounted for 39% of the decline while urban areas accounted for 36% of the decline. Interestingly, while expenditure on food rose, consumption of food grains declined in the last decade, meaning that higher levels of income must have been spent on foods other than food grains. The study finds that the most important items of food consumed were rice, wheat and corn. Consumption of rice and wheat are the highest in urban areas while more corn is consumed in rural areas. With respect to meat consumption, the most popular meat consumed was pork followed by chicken. Urban consumption was about twice that of rural consumption at the end of the 2000s. While rural consumption of poultry recorded a steady increase, urban consumption did not show a consistent upward pattern due to an increase in consumption of meals away from home such as Kentucky Fried Chicken (KFC) and others fast foods popular in urban areas. The study finds an increase in the consumption of poultry meat, especially among consumers with higher incomes, an indication that there was a positive relationship between income increases and per capita consumption of poultry meat in both rural and urban areas. Also, the study finds a significant increase in dairy products consumption within the past ten years. For instance, consumption of dairy in rural areas in 2010 was approximately a quarter of urban consumption. However, that percentage significantly increased in rural areas where the consumption of dairy products

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increased three-fold in the period 2000-2010, while in urban areas the corresponding increase stood at 67% but with a much larger absolute increase of 7kg compared with less than 4kg in rural areas. The study finds a significant increase in consumption of aquatic products within the past ten years, propelled by the tremendous growth in China's aquacultural output. The major aquatic food consumed was fish in both rural and urban areas but the consumption of prawns and shrimp was relatively low for urban and rural areas. The study finds that there were no dramatic changes in terms of consumption of vegetables, fruits and their processed products. The quantity consumed seems to be quite stable in both rural and urban areas with a relatively small difference in the level of vegetable consumption between rural and urban areas. However, fresh fruit consumption in urban areas is twice that in rural areas. The consumption of vegetables (not including potatoes and sweet potatoes) increases from low income to high income groups. The level of vegetable consumption between rural and urban rich was largely comparable, around 130kg per person per annum. In general, the study finds that the level and composition of food consumption in China experienced major changes between 2000 and 2010 as per capita direct consumption of grains dropped while the consumption of foods of higher value increased, especially foods of animal origin. Finally, the study attributes the changes in the general consumption trend in China to the rate of economic growth, which is faster than the population growth rates – a phenomenon that led to an increased in consumer income. As a result of increased income, the amount of consumers' income spent on food increased even though the actual share of income spent on food declined, because inferior cereal grains were substituted with normal and luxury goods of higher value, such as foods of animal origin.

Shantana, Molla and Siraj (2003) used data from the Household Survey and Retailers Survey of rural households in Bangladesh to study patterns and trends in food consumption in poor urban and rural households in Bangladesh. Their study finds that in terms of food consumption, rice is the most consumed staple food and is consumed in all households and in every major meal. The study finds that consumption of chira/puffed rice was highest in the Bangladesh Rural Advancement Committee (BRAC) group, as high as 82.6%, and lowest in the *char* (sandbar) villages at 6.7%. The study also finds a clear difference in terms of consumption of locally produced biscuits between high vibrancy (HV) and low vibrancy (LV) villages, where the consumption is higher in the HV villages. The consumption of the local biscuits is low in households in the char areas. This indicates that bakeries are yet to develop in LV and char

villages. With regard to the consumption of animal food sources, the most frequently eaten was fish, consumed most frequently in the villages and least frequently in slums and chars. However, the consumption of meat was rare in all areas but milk was commonly consumed in the villages and chars, but not in the slums. This is contrary to the consumption of eggs which are very rarely eaten in char households, compared to households in other sample areas. The study finds that consumption of luxury food items increased. For example, there is an increase in the consumption of chocolates, potato chips, chewing gum and chanachur. Similarly, consumption of laddu significantly increased, with a remarkable recorded 100%-400% increase in sales in the upazila (county) centres. There is a notable change in the sales of chocolate which increased by 20% in the char areas during the period. With respect to the overall change in consumption patterns in the study area, meat, fish and wheat flour recorded an overall decrease in consumption among the poor, while new processed, packaged items and luxury items such as crisps, chocolates, branded biscuits and bottled oil recorded the highest consumption by the households. This pattern of consumption is also applicable to the middle class, an indication that the consumption trends are not limited to the wealthiest income groupings.

Timmins (2006) studied the consumption trends of the US Hispanic population from 1980 to 2003. The study used data from the Consumer Expenditure Survey (CES) produced by the Bureau of Labor Statistics (BLS). The study finds that in terms of food expenditure, the Hispanics population usually allocates a higher proportion of their total expenditures to food items than non-Hispanic households, by 20.0% and 16% respectively on average. From the data, the share of expenditure on food stood at about 18% higher for Hispanic households over the period. However, with respect to the food expenditure the maximum difference of 25% occurred in the 1984 period. The divergence arises basically because the Hispanic people have lower income levels and generally poorer people spend a relatively significant portion of their budget on food items. Other factors that trigger this trend include household sizes, cultural influence and the importance of food within the Hispanic communities. Another finding of the study showed that expenditure on education among the Hispanic community is very low. On average, education-related expenditure accounted for only 1.3% of the total household expenditure. The components of educational expenditure among the Hispanic households are broken down as follows: tuition fees for both colleges and universities account for 43.3% of the total education expenses, followed by elementary and high school tuition and fees accounting for 26.8% and

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textbooks/supplies for college accounting for 8.37%. The study finds that 37% of the overall Hispanic household-related expenditures concern shelter, household furnishings, utilities/fuels and housekeeping supplies. The significant portion of Hispanic housing expenditure consists of shelter and utilities/fuels spending. The average Hispanic expenditure on shelter is broken down as follows: 22.2% housing spending, 7.85% utilities/fuel expenditures and 21.0% for housing spending. Finally, the study finds that in all Hispanic households, health care accounts for a smaller portion of the budget, 4.4% of the total expenditure. The Hispanic households spending on health is broken down as follows: 1.7% on medical services and 0.7% on prescription drugs.

Marlena, William and Arnold (2015) conducted their study on trends in consumption of household durables in Poland and European countries. The study used data from the National Office for Statistics and Eurostat. In general, the study finds that much higher expenses for household equipment were incurred in households of people having a university degree – just below PLZ 89 per month per capita, while in the households of people with no education or with a level of primary education, these expenses were at a level just below PLZ 31. The study finds that the expenses of households located in larger cities were greater than those of smaller towns and villages. In towns with populations below 20,000, the average expenditure on household equipment was PLZ 47 per month and was PLZ 77 in the households of settlements with a population of 500 and greater. In the villages, the expenses for household equipment were the least, PLZ 41 per month per person. The expenses for household furnishings varied, depending on the type of household. In 2012, the highest expenses for household furnishings, just below PLZ 72, were recorded for households with income generated by white-collar jobs, with over PLZ 65 spent per month per person among the self-employed, while in households where the income was generated by blue collar jobs, the expenses oscillated around PLZ 36 and for the retired citizens, were just below PLZ 37. Based on the use of cluster analysis, the study finds that the best-equipped households, the households with all the needed durables, had one or two children and a better educated household head.

Kolawole and Auwudu (2014) studied determinants of household education and health spending in Nigeria. Their study used maximum likelihood estimates of the equations in order to explain the probability of spending on schooling (probit) in both rural and urban households. The results of the study show that household income, as proxied by real total expenditure for rural and urban households, is responsible for increasing the probability for household spending on education,

indicating that richer households are likely to spend more on education than poorer households. Also, there is higher demand for educational services among households that have educated heads because from the result, the educational level of the household head is positive and significantly different from zero for both rural and urban households. Another finding of the study shows that demand for educational services is influenced by the gender of the household head in rural and urban areas. From the result the positive and significant coefficients of gender indicate that households that have females as heads are more likely to spend on educational services than households headed by males. Again, the study finds that in deciding whether to spend and how much to spend, a rise in household income by 10% led to a corresponding increase in household spending on education by about 7% in rural areas and 12% in urban areas. This result is considered as income elasticity of demand for education, which appears to show that education is a necessity in urban areas while in rural areas, it appears to be a luxury. With respect to health care services spending, the study shows the probabilities of spending on health care services for rural and urban households. The study finds that the expenditure on health care services, like expenditure on education, is positively influenced by the level of household income, which suggests that richer households are more likely to spend on health care than poorer households in both rural and urban areas. The results also show that the larger the household size, the more likely the household is to spend on health care. This finding is based on the fact that households with larger family sizes have a higher tendency of a member being sick, causing medical expenditure to be incurred. Finally, the results of the study indicate that coefficients of the education variable are positive for rural and urban households, and it is only significantly different from zero for rural households. The results clearly show that rural households with a better educated head are more likely to spend a significant portion of their income on health care. Female-headed households also spend more on health care than male-headed households. However, the occupation of the head of the household has no influence on health care decisions and even on the spending itself. On the other hand, the age factor has a significant influence on household spending on health care. According to the study, households that have a significant number of members above 59 years of age have a higher probability to spend more on health care.

3.8 CONCLUSIONS

This chapter described the comprehensive empirical review conducted of the relevant and related studies. The review provided knowledge of the current literature and views with respect to the various factors affecting household consumption expenditure, not only in the study area but globally. As the study examines the trends of household expenditure among the six geopolitical zones in Nigeria based on Engel's law of consumption, the review examined the implication of Engel's law in both developed and developing economies. This involved the review of various studies that analysed household consumption in developed and developing economies within the context of Engel's law. The review showed the value of the choice of Engel's law as the theory for the study, based on its consistency for many years as the most potent and relevant theory that deals with the consumption behaviour of households in both developed and developing countries. The empirical review examined studies relating to topical issues within the framework of Engel's law of consumption such as household food expenditure, budget share, elasticities as well as the impact of household size on expenditure. The literature on consumption inequality in Nigeria and other countries was also reviewed in this chapter. As a developing country, Nigeria has many socioeconomic issues that affect household consumption expenditure which require a thorough analysis. As indicated by a variety of studies, any study on consumption, especially in developing countries, should include the issue of consumption inequality. This is particularly appropriate to this study's examination of the trends in household consumption among the six geopolitical zones in Nigeria given the wide socioeconomic disparities within and between the zones.

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CHAPTER FOUR: METHODOLOGY

4.1 INTRODUCTION

This study examines the trends in household consumption expenditure among the six geopolitical zones in Nigeria. This chapter deals with the methodology of the study and consists of six sections. The theoretical models adopted by the study are first discussed, having been clarified in the literature review chapters. Thereafter, the empirical model used for estimations of the data for the study is examined, following which the specifications of the empirical model of the study as well as the explanatory variables in the regression equation are discussed. The next section discusses the Gini coefficient used to measure consumption inequality in the study, whereafter the chapter concludes by examining issues relating to the data and the data source used in the study, the Nigeria General Household Survey (NGHS).

4.2 THEORETICAL MODEL

The study analyses the trends in household consumption expenditure among the six geopolitical zones in Nigeria. In order to achieve this objective, the study is based on Engel's law of consumption where various Engel equations are estimated and, in addition, the study uses the Gini coefficient to measure consumption inequality among the six geopolitical zones.

4.2.1 Engel's Law of Consumption

Ever since the publication of the work of Engel (1857), the Engel curve has occupied an important position in microeconomic theories due to its numerous applications in the analysis of household consumption expenditure. In its normal form, the Engel curve describes the existence of a relationship between household expenditure on a particular good and total household expenditure and income. According to Bewley (1982), the work of Engel on the relationship between household expenditure and income has attracted a considerable amount of interest among economists because of its flexibility and usefulness in various models of income distribution. In view of this, the relationship between total household expenditure and expenditure on a particular item incurred by cross-sectional families would be studied empirically to be able to examine the pattern of consumption over time.

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Engel's law in its crudest form states that the proportion of total expenditure incurred on food items declines as total expenditure [which is proxy for income] goes on increasing. The relationship existing between total household expenditure and expenditure on a particular component of household expenditure such as food, transportation, education or non-food is what is referred to as the Engel function, Engel's law or the Engel curve.

The Engel Function

The Engel function can be expressed as follows:

$$Y = f[X]$$

Where

Y= refers to households Expenditure on specific item such food, clothing or non-food

X = refers to the total household expenditure

It should be noted that change in Y because of a change in X for a particular expenditure item is referred to as 'marginal propensity to consume' or simply marginal effect. The degree of responsiveness of Y due to changes in X is referred to as the elasticity of Y with respect to X, popularly known as Engel elasticity. Sometimes both the sign and size of the Engel elasticity will be taken into consideration to be able to classify the goods/commodities into luxury or necessities.

The Engel curve at the beginning, apart from the normal income and expenditure relationship, was silent on the inclusion of household characteristics in the analysis of their consumption expenditure. The explicit inclusion of household characteristics such as household size, age and composition in the specification of the Engel curve was introduced by Prais and Houthakker (1955:34).

4.3   THE THEORETICAL MODEL

4.3.1   The Working-Leser version of the Engel Curve

In order to achieve the objectives of this study various versions of the Working-Leser version of the Engel curve was used. The Working-Leser version of the Engel curve is very popular and

useful in measuring cross-sectional data of households, and it has been used in many studies in both developed and developing countries. The first empirical model of the Working-Leser model to be used in the study is the Working-Leser food demand function. The original form of this model was discussed by Working (1943) and Leser (1963).

Model Specification For Estimating Food Share

The model is very useful in the estimation of food share as well as the share of the respective items among the various categories of household expenditure. The detailed explanation on the model was provided by Deaton and Muellbauer (1980a), and Intriligator, Bodkin and Hsiao (1996) provide a more detailed discussion of this functional form.

According to these authors, within the framework of the Working-Leser model, the respective share of each food item is simply a linear function of the log of prices as well as of the total household expenditure on all the food items under consideration. The model can be estimated for each food item and is stated below

$$w_i = \alpha_0 + \alpha_i \log x + \sum_j \beta_{ij} \log p_j + \sum_k \gamma_{ik} H_k + \varepsilon_i$$
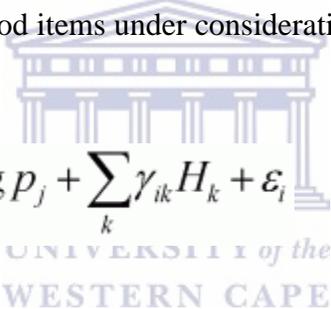
Where

(i,j) represent the 11th food items

w_i is the expenditure share of food

i among the 11th food items

p_j is the price of food

j and x represent the total expenditure of all food items included in the model.

The model can be estimated using the Ordinary Least Squares (OLS) method.

Model Specification for Estimating Demand Elasticity

The elasticity of demand can be calculated using the elasticity formulae for the Working-Leser model. The expenditure elasticity (e_i) can be expressed as:

$$e_i = 1 + \left(\frac{\alpha_i}{w_i}\right) \tag{1}$$

Taking a derivative of Equation 1 with respect to log (p_j) will yield, uncompensated own ($j = i$) and cross ($j \neq i$) price elasticities (e_{ij}) are as follows:

$$e_{ij} = -\delta 1 + \left(\frac{\beta_{ij}}{w_i}\right) \forall i, j = 1, \dots, n \tag{2}$$

Where δ_{ij} is the Kronecker and is unity if $i = j$ and zero are otherwise. The model can be estimated using the Ordinary Least Squares Method.

Model Specification to determine Consumption Economies of Scale

Deaton (1997:2003), in order to measure economies of scale accurately without encountering the serious flaws associated with the Engel methodology, suggested an alternative approach which includes the direct utility function of the household. In order to construct the model he starts by dismissing children and only assumes that the household contains *n* identical adults. Consider the direct utility function *u (q₁, q₂, . . . ,qm),* which assumes as the utility for a single individual that consumes q, unit of good 1, q2 unit of good 2, up to *qm* unit of good m. Therefore to a household consisting of n individuals that share consumption equally, the utility function of each member is given by the utility function which can be applied to an nth of the household's consumption. In this case the total household utility is written as

$$u_h = nv (q_1 \text{ I}n,\dots,q_m \text{ I}n) \tag{2}$$

It should be noted that equation 2 above assumes the absence of economies of scale. Also, at a household of n number of people it generates no more welfare than n households of only one person each. Therefore if one assumes instead that by some process, the needs for each good in the household do not change and remain the same with the number of people in the household, but less rapidly, for instance in proportion to n $_\emptyset$ with some units $0 < \emptyset \leq 1$, this isoelastic form can easily be generalised, but little is gained by doing so. Therefore if $_\emptyset = 1$, it is indicating that there are no economies of scale, which means that each person in the household gets an nth of the total. However for $_\emptyset < 1$, it is indicating that there are economies of scale, which means that each person in the household receives more than his or her share of the total. This means that the quantity $1 - _\emptyset$ is what actually measures the extent of economies of scale in the household. The preceding specification of household utility in equation 2 above is modified to

$$u_h = nv (q_1 In^{\emptyset},.....,q_m In^{\emptyset}) \qquad (3)$$
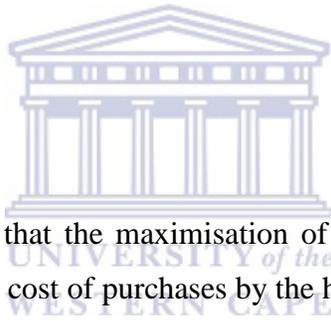
The above exercise aims to show that the maximisation of equation 3 above is subject to the budget constraint in which the total cost of purchases by the households will be equal to x, which gives the demand functions below

$$\frac{pi\ qi}{x} = \frac{piqi/In}{x/n} = \emptyset \ (\ \frac{x}{n\emptyset}\ , P_1, ..., Pm) \qquad (4)$$

In equation 4 above, the budget share for good i as well as for all goods $i = 1$, while m is the function of prices and the total household expenditure is deflated by household size to the power of $^{\emptyset}$. Therefore the household's indirect utility function corresponding to equation 3 and 4 is signified by equation 5 below

$$u_h = n\ \varphi\ (x/n^{\emptyset}, p_1,.....p_m) \qquad (5)$$

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From the model, φ (x/n$^{\emptyset}$, p$_1$,…..p$_m$) represents the indirect utility of a single individual within the household utility. This is due largely because both the budget shares as well as the indirect utility are determined by the family size only through the term x/n$^{\emptyset}$. The household's welfare is correctly indicated by the budget share of any good; hence two households which have different sizes are equally well off if the pattern of their budget shares are the same.

4.3.2   Measuring Consumption Inequality: The Gini Coefficient

There are various approaches to explaining the Gini coefficient, the most common being the geometric approach, where the Gini coefficient is the ratio of the area that is between the line of absolute equality and the Lorenz curve to the overall area that is below the line of absolute equality. The formula for the geometric approach to calculating the Gini coefficient was provided by Griliches and Rao (1969), but it was originally used to measure income inequality. However, because of its consistency and due to the functional relationship between income and consumption, Ahmad (2000) and Johnson and Mayer (2012) suggested that it can equally be used to measure inequality in consumption. The equation is stated as

$$G = \sum_{i=1}^{n-1}(p_i q_{i+1} - p_{i+1} q_i) \tag{1}$$

Where Pi is the cumulative population share and qi is the cumulative consumption share corresponding to the *i*th household if the entire households are arranged in ascending order in terms of their consumption.

From the work of Griliches and Rao (1969), Shorrocks (1982) came up with the framework for source-decomposition of the Gini coefficient of income, which was a very good method of measuring income inequality. According to Idris and Ahmad (2010), the same procedure can be used to measure consumption inequality in what they refer to as "allocation-wise decomposition of consumption inequality". This is given as

$$G = \sum\nolimits_{k=1}^{k}[S_k\,(\,C_k)]\tag{2}$$

S_k represents the consumption share of the components k in the total consumption while C_k represents the consumption ratio of the *k*th consumption. It should be noted that in the equation the concentration ratio is the same as that of the Gini coefficient. The only difference is that the ranking of the household is by total consumption rather than the *k*th consumption component. This is stated as:

$$C_k = \sum_{i=1}^{n-1}\left(P_i\,q_{i+1}^{k} - P_{i+1}\text{-}\,q_i^{k}\right)\tag{3}$$

From the equation above, P_i represent the *i*th household's cumulative population share while q_i^{k} is the cumulative share of the consumption component *k*. It should be noted that the concentration ratio of a given consumption component measures the state of how evenly or unevenly it is distributed when compared to the distribution of total consumption. Therefore if C_k is bigger (smaller) than the Gini coefficient, it indicates that consumption of the *k*th component is definitely distributed more (less) unevenly than the total consumption expenditure of the households.

From the specification above, in order to be able to decompose the consumption inequality, two classifications of total household consumption expenditure will be considered by this study and are stated below:

1. Household consumption inequality will be decomposed into food and non-food consumption expenditure.

2. Decomposition of household consumption inequality into the following expenditure groups:

Group 1: Total expenditure – refers to the total amount spent by households on all the categories of expenditure within a given period of time.

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Group 2: Food expenditure – Other food items than the ones above, including baked and fried products, milk and milk products, edible oils and fats, fish and meat, poultry products, cane foods, tobacco and other food items.

Group 3: Non-food expenditure, clothing and textiles – this group include footwear and all clothing, and related items.

Group 4: Health care – items under this group include expenditure for hospitals, drugs and all health-related expenditure.

Group 5: Education Expenditure – this category includes school fees, books and all expenses related to education.

Also, apart from the categorisation of the expenditure, the country is divided into the six geopolitical zones, namely North West, South West, South South, North East, North Central and South East, and rural and urban.

4.4 EMPIRICAL MODEL
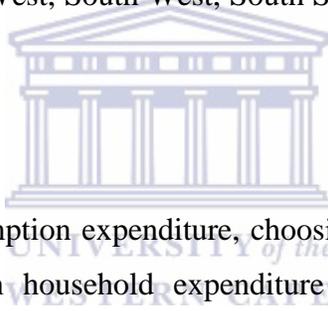
In any study on household consumption expenditure, choosing a mathematical model based on the relationship between a given household expenditure and total expenditure is critical. Therefore Prais and Houthakker (1955:45) indicate in their work that the ability to calculate a given income elasticity for a household expenditure depends largely on the type of function that has been fitted to the model for estimation. In line with this, the study uses an empirical model prescribed by Houthakker (1957:30) which was used in estimation of household expenditure. The function is stated as follows:

$$\log Y_i = \alpha_i + \beta_i \log X_1 + \gamma_i \log X_2 + \varepsilon_i$$

Where

Y_i = the consumption expenditure for ith group of items

X_1 = total household expenditure

X_2 = family size

ε_i = the disturbance term

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$\alpha_{i,}$ represents the constant to be estimated

It should be noted that the multiple regression coefficients β_i and γ_i represent the partial elasticities of the *i*th category of items in regard to the total household expenditure and household size respectively.

Given the above, the specifications of the endogenous and exogenous variables used in the model are specified as:

- o Household expenditure outcome variable: consumption expenditure

- o Explanatory variables: family size, expenditure elasticities, total household expenditure.

4.5   DESCRIPTION OF EXPLANATORY VARIABLES

In order to undertake the data analysis for the study, household consumption expenditure data in the Nigeria General Household Survey (GHS) was used. The data collected from the household survey cover 22,000 households for the cross-sectional survey and 5,000 households for the GHS panel component, covering the period 2010-2011 for wave 1 and 2012-2013 for wave 2. As stated earlier, the regression for this study consists of the following explanatory variables: total household expenditure, household size and expenditure elasticities. The variables used in the model estimation are explained in detail below.

Household Size

This determines the total number of people residing in a household. With the household size, other information about the household can be determined such as age and consumption. It has been argued that a household with more members is expected to be exposed to more consumption shocks and requires more resources to stabilise their consumption. To support this, Habte, Said, Tewolde and Teame (2016) claim that an increase in the household size leads to an increase in household expenditure on food and other consumption items. The higher the consumption of a household as a result of the household size, the lower the ability of the household to build wealth and as such a fall in their consumption capability.

According to Paul (2009:43), in every country household size follows a general pattern referred to as the life-cycle of families. At the beginning households are generally small, which is the formation stage signified by marriage. Subsequently, the household size will increase with the

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coming of new and additional children. In most cases, after reaching its maximum size a household may later reduce in size because the children have reached adulthood and eventually leave their family home. Shirley (2004:21) argues that insufficient accommodation and migration are two of the most important factors that lead to the decline in household size because lack of decent and convenient accommodation can force some family members to leave their house and also migration within and outside a country can significantly affect household size. In Nigeria, the majority of households are large in size, especially in northern Nigeria where polygamy is prevalent and also many members live with the extended family. As a result of this household size has a strong connection and significant relationship with household consumption expenditure. Unhelpfully, the General Household Survey technical manual offers no definition of household size.

Expenditure Elasticities

Expenditure elasticity measures the ratio of percentage change in one variable as a result of change in another. This response can either be between income and expenditure or price and expenditure (Khan & Khalid, 2000:35). The Engel expenditure elasticities are equally important tools for the analysis of the behaviour of household expenditure with respect to changes in prices or income. According to Roy (2000:29), within the context of microeconomics, the variation in proportionality of a particular variable in terms of another variable is measured by the elasticity. This means that if an expenditure on a particular item is proportional to the household's income or their total expenditure, the income elasticity of demand for that commodity, otherwise known as the Engel elasticity, is then a unity. There are various methods for measuring expenditure elasticity. The arc elasticity can be calculated based on a regression result; thus the partial elasticity γ_i in the regression shows elasticity in a given range in which the relationship is assumed to be in a straight line.

Total Household Expenditure

In every economy household expenditure is an important part of the Gross Domestic Product and represents what households spend on various goods and service to satisfy their needs. According to Mills (2009:19), the total household expenditure is the aggregation of the amounts households spend among a number of categories which include food, non-food, education and health. Final household consumption expenditure includes the share of expenses in health, education and

housing remaining to be paid by them, after possible reimbursements. According to the GHS Information Document 2012:22, the household total expenditure in Nigeria comprises of what the households spend on food, education, health, non-food and housing, and they are aggregated to represent the total household expenditure in Nigeria.

4.6   DATA ISSUES

The data source used for this study is the General Household Survey (GHS-Panel) conducted by the Nigerian National Bureau of Statistics in collaboration with the Bill and Melinda Gates Foundation. The surveys were conducted in the following sequences: 2010-2011, 2012-2013 and 2015-2016. The survey is the first of its kind, carried out to gather panel data on households, their characteristics, welfare and their agricultural activities. In view of the importance of the agricultural sector to the Nigerian economy as well as the high dependence of the majority of Nigerian households on agricultural activities, the survey provides vital information on the household such as human capital, economic activities and access to services and resources. The ability to track the same households over a long period of time makes the Nigerian GHS-Panel survey a new and powerful tool for assessing and understanding the role the agriculture sector is playing in household consumption and welfare.

The Nigeria General Household Survey (GHS) is a cross-sectional survey covering a total of 22,000 households that is performed yearly across the country. The panel component of the (GHS) deals with 5,000 households within the survey in order to get additional data on multiple agriculture events and household consumption. The GHS panel is aimed at providing better and more reliable data from the agricultural sector and also to create a link between the sector and other aspects of households' characteristic behaviour in Nigeria. The GHS-Panel surveys are conducted in two visits (the post-planting visit takes place in August-October and the post-harvest visit takes place in February-April) with one visit to the full cross-section (in parallel with the post-harvest visit to the panel). While the GHS-Panel is conducted once every two years, the GHS cross-section is conducted once annually.

4.6.1   Sample Size

The determination of the sample size at the level of the household was done based on the experience generated in the previous GHS rounds where 10 households were selected in each EA

and then given robust estimates within the entire survey. A total of 500 clusters/EAs were covered and within them a total of 5,000 households were interviewed. These samples were selected proportionally from the 36 states and FCT Abuja in such a way that all the states vary in terms of their sample sizes. The sample sizes for the survey covering the wave 1 and wave 2 periods are depicted in table 4.1 below.

Table 4.1: Sample Size for wave 1 and wave 2

Wave 1		Wave 2	
GHS 2010	GHS 2011	GHS 2012	GHS 2013
Cross-sectional **22,000**	Cross-sectional **17,000**	Cross-sectional **22,000**	Cross-sectional **17,000**
Panel Post-planting **5,000**	Panel Post-Harvest **5,000**	Panel Post-planting **5,000**	Panel Post-Harvest **5,000**

Source: Nigerian National Bureau of Statistics, 2015-2016

The table above represents the sample sizes for the GHS for Nigeria in wave 1 and wave 2. There were 22,000 samples for the cross-sectional and 5,000 for the panel surveys in 2010 and 2012, while in 2011 and 2013 there were 17,000 for the cross-sectional and 5,000 for the panel surveys.
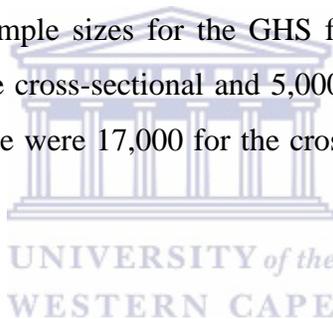
4.6.2 Interview Visits

The full revision of the questionnaire for the GHS survey was carried out and, within the same period, there is a sub-sample of the GHS which was included to form the panel component of the survey which covered agricultural activities and households' consumption. In the panel component of the survey a total of 5,000 households were involved in the interview visits, which were structured as follows.

Post-Planting Visits

 The post-planting visit for the revised GHS and GHS-Panel was undertaken from August to October 2010 where the questionnaire was administered to the respondents throughout the country.

Post-Harvest Visits

The post-harvest visit took place between February and April 2011, in which one visit was carried out to the full cross-section parallel with the post-harvest visit. It should be noted that

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within the Household questionnaire, there were some modules which were administered in post-planting and post-harvesting visits, while others were simply administered in one of the two visits.

4.6.3 Sample Design

Based on the characteristics of the data used in this study the sample is designed to reflect the peculiarities of the Nigerian system of administration and the sample is designed to collect data for three administrative levels – zonal, state, as well as rural and urban level. In the GHS-Panel, unlike the full GHS, the sample is not used for state-level estimates. The sample size of the GHS-Panel (unlike the full GHS) is not adequate for state-level estimates. The sample is designed in the form of a two-stage probability sample.

Stage One:

This stage comprises the primary sampling units (PSUs), which are the Enumeration Areas (EAs). They were selected on the basis of probability proportional to size (PPS) of the total number of EAs in each state and the Federal Capital Territory (FCT Abuja), as well as the total number of households listed in those EAs. Using this method a total of 500 EAs were selected.

Stage Two:

This stage deals with how the households were selected. The method used for the selection was random by using the systematic selection method in which ten households were picked for each EA. After obtaining the total number of households listed in a given EA, the Sampling Interval (S.I.) was obtained by dividing the total households listed by 10. This was then followed by generating a random start r from the random numbers table that stands as the first selection, while obtaining the consecutive selection of households was undertaken by adding the sampling interval to the random start.

The sample size of the household was determined through the experience gained in the past GHS rounds where 10 households were selected in each EA and then given robust estimates. Within the entire survey, a total of 500 clusters/EAs were covered and within them a total of 5,000 households were interviewed. These samples were selected proportionally from the 36 states in the country and FCT Abuja in such a way that all the states vary in terms of their sample sizes.

Table 4.2 below shows how the samples are distributed on the basis of state, geopolitical zone and the urban/rural divide.

Table 4.2: Distribution of Sample of 500 EAs and 5,000 Households by Sector, States and Zones

Zone	State	Total		Urban		Rural	
		No. of EAs	No. of HH	No. of EAs	No. of HH	No of EAs	No of HH
North Central Zone	Benue	16	160	2	20	14	140
	Kogi	12	120	4	40	8	80
	Kwara	12	120	6	60	6	60
	Nasarawa	7	70	1	10	6	60
	Niger	18	180	4	40	14	140
	Plateau	11	110	2	20	9	90
	FCT Abuja	4	40	3	30	1	10
North East	Adamawa	12	120	1	10	11	110
	Bauchi	17	170	3	30	14	140
	Borno	21	210	5	50	16	160
	Gombe	8	80	1	10	7	70
	Taraba	9	90	0	0	9	90
	Yobe	13	130	3	30	10	100
North West	Jigawa	13	130	2	20	11	110
	Kaduna	12	120	4	40	8	80
	Kano	20	200	3	30	17	170
	Katsina	18	180	3	30	15	150
	Kebbi	10	100	1	10	9	90
	Sokoto	8	80	2	20	6	60
	Zamfara	9	90	2	20	7	70
South East	Abia	11	110	4	40	7	70
	Anambra	22	220	12	120	10	100
	Ebonyi	14	140	1	10	13	130
	Enugu	14	140	3	30	11	110
	Imo	19	190	2	20	17	170
South Zone	Akwa-Ibom	15	150	4	40	11	110
	Bayelsa	7	70	1	10	6	60
	Cross River	13	130	3	30	10	100
	Delta	14	140	4	40	10	100
	Edo	10	100	5	50	5	50
	Rivers	21	210	8	80	13	130
South West	Ekiti	8	80	6	60	2	20
	Lagos	17	170	16	160	1	10

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	Ogun	11	110	7	70	4	40
	Ondo	13	130	6	60	7	70
	Osun	18	180	14	140	4	40
	Oyo	23	230	15	150	8	80

Source: Nigerian National Bureau of Statistics, 2015-2016

It should be noted that the selection of the households was not done using replacements. This means that the total number of households interviewed for 2015-2016 fell slightly to less than the 5,000 eligible for interviewing. The final number of households interviewed in the survey stood at 4,986 for a non-response rate of 0.3%. Similarly the total number of households members interviewed was 27,533. In the post-harvest or second visit it was discovered that some household had moved as had individuals. As a result the final number of households that had data at both points of time (post-planting and post-harvest) was 4,851, with 27,993 household members.

4.6.4 Weighting of the Data

In every national household survey and whenever a particular household sample is chosen for the survey, all the households selected are assumed to be the true representation of the entire population of the country. Therefore, in order to ensure accurate utilisation of the datasets, the data has to be weighted in order to reflect the distribution of the population in the entire country. In the survey the population weight was however measured for the panel components of the households. The sign (*wght*) represents the weight variable and is inserted in the household dataset. The population weight appeared in Section A (*secta_plantingw1* for post-planting and *secta_harvestw1* for post-harvest). The population weight will help to raise both the household and individual samples to the level of the national values and hence it is important to adjust in order to accommodate for the population concentrations in different parts of the country.

4.6.5 Description of Datasets

As stated earlier, the first wave of the General Household Survey panel survey was undertaken in two visits. These visits were divided into the post-planting visit in August-October 2010 and the post-planting visit in February-April 2011. Within the visits two sets of questionnaires were administered to the respondent households – the household questionnaire and agricultural

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questionnaire – while the community questionnaire was administered at the level of the enumeration questionnaire.

Table 4.3: Post-Planting Household Datasets

Section	Section Name	Data Filename
	Cover	Secta_plantingw1
1	Roster	Sect1_plantingw1
2	Education	Sect2_plantingw1
3	Labour	Sect3_plantingw1
4	Credit and Savings	Sect4_plantingw1
5	Households assets	Sect5a_plantingw1
		Sect5b_plantingw1
6	Non-farm Enterprises	Sect6_plantingw1
7A	Meals Away From Home	Sect7a_plantingw1
7B	Household Food Expenditure	Sect7b_plantingw1
8	Household Non-Food Expenditure	Sect81_plantingw1
		Sect82_plantingw1
		Sect83_plantingw1
		Sect84_plantingw1
		Sect85_plantingw1
9	Food Security	Sect9_plantingw1
10	Other Income	Sect10_plantingw1

Source: Nigerian National Bureau of Statistics, 2015-2016

Thus the GHS datasets are organised first of all by visit and thereafter by questionnaire. As a result of this, the household dataset corresponds to the Household Questionnaire, and the agricultural dataset corresponds to the Agriculture Questionnaire, while the community dataset corresponds to the Community Questionnaire.

The techniques of naming the data file scheme is coined with the prefix 'sect', then accompanied by the section number, then the suffix 'plantingw1' in the case of post-planting data and 'harvestw1' for post-harvest data. In section 1 of the Household Questionnaire for example, the folder is labelled 'sect1_plantingw1'. However an exception to this nomenclature are the

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sections where due to different reference periods, the files are broken down even further. For instance section 8 of the household post-planting questionnaire with the non-food expenditure is broken into five files with each file bearing the reference period collected in the section. The information in table 4.3 above represents the entire survey files data for the post-planting period. There are twelve files in total and some of these files are broken into three or four for sub-categories. For example, the household non-food expenditure is divided into five sub-categories, while household assets are divided into two categories.

The information in table 4.4 represents the post-harvest data and, unlike the planting data files with the nomenclature 'plantingw1', in this case the data has the prefix 'harvest w1'. The post-harvest data is slightly larger than the post-planting data because it has more files which are not in the planting data, such as education, labour activity, health, child immunisation, assets acquisition, remittance, housing and other income-generating activities. Also in the post-harvest data there is an exception to the files nomenclature where due to different reference periods, the files are broken down even further. For instance, section 11 of the household post-harvest planting questionnaire with the non-food expenditure is broken into five files, namely 11a, 11b, 11c, 11d and 11e; this helps users to easily identify the files.

Table 4.4: Post-Harvest Household Datasets

Section	Section Name	Data Filename
	Cover	Secta_Harvestw1
1	Roster	Sect1_ Harvestw1
2	Education – New Member	Sect2a_ Harvestw1
2B	Education – Original Household Members	Sect2b_ Harvestw1
3A	Labour	Sect3a_ Harvestw1
3B	Labour Activity	Sect3b_ Harvestw1
4A	Health	Sect4a_ Harvestw1
4B	Child Immunisation	Sect4b_ Harvestw1
5	Information and Communication Technology	Sect5_ Harvestw1
6	Remittances	Sect6_ Harvestw1
7	Household Assets Sales and Acquisitions	Sect7_ Harvestw1
8	Housing	Sect8_ Harvestw1

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9	Non-farm Enterprises and Income-Generating Activity	Sect9_ Harvestw1
10A	Meals Away From Home	Sect10a_ Harvestw1
10B	Food Consumption and Expenditures	Sect10b_plantingw1
10C	Aggregate Food Consumption	Sect10c_ Harvestw1
11	Non-food Expenditures	Sect11a_ Harvestw1
		Sect11b_ Harvestw1
		Sect11c_ Harvestw1
		Sect11d_ Harvestw1
		Sect11e_ Harvestw1
12	Food Security	Sect12_ Harvestw1
13	Other Household Income	Sect13_ Harvestw1
14	Total Safety Nets	Sect14_ Harvestw1
15A	Economic Shock	Sect15a_ Harvestw1
15B	Death	Sect15b_ Harvestw1
		Sect15b1_ Harvestw1

Source: Nigerian National Bureau of Statistics, 2015-2016

The household's income file is divided into two categories comprising household's non-farm enterprise and income-generating activity, and other household income. Again the labour file is divided into categories, namely labour and labour activity.

4.6.6 Limitations of the Data

As data forms the bedrock of a body of research, it is noted at this stage that research tends to suffer from one or other data limitation and this study was no exception. Whenever research involves secondary data there must be some limitations in the data that the researcher cannot control. These shortcomings are conditions or influences beyond the control of any researcher that might affect the research. Therefore, once these limitations are encountered in any given research no matter how few or small they should be mentioned. These limitations encountered will influence and justify the choices made during the study and in the process help to demonstrate the command that the researcher has over the research work. The following are some of the limitations of the data used in this study.

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Missing and Incomplete Files

The study was initially designed to cover the periods 2010-2011, 2012-213 and 2015-2016 corresponding to the designations wave 1, wave 2 and wave 3. However, some of the data files used for the analysis were missing and these missing files were mostly for the planting period in both wave 2 and wave 3. As a result the study had to be restructured to cover the periods were data was available. The missing files were for education, health and labour. There were also files that were in the harvest period but not in the planting period, which means that the data of the whole wave for those files were incomplete; the files were education, health, labour, housing and other income. Thus some of the details of the household expenditure on education, health and housing were missing which, like the labour and other income files, were potentially useful in determining the household income.

Table 4.5: List of Missing Files in the General Household Survey, waves 1, 2 and 3

Section	Section Name	Data File Name	Post-Planting Files			Post-Harvest Files		
			Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Cover	Cover	Sect a	√	√	√	√	√	√
1	Roster	Sect 1	√	√	√	√	√	√
2A	Education–New Member	Sect 2a	Missing	Missing	Missing	√	√	Missing
2B	Education–Original Household Member	Sect 2b	√	√	Missing	√	√	√
3	Labour	Sect 3a	√	√	√	√	√	√
4A	Health	Sect 4a	Missing	√	√	√	√	√

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7	Household Assets	Sect 7	√	√	√	√	√	Missing
8	Housing	Sect 6	Missing	Missing	Missing	√	√	√
13	Other Household Income	Sect 10 and 13	√	√	Missing	√	√	√
	Consumption Aggregate	Consagg	√	√	√	√	√	√
14	Household Consumption	Sect8, 10 and 11	√	√	√	√	√	√

Source: Author's own illustration

The information in table 4.5 above provides detailed information of the missing files across the three waves in both the post-planting and post-harvesting periods of the survey. With the exception of the cover, roster labour, household consumption and consumption aggregate files, all the files had one or other missing file. The files missing items and therefore incomplete were health, other household income, housing, household's assets and education. Therefore, in order to overcome the problems created by the missing data files, the study was redesigned to cover the wave 1 and wave 2 periods instead of wave 1, wave 2 and wave 3.

Difficultly in Merging the Files' Data Analysis

The General Household Survey data is divided into many files containing different information about the household. In this regard, the most important step in analysing data is to merge the different files. Although the Nigeria General Household Survey data is said to be the most developed and standard household survey ever carried out in the country, it is however not devoid of problems, especially when it comes to merging the various files in the data. This study used the household consumption information in the GHS data which includes household food expenditure files, non-food expenditure files and aggregate consumption files. The food expenditure is divided into household food expenditure, meals away and total food expenditure,

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while the non-food expenditure is divided into eight categories. Therefore in order to analyse the data, all the consumption files for post-planting and post-harvest had to be merged together and the wave 1 and wave 2 data also had to be merged. However merging these files became problematic. For example, merging food expenditure for planting and harvest was extremely time-consuming. It also took a lot of trial and error to merge the food and non-food expenditure files together. Finally when the food and non-food expenditure files were merged it proved difficult to merge them with the roster and cover files.

It should be noted that however that some technical reports for survey data provide clear modalities for merging the various files in the data. One of the problems with the Nigeria General Household Survey data is that the technical report guide for the data did not provide clear guidelines on merging the various files in the survey data. However the guidelines for merging that were provided were scanty and insufficient to provide detailed explanation on complex merging of files.

Difficulty in analysing the data

As stated earlier some of the limitations of the GHS data included difficulty in merging the data files and missing files and, as all these limitations were not known at the onset of the study, analysing the data became unexpectedly difficult and time-consuming. Since there is a technical report accompanying the data which should give all the necessary information about the data, the missing files should have been discussed, clarifying how and why the files went missing, and what could be done to reduce the impact on the researcher of the missing files. However, the report was not only silent about the missing files and how to solve the problem, but the report gave every indication that all was well with the data.

Non-Responses

Another limitation of the Nigeria General Household Survey data is the high frequency of non-responses in most of the household questionnaires. The non-response arises from the deliberate refusal by the respondents to appropriately provide answers to questions asked of them by the interviewers. There are various reasons for the non-responses in a survey: when a question asked is too personal respondents may decline to respond to the question; where the question asked is perceived to be difficult by the respondents they might decline; and finally, if the respondent did

not understand the question he might not answer (Fajuyi, 2014:70). The incidence of non-responses by the respondents in the NGHS is widespread and can be found in the consumption files, roster file, education file, labour file and other incomes file. Although non-responses are generally associated with all survey data the non-response should be minimal. Where it exceeds the norm too much effort would be made to eliminate the non-response. Unfortunately, in the Nigeria General Household Survey data, there are many non-responses in most of the variables where important questions were not answered. As a result, this made the data analysis somewhat difficult and problematic because the researcher's analysis was confined to data where response rates were high. Among many possible reasons for the widespread non-response in the Nigerian General House Survey data are lack of understanding of the question asked by the interviewer, or the question asked was too personal or difficult.

4.7   CONCLUSION

This chapter describes the methodology of the study and explains the rationale behind the selection of the theoretical model, empirical model and the regressions model that were used in the study to understand and accurately measure various parameters relating to household consumption expenditure among the six geopolitical zones in Nigeria. The chapter clearly describes the Nigeria General Household Survey data that was selected as the data to be used for the study, including the various weaknesses and shortcomings of the data, some of which, such as the missing files, could not be anticipated prior to commencing the study. While the missing files impacted on the original design with regard to the anticipated use of some of the data, this did not significantly affect the efficacy of the data in terms of the objectives of the study because the available data files were consistent and sufficient to provide all the needed variables required for the analysis of the data.

CHAPTER FIVE: NIGERIA AND ITS GEOPOLITICAL ZONES

5.1   INTRODUCTION

The main aim of this chapter is to describe the Nigerian national economy and the economic performance of the six geopolitical zones. This description will help to contextualise the analysis and findings of the study. The chapter begins with an overview of the Nigerian economy. Thereafter the key macroeconomic variables for the Nigerian economy are summarised. The chapter concludes with a detailed examination of the socioeconomic profiles of the six geopolitical zones in Nigeria.

5.2   OVERVIEW OF THE NIGERIAN ECONOMY

Nigeria is in West Africa and lies between the latitudes of 4° and 14° North and longitudes 3° and 15° East. It covers a land mass of approximately 923,768 km^2 accounting for about 14% of the West Africa land area. Nigeria shares a border with Benin to the west, Niger Republic to the north, as well as Cameroon to the east by land and to the south by the Atlantic Ocean. The coastline of Nigeria spans over 853km to the Niger Delta axis covering approximately 80% of the entire coastal area. The Niger Delta coastline and marine environment is the largest wetland in the world, covering an area that is approximately 70,000km^2.

With a federal system of government, Nigeria has three tiers of government, 36 states, 774 local government councils and a Federal Capital Territory. The 1999 constitution of the Federal Republic of Nigeria recognised the political division of Nigeria into six geopolitical zones, namely North Central, North East, North West, South East, South West and South South.

Figure 5.1: Map of Nigeria showing the six geopolitical zones
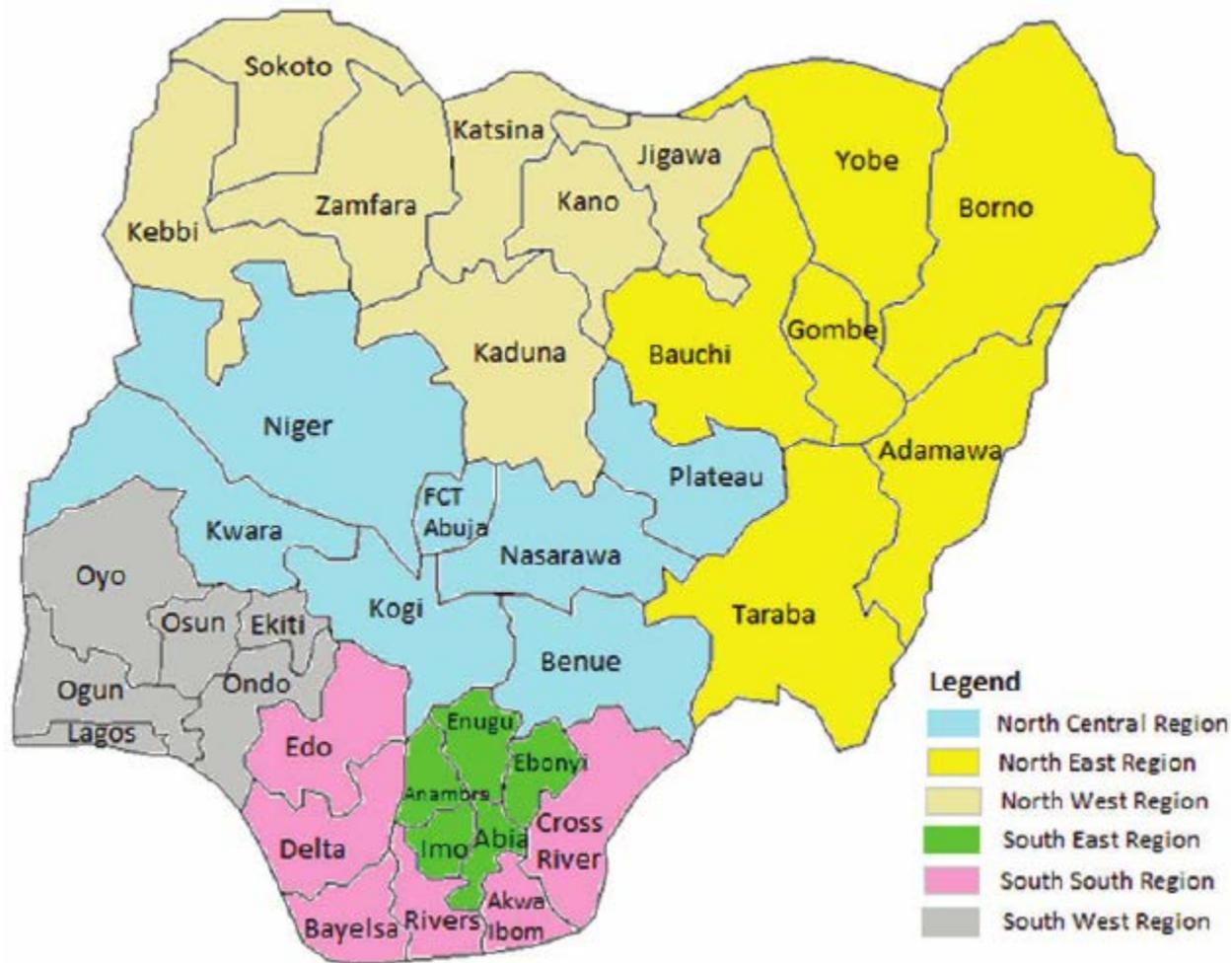
Source: Gawayan et al. (2014)

Nigeria is the most populous country on the continent, the largest economy in West Africa as well as the largest economy in the whole of Africa. According to the African Economic Outlook (2017:56), with a population estimated around 170 million Nigeria is the eighth-largest country in the world. The International Monetary Fund report of (2015) rates the Nigerian economy the 31st largest in the world. As the largest economy in West Africa, the economy of Nigeria is predominantly an agrarian economy with a general focus on the production of agricultural products and extraction of crude oil. Figures provided by the Nigerian National Bureau of Statistics (2015) indicate that the agricultural sector accounts for 30.9% of the GDP and the sector contributes 70% of employment in the economy. Crude oil and natural gas have been the major export earners for the country for many years as they account for about 15.0% of the GDP as well as 71% of government export earnings and 79.0% of government revenue.

Nigeria is one of the Africa's most resource-rich country with reserves of 34 different mineral resources, which include reserves of about 37.2 billion barrels of crude oil and over 187 trillion cubic feet of natural gas (African Economic Outlook, 2017:59). Nigeria's major mineral deposits include gold, iron ore, coal, limestone, aluminium and copper. Nigeria has about 70 million hectares of fertile farmlands, much of which is irrigated by yearly flowing rivers which has greatly helped in shaping the direction of the economy towards agricultural production. However, the oil sector is the powerhouse of the economy, driving the economy with average growth of about 10% annually compared to -0.35% for the non-oil sectors. Thus the major drivers of the Nigerian economy are agriculture and the oil and gas sectors, followed by the manufacturing and service sectors.

In many developing and emerging economies, the manufacturing sector is critical for promoting and sustaining economic development (Obioma, Kalu Alexanda & Anyanwu Uchienna, 2015:34). However in Nigeria, the manufacturing sector has very weak capacity. Over the last 30 years, the share of the manufacturing sector of GDP has declined from 6% in 1985 to about 4% in 2011. The decline in the capacity and productivity of the manufacturing sector in Nigeria can be attributed to the lack of critical infrastructure such as electricity in Nigeria, lack of positive government policies to address the challenges of the sector, influx of foreign goods, the high US dollar exchange rate and rising cost of borrowing, and lack of linkages to the global manufacturing sector (African Economic Outlook, 2016:68).

5.2.1 Macroeconomic Indicators

Table 5.1 below provides general information on the major economic indicators for Nigeria for the period 2014-2016. Despite being Africa's richest oil-producing country and having arguably the most potential in terms of natural and human resources, Nigeria's economic growth has not translated into a significant decline in poverty and inequality.

Table 5.1: Summary of Macroeconomic Indicators for Nigeria, 2014-2016

MACROECONOMIC INDICATOR	YEAR		
	2014	**2015**	**2016**
GDP (Purchasing Power Parity)	$1.108 Trillion	$1.108 trillion	$1.089 trillion
GDP – Real Growth Rate	6.3%	2.7%	-1.7%
GDP – Per Capita	$6,200	$6,200	$5,900
Gross National Savings	16% of GDP	12.4% of GDP	13.1% of GDP
Inflation rate (CPI)	NA	9%	15.3%
Industrial production growth rate	NA	NA	-4.7
Labour Force	NA	NA	58.8 Million
Current Account Balance	NA	-$15.44 Billion	-$2.856 Billion
Foreign Reserve	NA	$29.07 billion	$23.47 billion
Debt – External	NA	$32.27 billion	$39.1 billion
Taxes and other Revenue	NA	NA	2.7% of GDP
Public Debt	NA	11.5% of GDP	13.2% of GDP

Source: African Economic Outlook, 2016

The economic recession of 2015 and 2016 contributed to deepening the level of poverty among Nigerians, with the government seemingly unable to take effective measures to tackle Nigeria's economic problems. According to Ivan (2014:45), Nigeria's problem is not only the consequence of over-reliance on oil but is due largely to an inadequate power supply, poor infrastructure, corruption, lack of political will and institutional failure at all levels.

Because of the decline in the global price of oil, the economy of Nigeria slid into recession from 2015 until the second quarter of 2017. GDP growth fell to around 3% in 2015 and nosedived to -1.7 in 2016. Within the same period government revenue declined significantly, indicating that there was a serious reduction in business activities throughout the country which contributed to

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lower profits and taxes. Also within the period there was a sharp decline in the level of GDP per capita from \$6,200 in 2015 to \$5,900 in 2016 and gross national savings dropped from 16% of GDP in 2014 to 12.4% of GDP in 2015 and 13.1% of GDP in 2016, indicating contraction in economic activity and the general income among households. The inflation rate increased from 9% in 2015 to 13.5% in 2016, indicating a phenomenal rise in prices with devastating consequences for the people of Nigeria. Inflation in Nigeria is caused by the economic recession exacerbated by the decline in the value of the Naira relative to the US dollar, which has made Nigeria's imports very expensive.

5.2.2   Profile of the Six Geopolitical Zones

Nigeria is the most ethnically diverse country in Africa with almost 400 ethnic groups and over 450 languages. Prior to the popular national conference of 1995 which convened to draft a new constitution for Nigeria, the political environment in the country was very tense with various groupings blaming one another for the political and economic problems of the country, with some ethnic groups calling for the division of the country along ethnic lines while others proposed to secede from the country. More moderate groups mooted dividing the country into zones to enable different entities in Nigeria to have a sense of belonging within the federal system.

A six-zone structure was adopted at the 1995 constitutional conference, following a proposal by the former vice-president, Alex Ekwueme, for the thirty-six states in Nigeria and the Federal Capital Territory to be distributed between six geopolitical zones. Within each of the zones, the languages and cultures are similar and inhabitants of these states speak one unifying language. The zones are North Central, North East, North West, South East, South South and South West. Following the creation of the six geopolitical zones in Nigerian, all distributions of economic, political as well as educational resources by the state are always shared on the basis of the geopolitical zones.

The profiles and major macroeconomic indicators of the six geopolitical zones are briefly discussed below.

NORTH CENTRAL

The North Central Zone is located strategically between the northern and southern parts of the country at the centre of Nigeria and consists of the following states:

- Benue
- Kogi
- Kwara
- Nassarawa
- Niger
- Plateau

Major Economic Activities

The North Central geopolitical zone is blessed with agricultural potential and vast deposits of mineral resources which makes the zone one of the most economically viable, especially in terms of agriculture. The zone is one of two zones that produce most of the food consumed in Nigeria. Although agriculture is thriving and occupies many people in the zone, due to the seasonal nature of agriculture in Nigeria, coupled with the lack of non-agricultural industries and other commercial activities, the zone is among the poorest in the country. Although in the 1980s there used to be functioning industries in Kwara and Plateau states, most of the concerns engaged in these industries closed or are in a state of distress, which has aggravated the level of unemployment in the zone. The zone has great tourism potential with many tourist attractions and sites. However, policy and action by the state government towards the development of tourism is seriously lacking.

North Central has significant deposits of minerals such as iron, zinc cooper, aluminium, gold and coal. Nigeria's largest steel rolling company, the Ajaokuta Steel Company, is located in the zone and should have been the biggest industrial establishment in the region with multiplier effects on the economy and social development. However, mismanagement of the company, corruption and over-reliance on oil led to the dismal performance and partial closure of the company. Properly managed, the Ajaokuta Steel Company should have been a pillar of Nigeria's industrial development in the zone.

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The zone is the most important in terms of agricultural production after the North West Zone. The main crops are rice, maize, groundnuts, vegetables, potatoes, yams and fruits. Although the zone has very rich and fertile land conducive for large-scale agricultural production, the majority of the people in the zone are still subsistence farmers. This has contributed to deepening the level of poverty and inequality in the zone.

Population

The North Central zone is the third-most populous zone in Nigeria according to the 2006 census for Nigeria, with a total population of 20,369,956. The information in table 5.2 below represents the total population of the North Central zone by state.

Table 5.2: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
NORTH CENTRAL	
Benue	4,253,641
Kogi	3,314,043
Kwara	2,365,353
Nassarawa	1,869,377
Niger	3,954,772
Plateau	3,206,531
Total Population of the Zone	**20,369,956**

Source: Nigerian National Bureau of Statistics, 2012

The data shows that the majority of the states in the zone are very low populated areas and this is an indication of the dearth of economic activities in those zones. People move from one place to another largely for economic reasons. Lagos in the South West and Kano in the North West are the most attractive zones that draw people from other zones. These migrations add to the economic disadvantages of the North Central zone as it loses people to other zones for economic reasons.

Unemployment

Unemployment is a major economic problem affecting many developing countries and Nigeria is no exception, especially in the current period of economic crisis. The issue of unemployment is a serious problem in the North Central zone due to the lack of industrialisation and commercial activities. In most states in the zone there are very few functioning industries to help provide employment. Instead the majority of the people in the zone rely on the agricultural sector for employment. Table 5.3 shows the unemployment rate in the North Central geopolitical zone by gender.

Table 5.3: Unemployment Rate by Zone and Gender, 2012

		Sex		
		Male	Female	Total
Geopolitical Zone	North Central	8.8	14.1	11.4

Source: Nigerian National Bureau of Statistics, 2012

Income Inequality

Income inequality has grown despite the fact that the country is one of the largest producers and exporters of crude oil. Income inequality in Nigeria varies between zones depending on the level of economic activities taking place. Table 5.4 shows the levels of income inequality in the North Central zone for 2004 and 2010, which were 0.44 and 0.42 respectively. While the zone is among the most unequal zones in the country, the information in table 5.4 shows that inequality declined in the zone within the period.

Table 5.4: Income Inequality at Zonal Level, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	North Central	0.4459	0.422	-5.4

Source: Nigerian National Bureau of Statistics, 2011

Poverty Rate

Despite its large oil reserves and impressive economic growth Nigeria is struggling to lift its people out of poverty. North Central is a very poor zone. A factor that is driving the level of

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poverty in the zone is the absence of functioning industries to generate employment and create income. The zone is not commercially attractive to investors and business from within or outside Nigeria. The state governments in the zone have not yet presented viable economic programmes aimed at developing the economy and alleviating poverty.

Table 5.5: Poverty Rates for the Zone (absolute, relative and food-poor), 2012

	Food Poverty		Absolute Poverty		Relative Poverty		Dollar per Day based on adjusted PPP	
Zone	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
North Central	38.6	61.4	59.5	40.5	67.5	32.5	59.7	40.3

Source: Nigerian National Bureau of Statistics, 2012

Internally Generated Revenue (IGR)

Internally generated revenue has become an important yardstick for measuring the economic and financial strength of the zones, state and local governments in Nigeria. According to Anyanwu & Erhijakpor (2009), internally generated revenue represents the amount of money a state can generate within its jurisdiction through all forms of taxes, levies and charges. This ability and capacity of a state, local government or zone to generate significant amounts of internally generated revenue is determined by the level of economic activity taking place within the zone due to the presence of industries, commerce, agricultural activities and the level of infrastructural development in the zone, state or local government area. It should be noted that in Nigeria, all the states and local governments require money to run their affairs over and above the monthly subvention received from the federal government. Therefore the richer states and local governments have the higher IGR, while the poorest have lower IGR.

Table 5.6: Internally Generated Revenue (IGR) for North Central Geopolitical Zone, 2016

S/NO	State	Internally Generated Revenue Naira	Rank of the State
1.	Kwara	17,253,829,559	9/36
2.	Kogi	9,569,124,487	15/36
3.	Benue	9,556,495,064	16/36
4.	Plateau	9,191,372,277	17/36
5.	Nassarawa	3,402,616,062	30/36
6.	Niger	5,881,584,409	23/36
=	TOTAL NC	54,855,021,858	=

Source: Nigerian National Bureau of Statistics, 2016

The information in table 5.6 shows the internally generated revenue generated by states in the North Central zone. As agriculture is the most dominant sector in the zone the majority of the people engaged in agriculture do not earn sufficient income to contribute income tax. Except for Kwara, most of the states rank poorly for income generation, compared with states in other zones. The lack of capacity of the zone to generate significant revenue means there is little revenue available regionally to invest in developing the states in the zone.

NORTH EAST

The North East zone is located within the northern part of the country and borders Niger, Cameroon and Chad. In terms of land mass the zone is the second=largest after the North West. The North East zone consists of the following states:

- Adamawa
- Bauchi
- Borno
- Gombe
- Taraba
- Yobe

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Major Economic Activities

The economy of the North East zone is largely dominated by the agricultural sector and trade between some states in the zone with the people in the neighbouring countries of Cameroon, Chad and Niger Republic. The proximity of these countries has enabled the zone's role as the gateway for the transportation of livestock from these countries to other parts of Nigeria. This has led to the establishment of large cattle markets in major centres in the zone. Rivers and access to Lake Chad make fishing an important economic activity in the zone. The major agricultural products produced in the zone include rice, maize, groundnuts, vegetables, cotton, meat and fish. Although the zone has very rich and fertile land suitable for commercial agriculture, agriculture mainly consists of subsistence farming due to lack of investment in technology. Another key economic activity in the zone is commerce due to trade with the neighbouring countries. The recent Boko Haram crisis ravaging the zone has completely crippled all economic activities in the zone, particularly in three states where all economic activities have been brought to a halt.

Population

The North East zone is the fourth-most populous zone in Nigeria. According to the Nigerian National Bureau of Statistics (2012:40) census data for Nigeria, the total population of the zone was put at 18,600,999. The information in table 5.7 below represents the total population of the North East zone as well the population of each state in the zone.

Table 5.7: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
NORTH EAST	
Adamawa	3,178,950
Borno	4,653,066
Bauchi	4,171,104
Gombe	2,365,040
Taraba	2,294,800
Yobe	2,321,339
Total Population of the Zone	18,600,999

Source: Nigerian National Bureau of Statistics, 2012

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The majority of the states in the zone are very low populated areas, indicating low economic activities in the zone. This probably reflects migration to other zones in the country for better economic opportunities, such as South West and North West.

Unemployment

Unemployment is a serious problem in the North East zone due to the lack of industrialisation and other commercial and business activities. In most states in the North East zone there are very few functioning industries and the majority of the people rely on agriculture for employment. The Boko Haram insurgency has contributed to aggravating unemployment in the zone because many businesses have closed down because of attacks. Table 5.8 provides information on the unemployment rate in the North East geopolitical zone by gender for 2011.

Table 5.8: Unemployment Rate by Zone and Gender, 2011

		Sex		
		Male	Female	Total
Geopolitical Zone	North East	9.4	28.2	18.8

Source: Nigerian National Bureau of Statistics, 2011

Income Inequality

Table 5.9 provides information on the level of inequality in the North Central zone for 2004 and 2010, which are 0.41 and 0.44 respectively.

Table 5.9: Income Inequality for North East Zone, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	North East	0.4114	0.4468	8.6

Source: Nigerian National Bureau of Statistics, 2010

Poverty Rate

North East is the poorest zone in the country, largely due to the activities of the Boko Haram terrorists that cripple economic activities in three of the six states in the zone. Before the Boko Haram crisis the majority of the people in the zone relied on subsistence agriculture characterised by lower productivity. The zone does not attract serious commercial and industrial investment

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and the state governments in the zone have not undertaken robust measures to grow the economy and reduce poverty.

Table 5.10: Poverty Rates for the Zone (absolute, relative and food-poor), 2012

Zone	Food Poverty		Absolute Poverty		Relative poverty		Dollar Per Day based on adjusted PPP	
	Food Poor	Non Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
North East	51.5	48.5	69.0	31.0	76.3	23.7	69.1	30.9

Source: Nigerian National Bureau of Statistics, 2012

Table 5.10 shows that poverty is very high in the zone compared to other geopolitical zones.

Internally Generated Revenue (IGR)

Internally generated revenue indicates whether a zone is rich or poor. Revenue is generated through all forms of taxes, levies and charges paid by businesses and individuals. Table 5.11 shows that states in the zone generate among the lowest IGR compared to other states. This confirms North East's status as the poorest zone.

Table 5.11: Internally Generated Revenue for North East Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue Naira	Rank of the Zone
1.	Bauchi	8,677,265,878	20/36
2.	Adamawa	5,788,979,592	25/36
3.	Gombe	2,941,438,110	34/36
4.	Yobe	3,240,867,567	31/36
5.	Borno	2,675,723,063	35/36
6.	Taraba	5,895,538,974	22/36
=	TOTAL NE	29,219,813,18	=

Source: Nigerian National Bureau of Statistics, 2016

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NORTH WEST

The North West zone is the most populous zone in Nigeria and is one of the three zones in the northern part of Nigeria. Unlike other zones it has seven states and is also the largest zone in terms of land mass and size. The states are:

- Kano
- Kaduna
- Kebbi
- Katsina
- Jigawa
- Sokoto
- Zamfara

Major Economic Activities

The economy of the North West zone is largely dominated by the agricultural sector and the zone has the largest agricultural outputs. The major agricultural products the zone produces include rice, maize, groundnuts, potatoes, yams and other vegetables. Although the zone has very rich and fertile land subsistence agriculture predominates, characterised by low technological input and low productivity.

Kano state in the North West zone is the second-most industrialised state in Nigeria after Lagos and it is a major centre of commerce with significant markets that attract people from within and outside Nigeria. Kaduna state also has significant industrial and commercial operations. However, the other states in the zone are not as economically viable because there are no industries and very low business activities, leading to high unemployment and poverty.

Population

The North West zone is the most populous zone in Nigeria according to the Nigerian National Bureau of Statistics (2012:40). The total population of the zone was put at 35,369,956. Table 5.12 below shows the total population of the North West zone as well the population of each state in the zone.

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Table 5.12: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
NORTH WEST	
Kaduna	6,113,503
Katsina	5,801,584
Kano	9,401,288
Kebbi	3,256,541
Sokoto	3,702,676
Zamfara	3,278,873
Jigawa	4,361,002
Total Population of the Zone	35,915,467

Source: Nigerian National Bureau of Statistics, 2012

The high population of the zone can be attributed to the significant level of economic activities within the zone especially in Kano and Kaduna, which led to in-migration of people from other zones. The majority of the states in the zone have very large populations contributing to the high population of the zone.
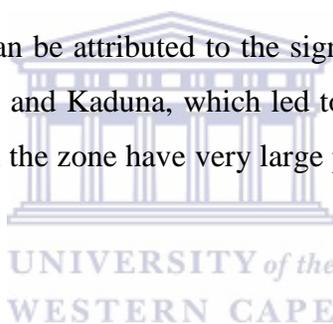
Unemployment

Unemployment in the North West geopolitical zone is the highest in the country despite the fact that there are significant industries and commercial activities, particularly in Kano and Kaduna states. This can be attributed to the higher population relative to the employment opportunities available in the zone.

Table 5.13: Unemployment Rate by Zone and Gender, 2012

		Sex		
		Male	Female	Total
Geopolitical Zone	North West	10.5	11.1	11.5

Source: Nigerian National Bureau of Statistics, 2012

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Income Inequality

Table 5.14 provides information on the level of inequality in the North West geopolitical zone. In 2004 inequality was 0.40, while in 2010 it stood at 0.41. The trend of poverty clearly shows that inequality in the North West zone is moderate compared to other zones.

Table 5.14: Income Inequality at Zonal Level, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	North West	0.4028	0.4056	0.7

Source: Nigerian National Bureau of Statistics, 2010

Poverty Rate

Table 5.15 below shows the poverty rate for the North West zone. The information indicates a moderate level of poverty in the zone when compared to other geopolitical zones.

Table 5.15: Poverty Rates for the Zone (absolute, relative and food-poor), 2012

	Food Poverty		Absolute Poverty		Relative poverty		Dollar per Day based on adjusted PPP	
Zone	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
North West	51.8	48.2	70.0	30.0	77.7	22.3	70.4	29.6

Source: Nigerian National Bureau of Statistics, 2012

Internally Generated Revenue (IGR)

In terms of internally generated revenue the North West zone is considered among the most economically and financially viable zones in Nigeria because the zone is ranked third after the South West and South South zones. The total internally generated revenue in the zone stood at ₦69,547,421,134 and this revenue is collected because of Kano and Kaduna states which have a good number of industries and business outfits. Thus the North West geopolitical zone is the richest among the zones in the north as indicated by the level of its internally generated revenue.

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Table 5.16: Internally Generated Revenue (IGR) for North West Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue Naira	Rank of the Zone
1.	Kano	30,959,027,531	5/36
2.	Kaduna	17,051,864,537	10/36
3.	Zamfara	4,777,169,537	27/36
4.	Sokoto	4,545,765,527	28/36
5.	Katsina	5,545,900,833	26/36
6.	Jigawa	3,535,349,908	29/36
7.	Kebbi	3,132,343,261	32/36
=	TOTAL NW	69,547,421,134	

Source: Nigerian National Bureau of Statistics, 2016

SOUTH EAST

The South East zone is one of the three zones in southern Nigeria and is the smallest zone in terms of land mass and size. The South East zone has only five states:

- Anambara
- Abia
- Ebonyi
- Enugu
- Imo
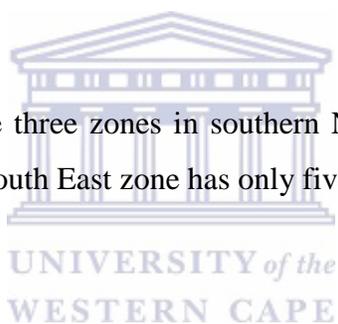
Major Economic Activities

The economy of the South East zone is largely agriculture based. The zone is endowed with fertile soil and tropical rains to complement water supply from the rivers and swamps which criss-cross the zone. The major agricultural products are rubber, cassava, palm products, rice and maize. The people of the zone have a reputation for entrepreneurship and commercial activities, not only in the zone but throughout the country and even outside Nigeria. As a result some states in the zone, notably Abia (Aba and Onitsha) and Anambra states are among the leading industrial and commercial centres of Nigeria. Although the people of the South East are enterprising, most

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of their businesses are not operating within the zone but are spread among the other geopolitical zones, which has resulted in very low commercial activities in the South East zone.

Population

Although the South East zone is the least populated zone in Nigeria according to the Nigerian National Bureau of Statistics (2012:40), the total population of the zone was put at 16,395,555, which means that the zone accounts for about 11.7% of the national population.

Table 5.17: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
South East	
Abia	2,845,380
Anambra	4,177,828
Ebonyi	2,176,947
Enugu	3,267,837
Imo	3,927,563
Total Population of the Zone	16,395,555

Source: National Population Commission, 2012

It should be noted that despite the smaller population of the South East zone, it is described by the National Population Commission as the most densely populated area in Nigeria, based on the 2006 national census. The high population density of the zone has triggered a migration of people of the zone to other zones in Nigeria and other countries (Onuoha, 2008:30).

Unemployment

Statistical data shows that the rate of unemployment has increased during the last few years. Table 5.18 provides information on the unemployment rate in the South East zone, by gender.

Table 5.18: Unemployment rate by Zone and Gender, 2012

		Sex		
		Male	**Female**	**Total**
Geopolitical Zone	South East	8.9	9.0	8.9

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Income Inequality

Table 5.19 shows income inequality in the South East zone for 2004 and 2010, as 0.38 and 0.44 respectively. The table shows that the zone is among the most unequal zones, with income inequality increasing over the period.

Table 5.19: Income Inequality for South East Zone, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	South East	0.376	0.4442	18.1

Poverty Rate

Table 5.20 represents the poverty rate for the South East geopolitical zone. Table 5.20 shows that poverty in the zone is moderate when compared to other geopolitical zones in Nigeria.

Table 5.20: Poverty Rates for the Zone (absolute, relative and food-poor), 2012

	Food Poverty		Absolute Poverty		Relative Poverty		Dollar per Day based on adjusted PPP	
Zone	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
South East	41.0	59.0	58.7	41.3	67.0	33.0	59.2	40.8

Internally Generated Revenue (IGR)

The internally generated revenue for the South East zone is low and the zone ranks fourth after South West, South South and North West in terms of internally generated revenue. The internally generated revenue is a yardstick for measuring the economic and financial strength of a state or zone. The major factors that determine the IGR are the levels of economic activities taking place in the zone as well as the ability of the government to collect and mobilise the revenue from the

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activities. While the people of the South East zone are highly enterprising, most of their businesses are located outside the zone, which means that the people of the South East zone are generating revenue in other zones. Table 5.21 shows that two states particularly, Imo and Ebonyi, perform very poorly in terms of IGR, while the others perform reasonably well.

Table 5.21: Internally Generated Revenue (IGR) for South East Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue Naira	Rank of the Zone
1.	Enugu	14,235,512,227	13/36
2.	Abia	12,694,839,539	14/36
3.	Imo	5,871,026,976	24/36
4.	Ebonyi	2,342,092,225	36/36
5.	Anambra	14,791,175,253	11/36
=	TOTAL SE	49,934,646,220	=

Source: Nigerian National Bureau of Statistics, 2016

SOUTH SOUTH

The South South geopolitical zone is one of the three zones in the southern part of Nigeria and strategically located at a point where the tail end of the Niger River borders the Atlantic Ocean through the Gulf of Guinea. Though the South South zone is the smallest in terms of land mass, it is economically the most important because it provides oil and gas, the mainstay of the country. The zone comprises:

- Akwa Ibom
- Bayelsa
- Cross Rivers
- Edo
- Delta
- Rivers

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Major Economic Activities

The South South zone is one of the most strategic zones, with abundant reserves of mineral resources of high economic value, including a wide range of solid minerals, crude oil and natural gas. As a result there are significant numbers of multinational mining and oil companies which greatly assist the economy of the zone. Agriculture represents a major aspect of the renewable natural resources sector in the economy of the South South. The zone is blessed with abundant arable farmland that forms the basis of subsistence agriculture and presents enormous potential for agriculture-based industrial development. The zone produces a variety of food and cash crops such as yams, rice, cassava, palm oil, maize and plantains. The production of palm oil in large quantity in the zone has led to the establishment of palm oil processing plants producing for local and export markets, and providing raw materials for many agro-industries.

Population

The South South zone is one of the least populated zones in Nigeria according to the Nigerian National Bureau of Statistics (2012:40), which calculated the total population of the zone at 20,369,956. Table 5.22 below represents the total population of the South South zone as well as the population of each state in the zone.
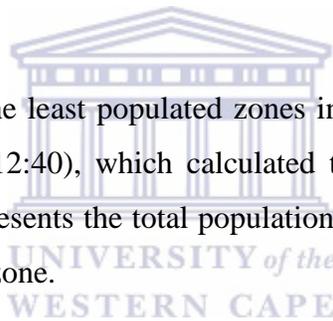
Table 5.22: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
SOUTH SOUTH	
Akwa Ibom	3,902,051
Bayelsa	1,704515
Cross Rivers	2,892,988
Delta	2,112,445
Edo	4,233,366
Rivers	5,198,716
Total Population of the Zone	21,044,081

Source: Nigerian National Bureau of Statistics, 2012

Unemployment

Statistical data shows that the rate of unemployment in the zone has increased during the last few years. However the rate of unemployment is the lowest compared with the other zones. Unemployment in the zone has been kept low as many people in the zone are directly or indirectly employed by the oil companies operating in the zone. Table 5.23 shows the unemployment rate in South South geopolitical zone, by gender.

Table 5.23: Unemployment rate by Zone and Gender, 2012

		Sex		
		Male	Female	Total
Geopolitical Zone	South South	17.6	18.4	18.0

Source: Nigerian National Bureau of Statistics, 2012

Income Inequality

Table 5.24 provides information on the level of inequality in the South South zone. The table shows that the zone is among the most unequal zones, inequality having increased between 2004 and 2010. Although the South South zone is resource rich and not densely populated an equitable distribution does not follow. Like other zones in Nigeria, inequality is high, which can be attributed to a concentration of economic activities in the urban sectors in the zone.

Table 5.24: Income Inequality South South Zone, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	South South	0.3849	0.434	12.8

Source: Nigerian National Bureau of Statistics

Poverty Rate

Table 5.25 below represents the poverty rate for the South South geopolitical zone. The table indicates a moderate level of poverty in the zone when compared to other geopolitical zones. Despite being the hub of oil and gas exploration in Nigeria the poverty rate is still high in the South South geopolitical zone, as it is in all of Nigeria.

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Table 5.25: Poverty Rates for the Zone (absolute, relative and food-poor), 2012

	Food Poverty		Absolute Poverty		Relative Poverty		Dollar per Day based on adjusted PPP	
Zone	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
South South	35.5	64.5	55.9	44.1	63.8	36.2	56.1	43.9

Source: Nigerian National Bureau of Statistics, 2012

Internally Generated Revenue (IGR)

The South South zone is the second-richest zone in Nigeria based on internally generated revenue collection. Table 5.26 below shows that within the 2016 period, a total of ₦198,34 billion was collected in the zone. The internally generated revenue of the South South zone is impressive and this can be attributed to revenue derived from oil multinational companies as well as many oil services companies. Also, Rivers, Delta and Edo states have thriving markets and are very important commercial and business centres in the zone.

Table 5.26: Internally Generated Revenue (IGR) South South Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue Naira	Rank of the Zone
1.	Rivers	85,287,038,971	2/36
2.	Delta	44,057,915,472	4/36
3.	Edo	23,041,425,599	7/36
4.	Akwa Ibom	23,269,750,752	6/36
5.	Cross Rivers	14,776,808,331	12/36
6.	Bayelsa	7,905,458,280	21/36
=	TOTAL SS	198,338,397,405	=

Source: Nigeria National Bureau of Statistics, 2016

SOUTH WEST

The South West is the second-most populous zone in Nigeria and comprises the following states:

- Ekiti
- Lagos
- Oyo
- Osun
- Ogun
- Ondo

Major Economic activities

The South West geopolitical zone has a land mass of 76,852km^2 and is the second-most populous zone in the country after North West. The economy of the South West is the largest economy among the six geopolitical zones in Nigeria because 65% of all the industries in Nigeria as well as 67% of banking and insurance assets in Nigeria are in the zone. In terms of major economic infrastructure, the zone is the most advantaged because the three major deep sea ports of Apapa, Tin Can Island and Roro are located there, as are the busiest international airport, Ikeja, and three thermal power stations at Egbin, Papalanto and Omotosho. Four strategic industrial estates are situated in the zone – Agbara, Apapa, Ikeja and Otta – which are linked to the West African gas pipeline plan and piping of gas is ongoing from Otta to Abeokuta. The geographical location, education, infrastructure and availability of resources have over the years enabled the South West to rank as the most economically viable zone in Nigeria. The major agricultural products the zone produces include fruit, cocoa, yams and palm oil. Although the zone has the potential to produce cocoa in large quantities for export this was not developed as the country's focus has been on the oil sector (Omotosho, 2008:15).

Population

With a population of almost 28 million representing 21% of the country's population, the South West zone is the second-most populous geopolitical zone in the country after the North West zone (Nigerian National Bureau of Statistics, 2012:40). Table 5.27 below shows the total population of the South West zone as well the population of each state in the zone. The large

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population of the South West zone can be attributed to the fact that Lagos (and Oyo State to a lesser extent) is the most industrialised as well as the largest commercial centre in Nigeria, drawing a significant number of people from other zones to permanently or temporarily settle there.

Table 5.27: Population of the Zone by State, 2012

GEOPOLITICAL ZONE/ STATE	POPULATION
SOUTH WEST	
Ekiti	2,398,957
Lagos	9,113,605
Ondo	3,460,877
Osun	3,416,959
Oyo	5,580,894
Ogun	3,751,140
Total Population of the Zone	27,722,432

Source: Nigerian National Bureau of Statistics, 2012

Unemployment

Table 5.28 shows the unemployment rate in the South West geopolitical zone, by gender.

Table 5.28: Unemployment Rate by Zone and Gender, 2012

		Sex		
		Male	Female	Total
Geopolitical Zone	South West	12.0	11.1	33.1

Source: Nigerian National Bureau of Statistics, 2012

Income Inequality

Table 5.29 provides information on the level of inequality in the South West geopolitical zone in Nigeria. The table shows that the zone is among the most unequal zones with inequality having risen from 0.4 in 2004 to 0.41 in 2010.

Table 5.29: Income Inequality at Zonal Level, 2004-2010

	Location	2004	2010	% change in inequality
Geopolitical Zone	South West	0.4088	0.4097	0.2

Source: Nigerian National Bureau of Statistics, 2012

Poverty Rate

Table 5.30 below shows the poverty rate in the South West zone. The information indicates that the South West geopolitical zone has the lowest poverty rate in the whole of the country. Apart from agriculture, the people in the South West zone also have the opportunity of employment in the large number of industries operating in the Lagos and Ogun axis which account for two-thirds of Nigeria's industries.

Table 5.30: Poverty Rates for the Zone (absolute, relative and food poor), 2012

	Food Poverty		Absolute Poverty		Relative Poverty		Dollar per Day based on adjusted PPP	
Zone	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
South West	25.4	74.6	49.8	50.2	59.1	40.9	50.1	49.9

Source: Nigerian National Bureau of Statistics, 2012

Internally Generated Revenue (IGR)

Table 5.31 below shows the internally generated revenue of the South West geopolitical zone. The table shows that Lagos and Ogun generated more revenue than any other states in the zone. The South West geopolitical zone is the largest zone in terms of revenue which makes it the richest zone in Nigeria. Economically speaking, the South West zone is the most viable and economically advantaged zone in the country due to the large number of industries and significant economic activities taking place. Apart from this, Lagos and Ogun states have an efficient revenue collection and administrative system.

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Table 5.31: Internally Generated Revenue (IGR) South West Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue ion Naira	Rank of the Zone
1.	Lagos	302,425,091,964	1/36
2.	Ogun	72,983,120,003	3/36
3.	Oyo	18,879,084,132	8/36
4.	Osun	8,884,756,040	18/36
5.	Ondo	8,684,406,573	19/36
6.	Eki	2,991,041,855	33/36
=	TOTAL SW ZONE	414,847,500,567	=

Source: Nigerian National Bureau of Statistics, 2016

5.3 COMPARATIVE ANALYSIS OF KEY ECONOMIC INDICATORS

5.3.1 Introduction

The discussion above of the prevailing macroeconomic variables in each of the six geopolitical zones of Nigeria with respect to population, employment, inequality, internally generated revenue and poverty rates has given a clear picture of the various economic scenarios existing in each of the six geopolitical zones in Nigeria. What follows is a general comparative analysis of the six geopolitical zones in line with the macroeconomic variables discussed earlier.

5.3.2 Internally Generated Revenue (IGR)

Nigeria has a federal government, with 36 states within the federation, 774 local government councils and a Federal Capital Territory. All three tiers of governments are collectively funded by the national fiscus. There are large disparities in terms of endowments of agricultural, mineral and commercial resources across the six geopolitical zones in Nigeria which significantly affect the chances or opportunities for economic growth in the different geopolitical zones. As a result, economic activities and growth are concentrated in four geopolitical zones in Nigeria, namely South West, South South, North West and North Central, while the South East and North East zones are largely excluded from the growth processes.

Table 5.32: Internally Generated Revenue (IGR) in Nigeria by Geopolitical Zone, 2016

S/NO	Zone	Internally Generated Revenue Billion Naira	Rank of the Zone
1.	South West	414.85	1/6
2.	South South	198.34	2/6
3.	North West	69.55	3/6
4.	North Central	54.86	4/6
5.	South East	49.93	5/6
6.	North East	29.22	6/6
=	TOTAL	816.75	=

Source: Nigerian National Bureau of Statistics, 2016

The disparity in the distribution of resources has created a wide gap in terms of revenue generated internally among the six zones: the South West zone is the richest zone followed by the South South, North West, North Central, South East and North East. It should also be noted that southern Nigeria is generally richer than northern Nigeria.

Figure 5.2: Internally Generated Revenue in Nigeria by Geopolitical Zone
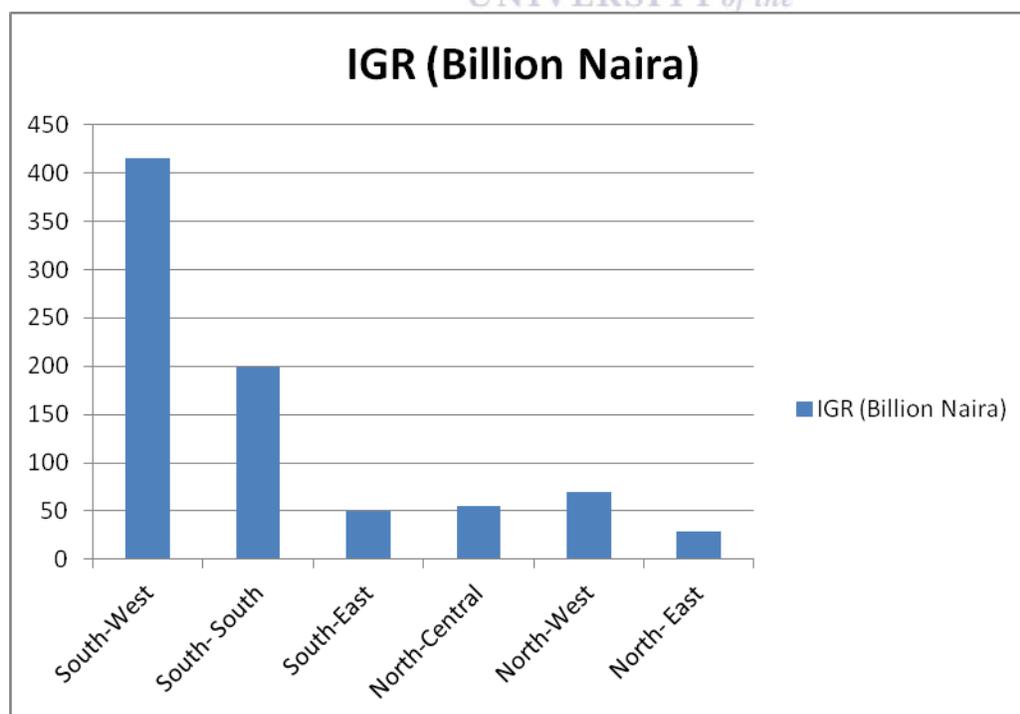
5.3.3 Population

Table 5.33 below shows the population of the geopolitical zones in Nigeria. The most populous zones are the North West and South West while the least populated zone is the South East geopolitical zone. It should be noted that the zones in the north are the most populated and are larger in terms of land mass than the zones in the southern parts of the country. However, due to their smaller land mass the zones in the south are also densely populated.

Table 5.33: Population of the Zone by State, 2012

GEOPOLITICAL ZONE	POPULATION
NORTH CENTRAL	20,369,956
NORTH EAST	20,369,956
NORTH WEST	35,915,467
SOUTH EAST	6,395,555
SOUTH SOUTH	12,044,081
SOUTH WEST	27,722,432

Source: Nigerian National Bureau of Statistics, 2012

5.3.4 Unemployment

Unemployment in Nigeria is a huge concern to policy makers and the government. Statistical data has shown that the rate of unemployment has increased during the last few years. Table 5.34 shows the unemployment rate for all the geopolitical zones by gender, showing the national unemployment rate for males is 12.0%, for females is 11.1% and averages 11.5%.
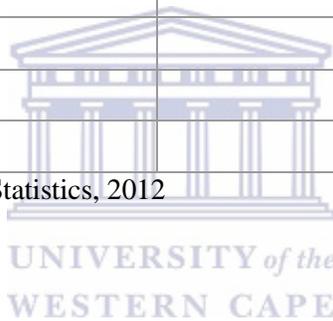
Table 5.34: Unemployment Rate by Zones and Gender, 2012

Geopolitical Zone	Sex		
	Male	**Female**	**Total**
North Central	8.8	14.1	22.9
North East	9.4	28.2	37.6
North West	10.5	11.1	21.6
South East	8.9	9.0	17.9
South South	17.6	18.4	36.0
South West	12.0	11.1	23.1

Source: Nigerian National Bureau of Statistics, 2012

5.3.5   Income Inequality

In Nigeria over the years income inequality has grown despite the fact that the country is one of the largest producers and exporters of crude oil. It should be noted, however, that inequality in Nigeria varies between the zones depending on the level of economic activities taking place in the zone. Table 5.35 provides information on the level of inequality among the geopolitical zones in Nigeria. The table shows that the South West and North West are the most unequal zones.

Table 5.35: Income Inequality for the Zones, 2004-2010

Geopolitical Zone	2004	2010	% change in inequality
North Central	0.4459	0.422	5.4
North East	0.4114	0.4468	8.6
North West	0.4028	0.4056	0.7
South East	0.376	0.4442	18.1
South South	0.3849	0.434	12.8
South West	0.4088	0.4097	0.2

Source: Nigerian National Bureau of Statistics, 2010

5.3.6 Poverty Rate

The incidence of poverty is very high in Nigeria. The variation in the rate of poverty among the six geopolitical zones is due to differences in economic opportunities, and socio-cultural and environmental factors. Table 5.36 below represents the poverty rate for the six geopolitical zones.

Table 5.36: Poverty Rates for the Zones, 2012

Zone	Food Poverty		Absolute Poverty		Relative Poverty		Dollar per Day based on adjusted PPP	
	Food Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
North Central	38.6	61.4	59.5	40.5	67.5	32.5	59.7	40.3
North East	51.5	48.5	69.0	31.0	76.3	23.7	69.1	30.9
North West	51.8	48.2	70.0	30.0	77.7	22.3	70.4	29.6
South East	41.0	59.0	58.7	41.3	67.0	33.0	59.2	40.8
South South	35.5	64.5	55.9	44.1	63.8	36.2	56.1	43.9
South West	25.4	74.6	49.8	50.2	59.1	40.9	50.1	49.9

Source: Nigerian National Bureau of Statistics, 2012

In terms of absolute, relative and food poverty measures, the zones in the northern part of Nigeria are ranked higher than the zones in the southern part of the country, which signifies that poverty is higher in the north. In terms of the distribution of critical national infrastructure necessary for facilitating economic development, the zones in the north are disadvantaged. All the major economic activities are concentrated in the South West and South South zones while the remaining zones are excluded. These imbalances are responsible for rising trends in inequality and poverty across the three geopolitical zones in northern Nigeria. The situation in

the North East geopolitical zone is the most alarming because apart from the expected poverty affecting the zone, the Boko Haram insurgency has exacerbated the level of poverty in the zone.

5.4 CONCLUSION

The analysis of the six geopolitical zones of Nigeria described in this chapter has revealed the extent of the disparities in endowments of resources and economic activities in the zone that have had a significant impact on the relative levels of poverty in the zones. This calls for urgent efforts by the federal government and governors of the affected zones to take all the necessary measures to make economic growth among the geopolitical zones more inclusive and equitable. Efforts must be made to integrate and bring resource-poor zones closer to the better-performing zones in order to bridge the interzonal disparity to sustain economic growth, thereby reducing national poverty and inequality.

CHAPTER SIX: DESCRIPTIVE ANALYSES OF CONSUMPTION

6.1 INTRODUCTION

Consumption expenditure reflects what individuals and households spend on goods and services in an economy within a given period of time (Houthakker, 1995:145). In every economy the study of households' budget allocation of their scarce resources on goods and services is important to policy makers and economists. This is because the well-being or welfare of a household is generally expressed in terms of the amount of goods and services it is consuming within a given period of time. The more goods and services consumed by the households, the higher the level of economic prosperity or well-being of the households. Trends in household consumption expenditure inform government economic policy regarding the living standards and economic well-being of the households in the entire economy and thus widen the understanding of how the economy is functioning.

In line with the above, this chapter sets out to analyse, describe and interpret the data with the aim of answering the research question raised in the introductory chapter of this dissertation. The next section of this chapter will examine the trends in household consumption expenditure in Nigeria in both wave 1 and wave 2 nationally and among the six geopolitical zones, using cumulative distribution function (CDF) curves and Kernel density estimation. An analysis is made across the various categories of household expenditure to determine the mean and standard deviations of expenditures by zones and by categories of expenditure. The next section looks at inequality in household consumption expenditure among the six geopolitical zones as well as rural and urban areas. In order to measure consumption trends and patterns in this study, household consumption expenditure is decomposed into total expenditure, total expenditure of purchased food, non-food expenditure, education expenditure and health expenditure. Gini coefficients and Lorenz curves are used to present the inequality of household expenditure in Nigeria for both waves 1 and 2. The mean share of household expenditure is also examined by using quintiles. The last section of the chapter deals with the estimation of the Engel Curve and

the Working-Leser form of the Engel Curve to determine households' expenditure share and economies of scale.

6.2 TRENDS IN HOUSEHOLD CONSUMPTION

The role of every economy is to ensure the delivery of goods and services to the people. The efficiency and success of the economy can accurately be measured in terms of the volume of goods and services available to households in the economy. In every economy the trends in household consumption express the patterns within a given period of time of household consumption expenditure which includes food, non-food, education and health. A trend in household consumption expenditure provides an information base to track fluctuations and distributions of household expenditure across the country. This is an essential prerequisite for the evaluation of actual or proposed policies and, in the long run, enhances understanding of how the economy functions, allowing for the evolution of better policies for progress and development.

This section analyses the trends in household consumption expenditure in Nigeria between wave 1 and 2 of the Nigeria General Household Survey. The analysis covers the following components of household's expenditure: total household expenditure, expenditure on purchased food, total food expenditure, total education expenditure, total health expenditure and total non-food expenditure. The descriptive analysis covers the six geopolitical zones and the urban and rural areas.

In the Nigeria General Household Survey data, household food expenditure is one of the broadest categories of expenditure. As a result the food expenditure file is divided into three categories, namely total household food expenditure, total expenditure on purchased food and the value of own production of food for own consumption. The total household food expenditure referred in the consumption file as (fdtexp) is made up of food purchased and food from households' own production. Total household food expenditure (fdtexp) is aggregated from the household total expenditure on purchased foods referred to as (fdtotby) as well as the total value of households' own production which is consumed by all the household members and is referred to in the consumption data as (fdtotpr).

The total household food expenditure (fdtexp) is the aggregate food consumption expenditure of the households within a given period of time and it is made up of the expenditure of the households on food items which are purchased in the market, comprising all type of foodstuffs and ingredients, as well as the value of the households' own production which is consumed by all the members of the household.

The household expenditure on purchased food (fdtotby) is aggregated from the total expenditure the household incurred on raw food items, ingredients for preparing the food and expenditure on food eaten away from home. Hence the household expenditure of purchased food is the total monetary value of what the household spent on food either within or outside the house.

Another category of household food expenditure is the value of households' own production referred to as (fdtotpr) in the consumption file. The idea of the households' own production is in line with the work of Bentan (1980:200) in which he describes the household as an independent economic unit responsible for acquiring its income and undertaking the production of goods to satisfy the members of the entire household. This idea is recognised in the GHS survey where all food produced by the household for the consumption of members of the household are recorded and then categorised as (fdtotpr).

Figure 6.1 represent the cumulative distribution function for the total household expenditure in Nigeria in wave 1 (2010-2011) and wave 2 (2012-2013). The graph plots the proportion of the population against the total household expenditure for wave 1 and wave 2. The shape of the CDF indicates changes in the direction of household expenditure in Nigeria for the period wave 1 and wave 2. The CDF graph shows the cumulative per capita expenditure among the households in Nigeria.
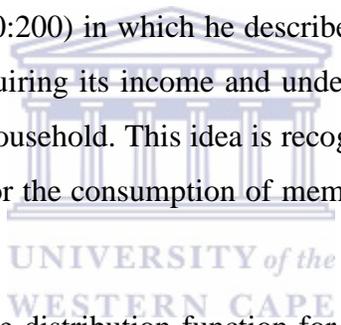
Figure 6.1: CDF for Total Household Expenditure, wave 1 and 2 (2010-2013)
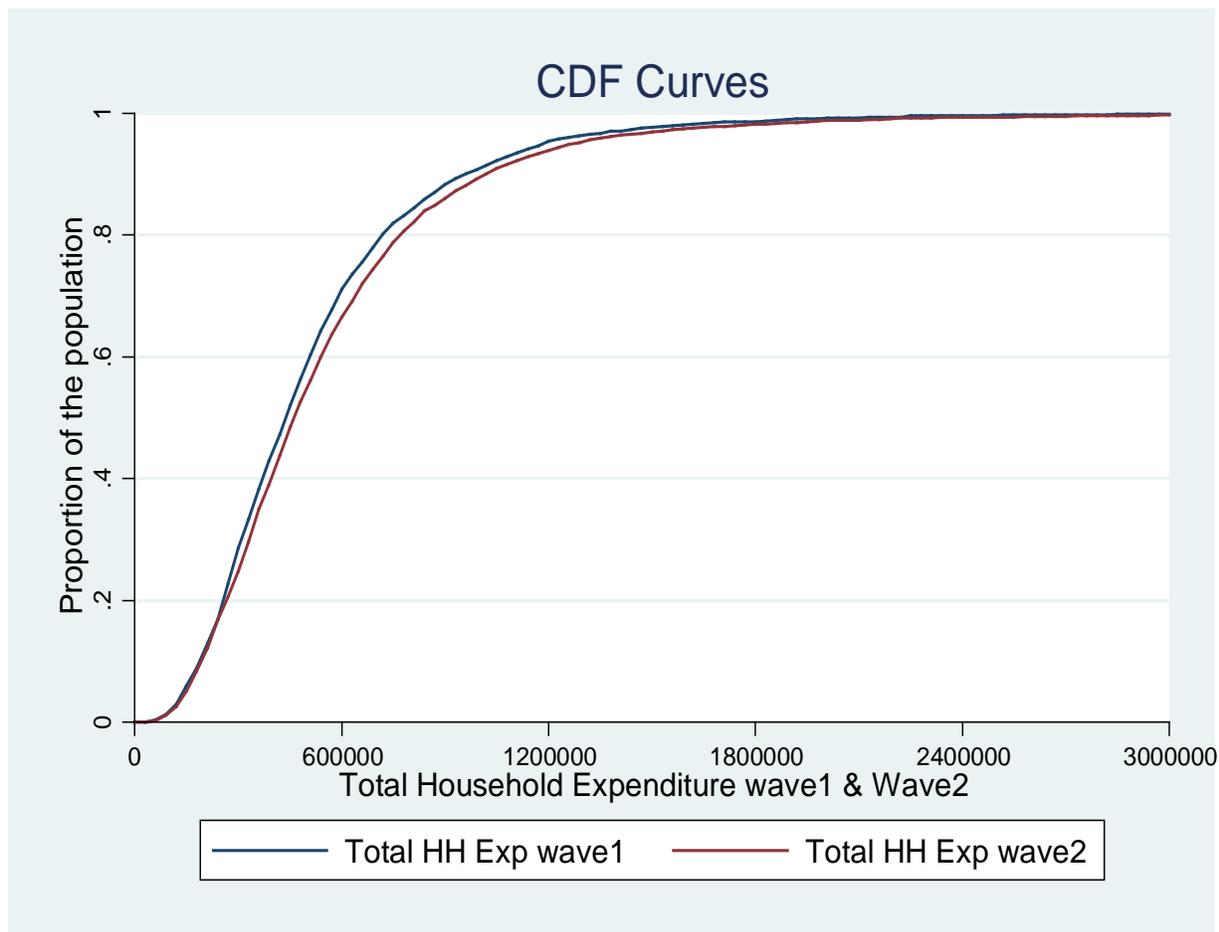
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

From the CDF above it will be seen that 40% of the population have a total household expenditure of approximately ₦300,000 or less in wave 1. The amount for wave 2 shows an increase in real household expenditure as the CDF for wave 2 is to the right of the CDF for wave 1 which is slightly higher than ₦300,000. Also in wave 1 50% of households have a total household expenditure less than ₦500,000 increasing to ₦550,000 and below in wave 2. Furthermore, the information on the CDF reveals that 60% of households have a total expenditure of ₦590,000 or less in wave 1, increasing to ₦600,000 or less per annum. The CDF shows that 80% of the population spent more than ₦700,000 in wave 1 while in wave 2 the total household expenditure was higher. This clearly shows that total household expenditure in wave 2 in real terms was higher than wave 1, signalling an improvement in total household consumption

as well as improvement in the living standards of these households. This can be attributed to a number of factors, like an increase in household size and improved GDP growth figures.

As stated in the previous chapters Nigeria has a rising population. Deaton (1999) emphasises the positive relationship between household expenditure and household size. Another reason for the rise in the expenditure could be due to an increase in income for some categories of households especially those that have additional sources of income.

It should be noted that the GDP growth witnessed in Nigeria between the two waves was consistently above 4%. For example in 2011 it was 4.9% and in 2013, 5.4% (World Bank, 2017). This has stimulated economic activity particularly among both formal and informal SMMEs thereby increasing total household expenditure.

Figure 6.2 below shows the cumulative distribution function of total household expenditure on purchased food in Nigeria for wave 1 and wave 2, for 2010-2011 and 2012-2013 respectively. The graph plots the proportion of the population against the total household expenditure on purchased food for wave 1 and wave 2. The shape of the CDF indicates changes in the direction of household expenditure on purchased food in Nigeria for the wave 1 and wave 2 periods. The total expenditure of purchased food refers to all forms of food items and ingredients which households purchase within a given period of time, including meals away from home. However, this expenditure category does not include food produced by households' own production.

The CDF graph below shows the cumulative total household expenditure in Nigeria on purchased food. From the CDF, 20% of the population had expenditure of ₦150,000 or less in wave 1 which decreased to less than ₦150,000 and below in wave 2. This finding is consistent across the length of the CDF for wave 2. In general total household expenditure on purchased food is higher in wave 1 than in wave 2.

Figure 6.2: Total Household Expenditure on Purchased Food, wave 1 and wave 2 (2010-2013)
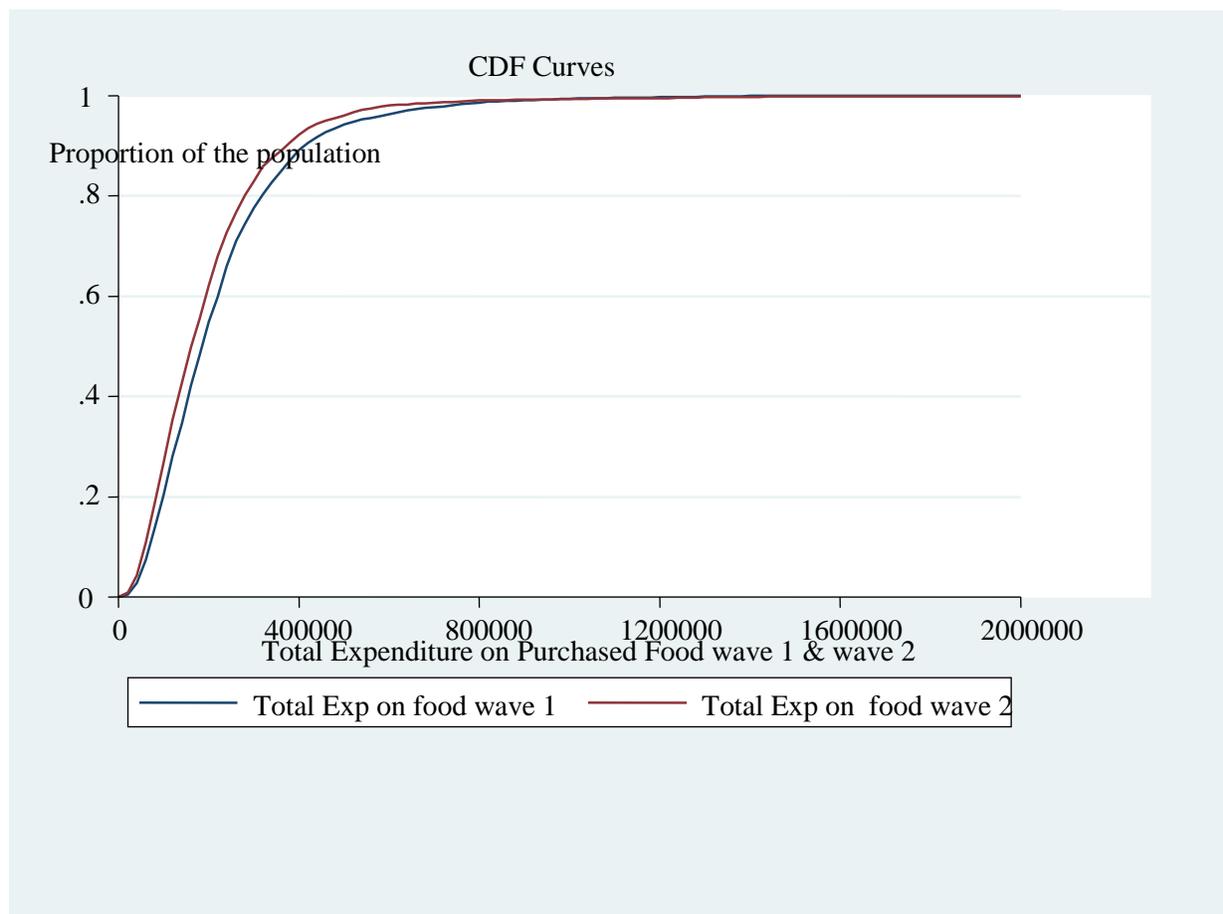
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The food expenditure is one of the most important components of household expenditure and many economic studies have emphasised the importance of purchased food expenditure, especially among low-income earners as well as poor countries. It should be noted however that household expenditure on this category of food expenditure is not very high because it involves real expenditure on food items purchased in the markets or in restaurants and eateries. However, most households in Nigeria are producing and consuming their own food which significantly reduces this category of expenditure.

Figure 6.3: Total Household Autonomous Expenditure on Food, wave 1 and wave 2 (2010-2013)
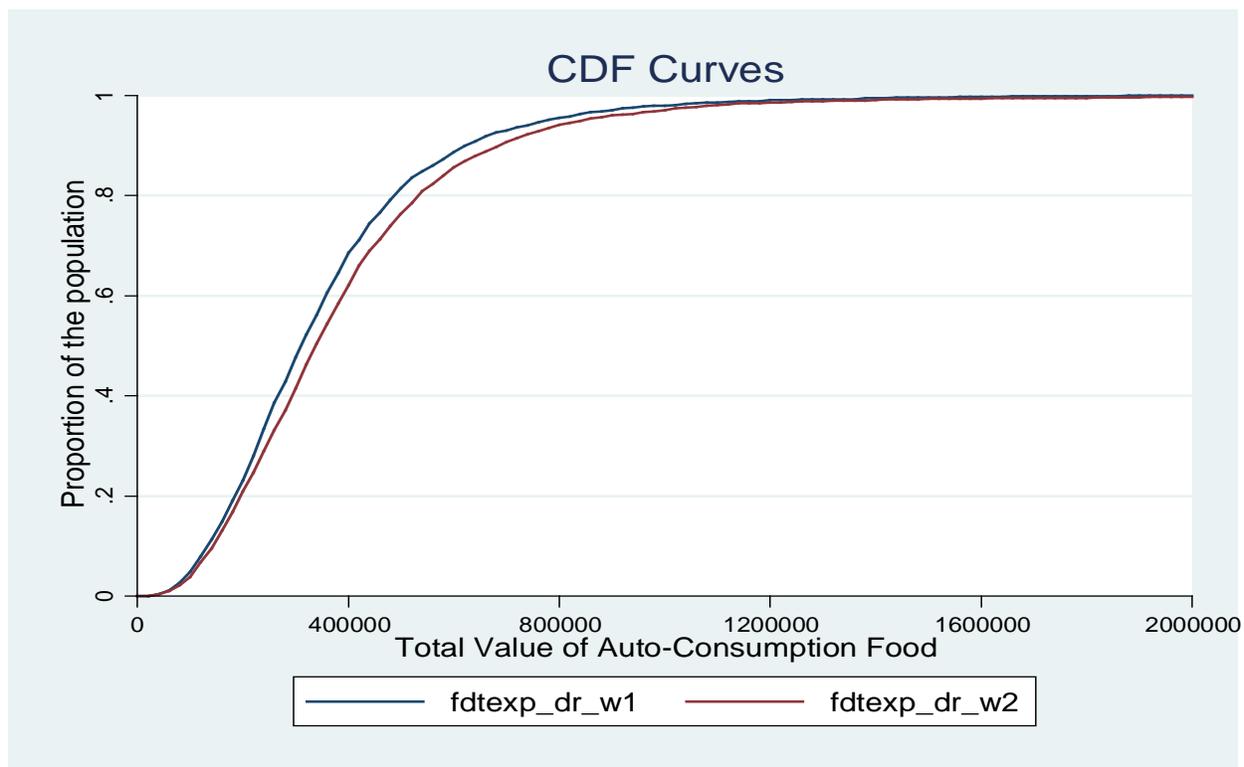
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The CDF in figure 6.3 above represents the household's autonomous expenditure on food in Nigeria for the wave 1 and wave 2 periods. The CDF shows that the value of autonomous food consumption expenditure for the wave 2 period is higher than in wave 1.

Figure 6.4: Total Education Expenditure, wave 1 and wave 2 (2010-2013)
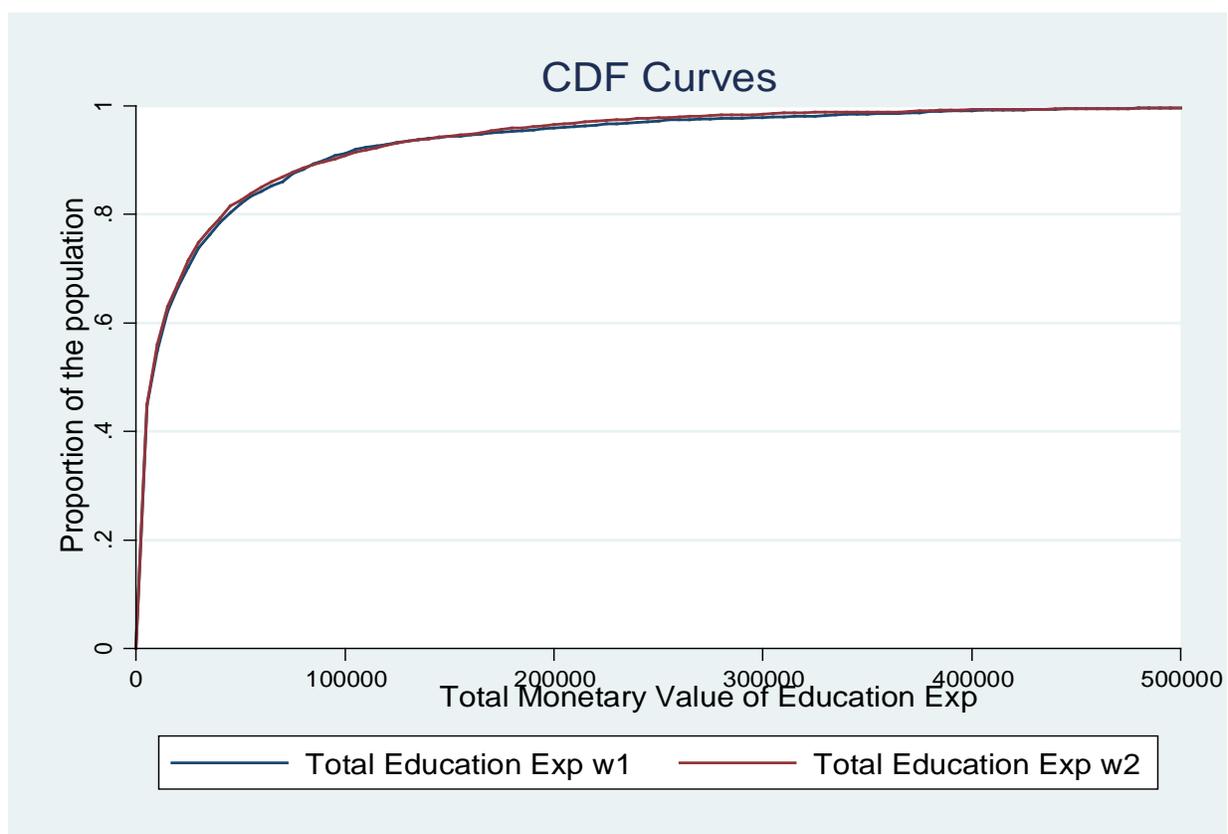
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6.4 represents the cumulative distribution function showing total household expenditure on education in Nigeria for wave 1 and wave 2. The graph plots the proportion of the population on the one hand against the total household expenditure on education for wave 1 and wave 2 on the other. The shape of the CDF describe the unique behaviour of education expenditure which is different from food expenditure in the wave 1 and wave 2 periods.

From the CDF graph in both wave 1 and wave 2 20% of the population have nearly zero expenditure on education. The wealthiest 20% of the population however spend significantly more on education. Overall, education expenditure in both wave 1 and wave 2 are the same. From the result we can see that education expenditure in wave 1 and wave 2 period is low for the vast majority of Nigerians.

Given the low household expenditure on education in both wave 1 and wave 2, it should be noted that expenditure on education is very important because it is one of the components of human capital. However, expenditure by households on education in Nigeria is very low. There are many factors responsible for low household expenditure on education. For many years people, especially low-income earners, relied on public schools for educational services despite the poor service. As an alternative to public schools, private schools are very expensive and unaffordable for many poor Nigerians, hence the only people that can afford them are the rich and the middle class. Finally, low income leads to low expenditure on education, since people who are poor spend most of their income on food with nothing left for education expenditure. This view is shared by Lawal (2014).

Figure 6.5: Total Non-Food Expenditure, wave 1 and wave 2 (2010-2013)
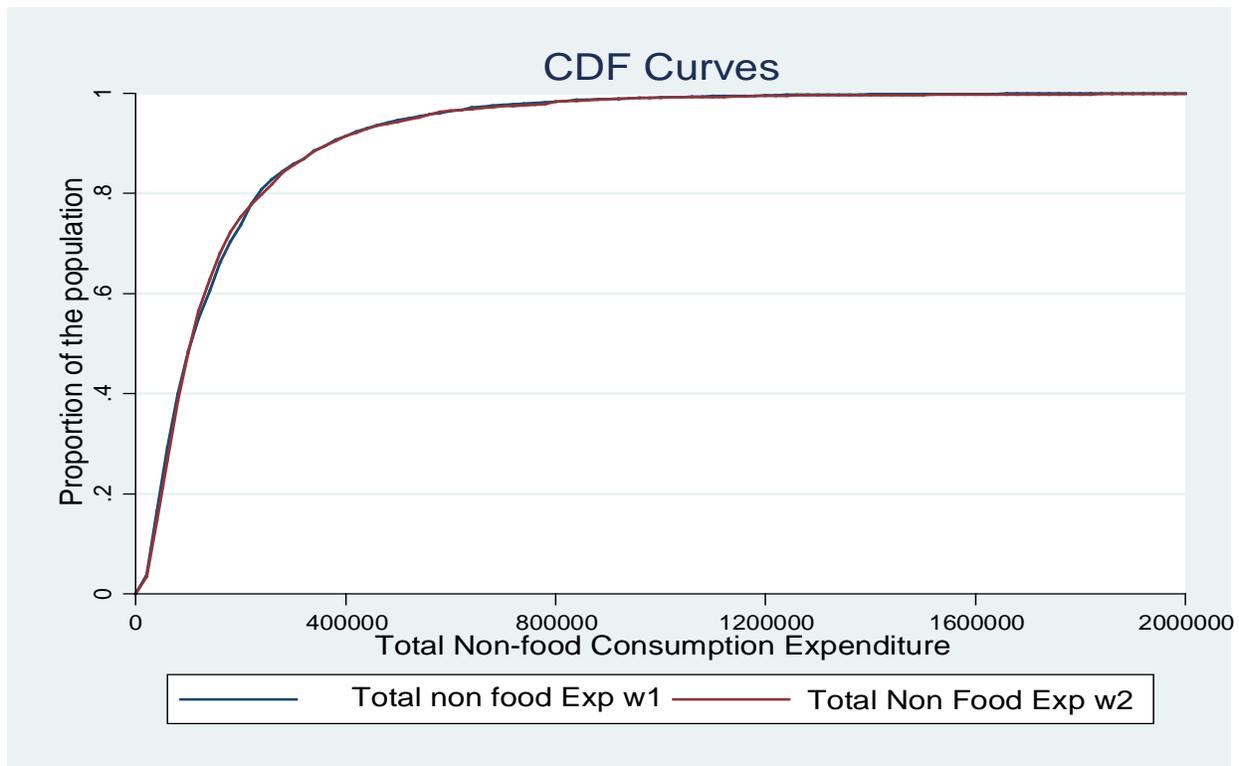
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6.5 above represents the cumulative distribution function showing total household expenditure on non-food in Nigeria for wave 1 and wave 2. The graph plots the proportion of the population's expenditure on non-food against the total household expenditure on non-food for

wave 1 and wave 2. The shape of the CDF describes the pattern of non-food expenditure by the proportion of the population in the period wave 1 and wave 2.

From the CDF graph in both wave 1 and wave 2 it can be seen that 40% of the population also had zero expenditure on non-food in wave 1 and wave 2, while 60% of the population spent ₦150,000 or less on non-food expenditure in wave 1 and ₦160,000 or less in wave 2. Furthermore, 80% proportion of the population spent ₦200,000 or less per annum as their total expenditure on non-food in both wave 1 and wave 2. Overall non-food expenditure in both wave 1 and wave 2 are the same. From the result we can see that non-food expenditure in the wave 1 and wave 2 periods is very low when compared with the food expenditure.

The low non-food expenditure confirms the postulations of Engel's law, which says that the poorer a household is, the higher the proportion of its income or expenditure would be spent on food. Also, unlike food expenditure, non-food expenditure is not a necessity but a luxury. As a result, many people spend little on it. Finally, unlike food items, whose prices fluctuate within the year, the prices of non-food items are generally either fixed or increasing, making them very expensive for people to buy. This view is shared by Tukur (2009) and Adeyemie (2012).

**Figure 6.6: Category of Households' Expenditure, wave 1 (2010-2011)**
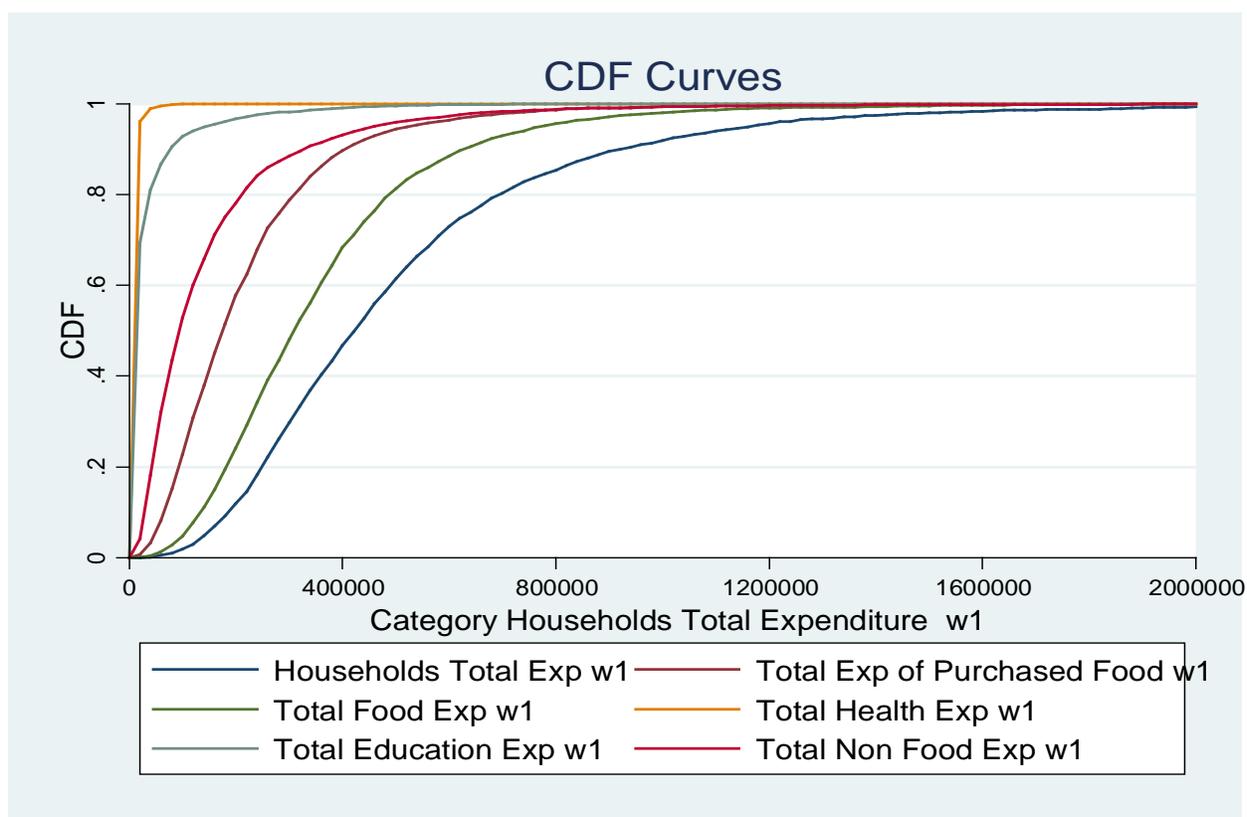
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6.6 represent the cumulative distribution function showing six categories of household expenditure in Nigeria in wave 1 (2010-2011). The graph plots the proportion of the population in each category of expenditure against the total household expenditure for wave 1. The shape of the CDF indicates that in wave 1, the largest category of household expenditure is food expenditure and the graph shows that a larger proportion of the population spend more on food than any item of expenditure. This accords with Engel's law and is also an indication that Nigeria is a poor country because food is the most dominant category of expenditure. Figure 6.6 also shows that household expenditure on education and health are the lowest because significant proportions of the population spend zero on education and health. This is despite their importance as the most important sources of human capital development. The expenditure of purchased food is comparatively higher than education expenditure because the proportion of the population spending on this category is high. The non-food expenditure is significantly higher than education and health but less than the food expenditure. It should be noted that the non-food

expenditure, unlike food expenditure, is not a necessity but a luxury and in most cases, luxury goods are not affordable for the poor but are for the rich. That is why this expenditure is very low.

Figure 6.7: Categories of Household Expenditure for Wave 2 (2012-2013)
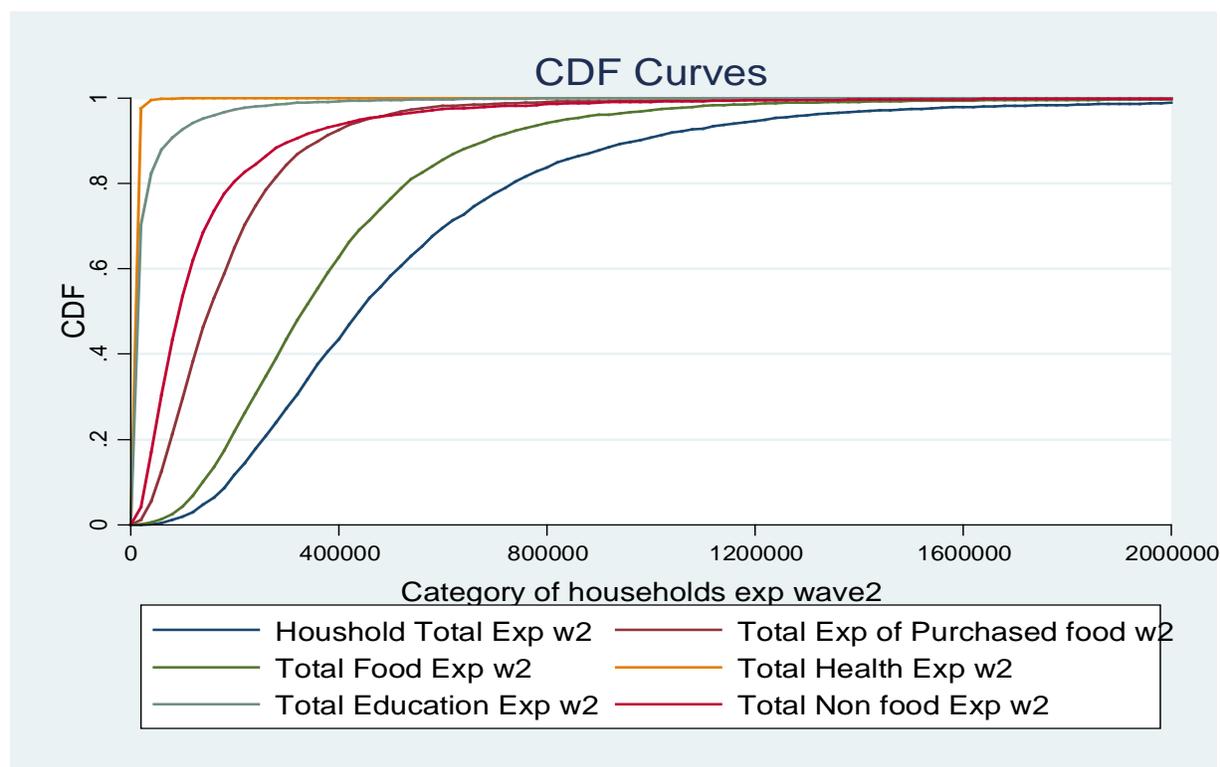
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6.7 represents the cumulative distribution function showing six categories of household expenditure in Nigeria for wave 2 (2012-2013). The graph plots the proportion of the population in each category of expenditure against the total household expenditure for wave 2. Figure 6.7 shows that within that period, food expenditure is the most dominant category of expenditure because the proportions of the population that spent more on the food component of the expenditure are higher than for any other category of expenditure. However, the proportion of the population's spending on education and health is very low. This shows that in the wave 2 period in Nigeria, education and health expenditure by the households were lower when compared with the food components. Expenditure on purchased food is comparatively higher than education expenditure. But the non-food expenditure is significantly higher than education

and health but less than the food expenditure. The non-food expenditure, unlike the food expenditure, is not a necessity but a luxury and this is why its expenditure is low.

From the preceding analysis of various categories of household expenditure in Nigeria using the CDF for the wave 1 and wave 2 periods, we can conclude that household expenditure in Nigeria depicts a typical consumption behaviour of a developing and low-income country where food expenditure accounts for the largest share of the household consumption expenditure, while non-food, education and health account for an insignificant share of the expenditure. Furthermore there is a growing trend in total household expenditure in Nigeria from wave 1 to wave 2, indicating slight improvements in standards of living in the country. As stated earlier, the increase in total household expenditure can be attributed to the positive GDP growth rates during the periods under consideration improving incomes and households' propensity to spend.

6.3   MEAN HOUSEHOLD EXPENDITURE IN NIGERIA

This section examines the mean of various categories of household consumption expenditure for wave 1 (2010-2011) and wave 2 (2012-2013). Table 6.1 shows the trends for the average Nigerian household expenditure in wave 1 and wave 2, household expenditure on purchased food, total household expenditure on food for wave 1 and wave 2, household expenditure on health for wave 1 and wave 2, total household expenditure on education for wave 1 and wave 2, and total expenditure on non-food. The analyses in this section provide insights into how the mean of household expenditure differs across the mentioned expenditure components within the wave 1 and wave 2 periods.

Table 6.1: Mean Total Household Expenditure, wave 1 and wave 2 at 95% Conf. Interval (2010-2013)

Variable	Mean	Std. Err.	[95% Conf. Interval]	
Household Total Exp w 1	523513.1	5574.1	512585.1	534441.2
Household Total Exp w 2	566475.7	8382.6	550041.6	582909.8

Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The information in table 6.1 above provides details of the mean total household expenditure for Nigeria in wave 1 and wave 2 covering the 2010-2011 and 2012-2013 periods. In wave 1 the annual mean total household expenditure was ₦523,513.1 while the mean total household expenditure for wave 2 was ₦566,575.7, indicating that there was a fluctuation in the mean within the periods. It should be noted that changes in the annual mean expenditures in Nigeria can be attributed to three factors:

- Increase in the standard of living brought about by relatively high GDP growth rates during the period under consideration;

- The impact of increased household size;

- Households may simply decide to change the pattern of their expenditure over time in response to changes in their income.

The three factors mentioned are likely responsible for the rise in total mean expenditure of households in Nigeria and they should therefore be considered when analysing growth rates in mean total expenditure of households in Nigeria.

Table 6.2: Mean Household Expenditure of Purchased Food, wave 1 and wave 2 (2010-2013)

Variable	Mean	Std. Err.	[95% Conf. Interval]	
Household Total Exp of Purchase food w 1	224599.7	2604.5	219493.7	229705.8
Household Total Exp of Purchase food w 2	203388.8	6053.2	191521.4	215256.2

Source: Own calculations

Table 6.2 above shows details of the mean household expenditure on purchased food in Nigeria for wave 1 and wave 2. In wave 1 mean household expenditure on purchased food was ₦224,599.7, while for wave 2, the mean was ₦203,388.8. This indicates a decline in average household spending on purchased food. It should be noted that this category of expenditure strictly represents what is actually spent on purchased food and excludes the households' own

produced food. Although food expenditure is the largest component of household expenditure in Nigeria and many developing countries, the decline in the mean expenditure for food in wave 2 can be attributed to the fluctuation in the prices of food items in Nigeria, especially the locally produced food items such as grains, rice, tubers and cooking oil. It should be noted that in Nigeria, prices of agricultural products – especially those produced locally – are subject to fluctuation due to excess supply during the harvest period from October to February. Prices at this time are low, but from March to August the prices will rise once again (Tukur, 2009). Due to the fall in the prices of food items, households will have an additional income in the form of a compensation variation effect as argued by Slutsky (1966), which will make the households divert the extra income they gain from the fall in price to other items of expenditure, thereby increasing their welfare. It should also be noted that the standard deviation in wave 2 is double that of wave 1, indicating greater variability in this category of household expenditure.

Table 6.3 provides the details of total household expenditure on food for wave 1 and wave 2. Food represents the largest component of household expenditure. In wave 1, the mean total household expenditure on food was ₦357,259.8, while for the wave 2 period the mean of household expenditure on food was ₦396,132.8. This represents an average annual growth rate of 4.1% which is higher when compared to the decline of 2.2% for household expenditure on purchased food.

Table 6.3: Mean Household Expenditure of Food, wave 1 and wave 2 (2010-2013)

Variable	Mean	Std. Err	[95% Conf. Interval]	
Food Total Expenditure wave 1	357259.8	3472.7	350451.6	364068
Food Total Expenditure wave 2	396132.8	6785.8	382829.4	409436.3

Source: Own calculations

Household total expenditure on food is a very broad category of expenditure of the household because it also includes the households' own food production. As noted in table 6.3 above, the mean household expenditure of food increased within the two waves. This can be attributed to improved GDP growth and an increase in household size within the periods of the survey, from wave 1 to wave 2. The World Bank reports for 2010, 2012 and 2013 projected annual population growth for Nigeria at 2.7%,3.1% and 3.3% respectively.

Edrees (2014:34), in his study on consumption and demographics, observed that the mean expenditure of households in Pakistan increased due to population growth. The fluctuation in the prices of food items in Nigeria may likely bring an increase in the total amount spent on food by the households. As the total household food expenditure includes the households' own food production, a possible decrease in the households' own food production may likely increase the mean household expenditure on food. This is what may actually have happened.

Education expenditure is one of the components of human capital that contribute to economic development. Table 6.4 describes the mean household expenditure on education for wave 1 and wave 2 for the periods 2010-2011 and 2012-2013. In the wave 1 period the mean education expenditure was ₦35,164.9, while the annual mean education expenditure for wave 2 was ₦33,890.83. This indicates a slight decrease in the annual mean because the mean education expenditure is higher in wave 1 than in wave 2. The decline in mean is not surprising because expenditure in education in Nigeria is partly driven by public and private spending – some aspects are paid by the household while some are funded by the government – which can lead to a decline in mean expenditure. Salinas and Lopez-Acevedo (2000:20) are of the opinion that education expenditure is largely determined by income, hence any fluctuation in household income can equally decrease the mean expenditure. There are a few explanations for the decline in the annual mean expenditure in education. Firstly, educational services in Nigeria are largely provided by government thereby making it a public expenditure and resulting in a low mean expenditure for the education component. Secondly, the cost of acquiring education in the private sector in Nigeria is very high because tuition fees and books costs are subject to fluctuation every year without notice to the parents, resulting in a high cost of education. These factors are responsible for a lower mean of education expenditure. This view is shared by Kehinde (2010).

Table 6.4: Mean Household Expenditure on Education, wave 1 and wave 2 (2010-2013)

Variable	Mean	Std. Err	[95% Conf. Interval]	
Total Expenditure on Education wave 1	35164.9	1216.6	32779.9	37550
Total Expenditure on Education wave 2	33890.8	1274.7	31391.8	36389.9

Source: Own calculations

Health expenditure is very important because it is one of the components of human capital and a source of productivity of the labour force in the economy. Table 6.5 explains the mean of household health expenditure for wave 1 and wave 2.

Table 6.5: Mean Household Expenditure on Health, wave 1 and wave 2 (2010-2013)

Variable	Mean	Std. Err	[95% Conf. Interval]	
Total Expenditure on Health wave 1	3976.8	1243836	3732.9	4220.6
Total Expenditure on Health wave 2	3796.4	1140751	3572.8	4020.1

Source: Own calculations

The annual mean health expenditure for wave 1 is ₦3,976.787, and ₦3,796.429 for wave 2. This indicates a decline in the annual mean with several possible causes. Firstly, the quality of services rendered in the public hospitals in Nigeria has deteriorated due to low government expenditure and corruption. This has led to the proliferation of private hospitals in the provision of health care. However, the investment in private hospitals was inadequate to bring about economies of scale in the cost of service delivery. As a result the service is expensive and of very poor quality, which makes it unaffordable. Since private health expenditure comes at a very high cost the level of health expenditure, especially among the poor households, is very low.

Secondly, due to the absence of an efficient health insurance scheme in Nigeria, most of the health care expenditure is covered directly by out-of-pocket expenses (OOP). This results in difficulty and high costs of payment which leads to reduction in health expenditure.

Table 6.6 represents the mean annual household expenditure on non-food for wave 1 and wave 2. The wave 1 mean annual expenditure was ₦166,253.3 and for wave 2 it was ₦170,342.9. This indicates a slight increase in the annual mean household expenditure for non-food in wave 2. Although the annual increase in the mean household expenditure on non-food is slight, it is worth noting that the slight increase may be attributed to a rise in mean non-food expenditure of some households in some major urban areas such as Lagos, Abuja, Kano and Port Harcourt. The non-food expenditure is not a necessity but is a luxury because most households in Nigeria, especially the low-income or even poorer households, spend very little on non-food (Chioma, 2012; Abayomi, 2014).

Table 6.6: Mean Household Expenditure on Non-Food, wave 1 and wave 2

Variable	Mean	Std. Err	[95% Conf. Interval]	
Total Non-Food Expenditure wave 1	166253.3	2942.2	160485.1	172021.6
Total Non-Food Expenditure wave 1	170342.9	3423.4	163631.4	177054.4

Source: Own calculations

6.4 MEAN HOUSEHOLD EXPENDITURE IN NIGERIA BY ZONES AND SECTOR

The section examines the mean household consumption expenditure for wave 1 (2010-2011) and wave 2 (2012-2013) by zones and sector. Nigeria is divided into six geopolitical zones and in each of the zones there are rural and urban sectors. Therefore the rural and urban sectors were examined along with the mean household expenditure for the six geopolitical zones.

Tables 6.7 and 6.8 below represent the average household expenditure for the six geopolitical zones and the rural and urban sectors in wave 1 and wave 2, with respect to household expenditure on purchased food, total household expenditure on food, household expenditure on health, total household expenditure on education, and total household expenditure on non-food. The analyses in this section provide insight into how the mean of household expenditure differs across the six geopolitical zones in Nigeria for the wave 1 and wave 2 periods.

Table 6.7: Mean Household Expenditure by Zones and Sector, wave 1 (2010-2011)

Zone	Household Total Expenditure	Household Expenditure on purchased food	Total Food Expenditure	Education Expenditure	Health Expenditure	Non-Food Expenditure
North Central	523,598.4	225,099.8	385,928	26,235.2	3,488.2	137,670.4
North East	700,365.9	310,689.8	525,794.6	18,484.5	4,227.8	174,571.2
North West	541,582.5	266,464.6	427,912	16,960.4	2407.8	113,670.5
South East	619,843.4	245,463.6	388,818.4	65,750.3	10,052.6	231,025
South South	635,754.5	252,371.7	404,505.9	62,111.4	5,296.8	231,248.6
South West	619,091	243,589.9	367,301.9	67,980.8	3,831.7	251,789.1
Urban	757,640.3	325,818.9	473,580.3	69,840.3	5,252.2	284,060
Rural	508,242.5	216,911.5	379,251.9	26,111.3	4,003.1	128,990.5

Table 6.8: Mean Household Expenditure by zones and sector, wave 2 (2012-2013)

Zone	Household Total Expenditure	Household Expenditure on purchased food	Total Food Expenditure	Education Expenditure	Health Expenditure	Non-Food Expenditure
North Central	588,719.6	206,569.1	443,870.6	33,861.4	3,851.6	144,849
North East	697,598.7	269,821.3	561,894.3	20,279.7	2,778.3	135,704.4
North West	549,968.7	227,612.8	445,871.1	11,824.5	1,716.7	104,097.6
South East	577,518.5	191,578.8	376,891.5	42,088	7,278.8	200,627
South South	685,560.8	215,965	434,109	67,505.7	5,810.1	251,451.8
South West	729,421.1	245,223.4	454,813.6	69,234.8	4,993.7	274,607.5
Urban	805,421.1	287,179.3	523,376.8	67,907.3	5,203.2	282,044.3
Rural	538,099.6	192,885.8	411,202.3	23,895.5	3,534	126,897.3

Table 6.7 shows the mean household expenditure for the six geopolitical zones for wave 1. There is a variation in the annual mean total expenditure among the zones in the country. For instance, the three geopolitical zones in southern Nigeria have a higher mean total expenditure, while the three zones in northern Nigeria have a lower mean total expenditure. The table shows that in terms of mean total expenditure among the six geopolitical zones, the North Central has the highest mean total expenditure of ₦700,365, while the North East has the lowest mean total expenditure of ₦523,598. The North Central has the highest mean expenditure for food while South West has the lowest mean expenditure for food among the zones. In terms of education and health expenditure in wave 1, the zones in southern Nigeria have the highest annual mean expenditure while the zones in northern Nigeria have the lowest mean expenditure for health and education. This finding is not surprising and indicates that the richer zones spend less on food and more on education and health. This is in line with the findings of Ezeoka (2007:34),

Benerjee and Duflo (2012:23) and Alex (2014:31). Another reason is that people in the southern part of the country are more educated than the people in northern Nigeria which is why they spend more on education.

In table 6.8, the mean household expenditure for wave 2 is presented, and like in wave 1, the zones in southern Nigeria have a higher annual mean total expenditure than the zones in the north. Also the table shows that in wave 2, the South West zone has the highest annual mean total expenditure of ₦729,421, while the North West zone has the lowest annual mean total expenditure of ₦549,968. In terms of food expenditure, the North Central has the highest mean expenditure for food of ₦561,894 while South East has the lowest mean expenditure for food among the zones of ₦376,891. In wave 2 the annual mean expenditure for education and health for the zones in southern Nigeria is higher than the mean expenditure of health and education for zones in northern Nigeria. This means that in wave 2, the zones in the north have a higher annual mean expenditure for food while the zones in the south have a higher annual mean expenditure for education, health and non-food. The result indicates that the zones in the southern Nigeria are economically buoyant as manifested in the pattern of their higher mean expenditure on education, health and non-food. The zones in the north are relatively poorer than the zones in the south, as indicated by their higher annual mean expenditure on food and lower mean expenditure on education, health and non-food.

With respect to the annual mean expenditure for the rural and urban sectors, both tables 6.7 and 6.8 show that the annual mean total expenditure for the urban sector is higher than the annual mean total expenditure for the rural sector. This can be attributed to high income among urban households and corresponding low income among the rural households as well as the problem of low level of infrastructural development. In rural areas most households produce some of their food at home, contributing to lowering their mean expenditure. For reasons mostly attributed to disparity in income, in every category of expenditure depicted in the tables for both waves – food, health, education and non-food – the mean expenditure of the urban sector is higher than the mean expenditure of the rural sector.

6.5   DISTRIBUTION OF HOUSEHOLD EXPENDITURE USING KERNEL DENSITY CURVES

This section undertakes a descriptive analysis of total household consumption expenditure in Nigeria for both wave 1 and wave 2 as well as the distribution of household expenditure for wave 1 and wave 2 across the geopolitical zones.

Figure 6.8: Kernel Density for Log of Household Expenditure in Nigeria, wave 1
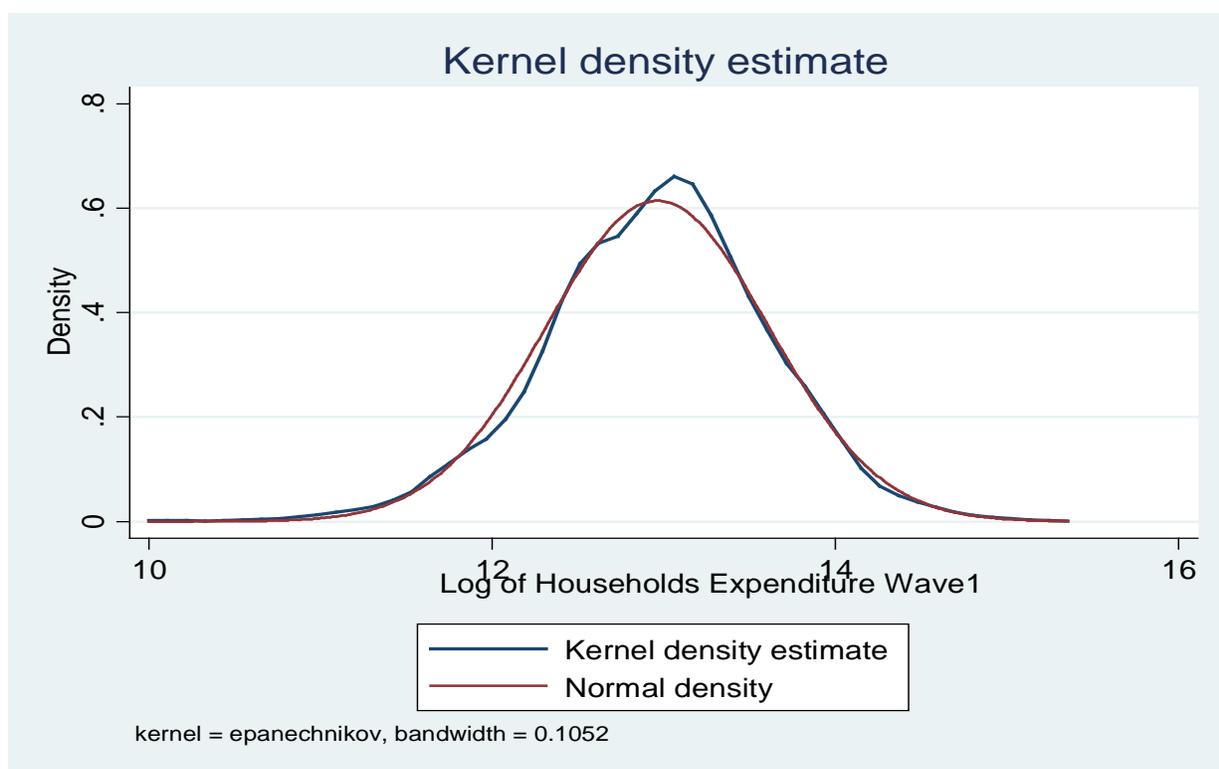
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6.8 shows the distribution of total household consumption expenditure for wave 1 covering the period 2010-2011. The household consumption expenditure in Nigeria is approximating a normal distribution.

Figure 6.9 shows that household consumption expenditure in wave 2 is approximating a normal distribution.

Figure 6.9: Kernel Density for Log of Household Expenditure in Nigeria, wave 2
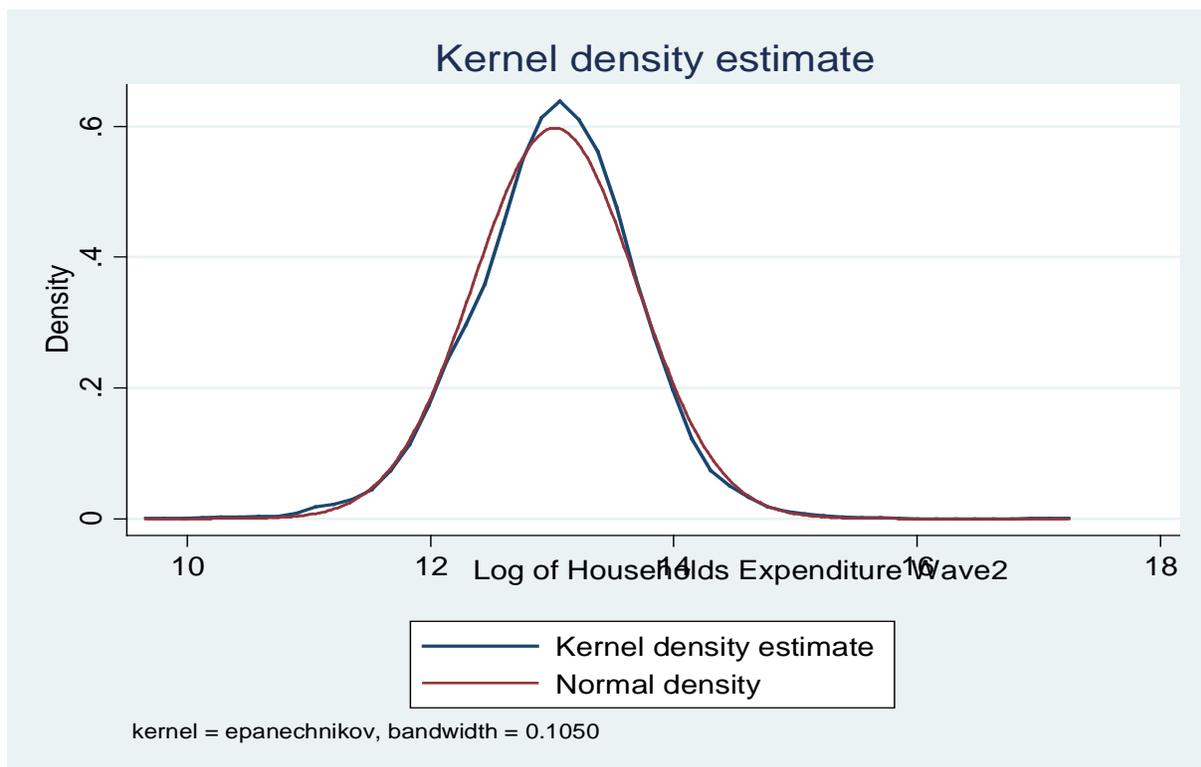
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Figure 6:10 shows the distribution of household consumption expenditure of the six geopolitical zones. In microeconomic theories, the impact of location on consumption is recognised and used in analysing the consumption behaviour of households (Peter, 2000; Adewoye, 2012). In Nigeria there is a strong variation in household consumption expenditure among the zones in both wave 1 and wave 2, due to the impact of location as indicated in both figures 6.10 and 6.11.

Figure 6.10: Kernel Density for distribution of Household Expenditure in Nigeria by zone, wave 1
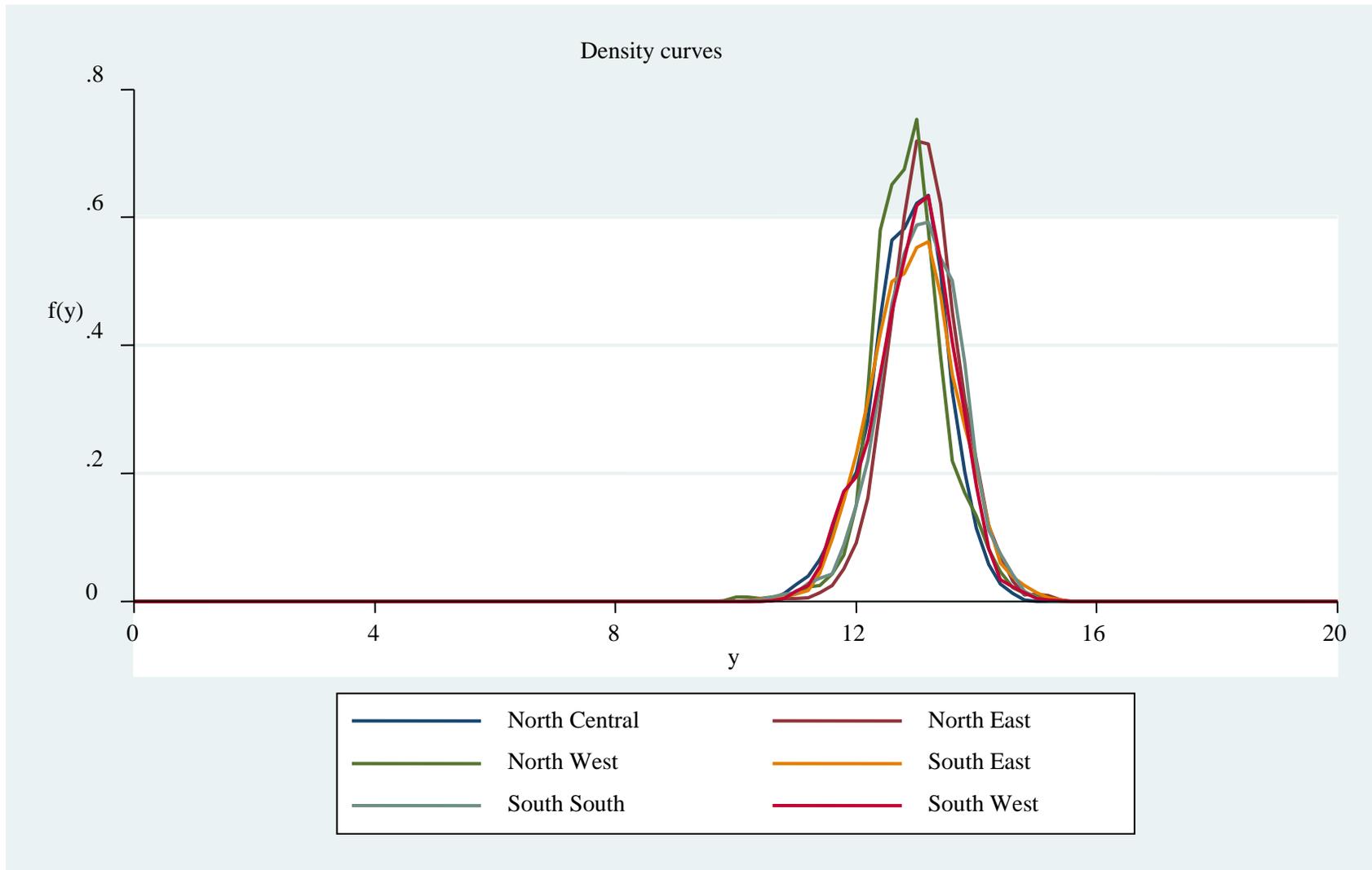
Density curves

In both wave 1 and wave 2 the distribution of household consumption expenditure is skewed because the overall density is significantly influenced by consumption redistribution occurring across households in the zones. In both wave 1 and wave 2 there appear differences in the distributional shape for the households in the southern zones and households in the northern zones. There appears to be a growth in the upper tail of the overall distribution in household consumption expenditure in the southern zones. This is indicated by a shift of the mass to the right indicating an increase in both the mean and median expenditures. It is also evident from the plots in figures 6.10 and 6.11 that the density for the households in the North East zone is left-shifted, due to a decline in both mean and median consumption expenditures.

Figure 6.11: Kernel Density for distribution of Household Expenditure in Nigeria by zone, wave 1
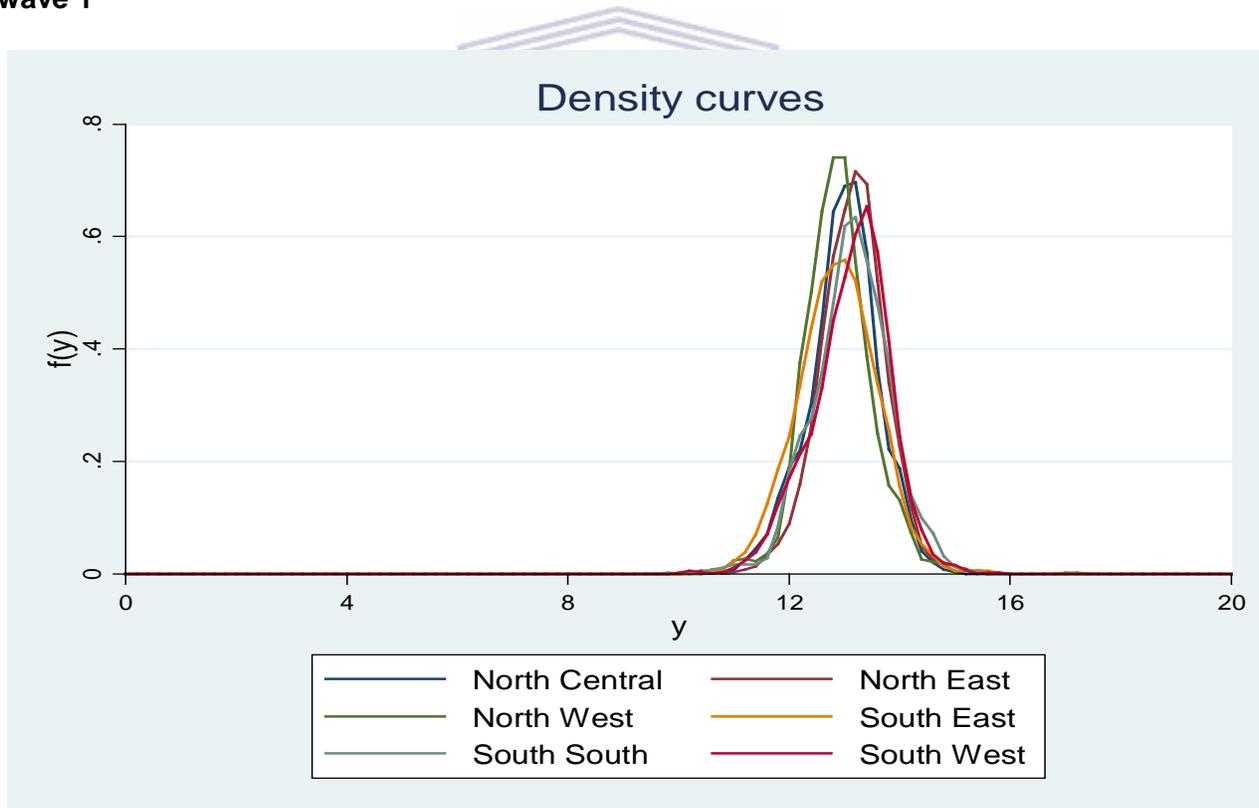
Figure 6.11 shows the overall changes in the relative densities of Nigerian household consumption expenditures by zone. The shifting up of consumption expenditures for households

living in the North Central, South South and South West is clearly apparent, whereas households living in the North East were marked by a strong downshift in their expenditures. The relative densities for North West and South West offer a somewhat different picture. A convergence toward the centre of the North Western distribution seems to emerge, due to the shift of both the lower and upper tails toward the middle, with the former effect prevailing.

6.6 CONSUMPTION INEQUALITY AMONG THE SIX GEOPOLITICAL ZONES IN NIGERIA

There are various methods for measuring consumption inequality which have been developed to decompose inequality. These methods are the ones by Pyatt (1976), Shorrocks (1980, 1982 and 1984), Jian and Tandulkat (1990), Kakwani and Subbarao (1990), Datt and Ravallion (1992), Fields (2000), Shorrocks and Kolenikov (2001) and Morduch and Sicular (2002). In line with the views of these scholars, inequality is decomposed by group or within group/ sub-groups based on income sources, consumption causal factors and by other sociodemographic characteristics. Inequality can also be decomposed at different levels of aggregation within a country. For example, inequality can be decomposed into within-subgroup and between-subgroup components. In this section attempts will be made to decompose inequality of consumption expenditure between the six geopolitical zones as well as between the urban and rural sectors using the Gini coefficient.

The results showing inequality in household total expenditure in Nigeria are presented in table 6.9 below which shows decomposition of total household expenditure for Nigeria by geopolitical zones and sector. The Gini coefficients of the six geopolitical zones as well as the rural and urban sectors are reported in the table. The decomposition of inequality in total food expenditure in Nigeria shows slight variations among the zones in terms of the Gini coefficient. The overall Gini coefficient for total household consumption expenditure for wave 1 and wave 2 are 0.34 and 0.35 respectively. The result shows that for both wave 1 and wave 2 inequality in total household expenditure is moderate when compared to some African countries such as the Democratic Republic of Congo, Ghana, Burundi, South Africa and Angola.

Table 6.9: Inequality in Total Household Expenditure in Nigeria by zone/sector for wave 1 and 2

Category of Expenditure	Zone/ Sector	Gini Wave 1 (2010-2011)	Gini Wave 2 (2012-2013)
	North Central	0.326163	0.325631
	North East	0.319787	0.316012
	North West	0.337255	0.363436
	South East	0.376799	0.386853
	South South	0.339314	0.360917
	South West	0.342085	0.348476
	Rural	0.329381	0.347472
Total Household	Urban	0.334936	0.337462
Expenditure	Nigeria	0.345407	0.359373

Source: Own calculations

The table shows the South East geopolitical zone is the most unequal zone in Nigeria in terms of total household expenditure in both wave 1 and wave 2. In terms of total household expenditure, inequality in the North East geopolitical zone is the lowest. In terms of rural/urban inequality in wave 1 inequality is higher in the urban area while in wave 2 inequality is higher in the rural area. From the result it can be seen that the Gini coefficient of both urban and rural areas in Nigeria are in the same range. This result indicates that the size of the urban/rural wealth gap is very low in Nigeria.

The relatively low inequality in total consumption expenditure in Nigeria can be attributed to the performance of the agricultural sector in most rural areas in Nigeria, where the majority of households are fully engaged in agricultural with stable incomes. This is line with the findings of Chukuwma and Felix (2008), Mary (2008) and Gbolaham (2012). From the overall result, it suggests that inequality in total household expenditure in Nigeria is low compared to many African countries, such as South Africa, Uganda, Central African Republic, Burundi, Zambia and Angola. The policy implication of these findings is that efforts by the Nigerian government should be geared towards enhancing the productive capacity of the agricultural sector to empower the rural households with the view to reducing inequality even further.

Inequality in Household Expenditure on Purchased Food

Expenditure on food is one of the most important components of household's consumption expenditure and has received a lot of attention among scholars in microeconomics. The information in table 6.10 below presents the inequality in household expenditure of purchased food for wave 1 and wave 2 among the zones in Nigeria. The overall Gini coefficient of household expenditure on purchased food for wave 1 is 0.37 and 0.39 for wave 2. The two coefficients suggest that inequality in household expenditure of purchased food is slightly higher than inequality in expenditure on purchased food as indicated by their respective Gini coefficients. The Gini coefficients for the zones with respect to purchased food is 0.37 in wave 1 and 0.39 in wave 2, which means that inequality is higher in wave 1 than in wave 2.

Table 6.10: Inequality in Household Expenditure of Purchased Food by zone/sector for wave 1 and 2

Category of Expenditure	Zone/ Sector	Gini Wave 1 (2010-2011)	Gini Wave 2 (2012-2013)
	North Central	0.367943	0.333164
	North East	0.377954	0.355604
	North West	0.386824	0.339487
	South East	0.367641	0.343482
	South South	0.367641	0.343482
	South West	0.333380	0.332788
Total Expenditure on Purchased Food	Rural	0.369831	0.414782
	Urban	0.345923	0.345678
		0.372084	0.399390

Source: Own calculations

The explanation for the high inequality is due to the prevalence of own food production by many households in the rural areas where they produce and consume their own food instead of buying in the market, which resulted in lower expenditure on purchased food by many households. Table 6.10 above reveals a significant variation in the level of consumption inequality among the zones. From the result, in both wave 1 and wave 2 the zones with the highest inequality as indicated by their Gini coefficient are South East and North West, while the zones with the

lowest inequality are South West and North Central, and the most unequal zone in both wave 1 and wave 2 is the South East zone with a Gini coefficient of 0.39 for wave 1 and 0.41 for wave 2. Household consumption habits can vary substantially in every country due to factors such as culture, urbanisation, income and climate that can all impact on inequality in each zone.

6.6.1 Inequality in Household Expenditure on purchased and autonomous food consumption in Nigeria

The result showing inequality in household total expenditure in Nigeria is presented in table 6.11 below and shows decomposition of total household expenditure for Nigeria by geopolitical zones and sector. The Gini coefficients of the six geopolitical zones as well as the rural and urban sectors are reported in the table. The decomposition of inequality in total food expenditure in Nigeria shows slight variations among the zones in terms of the Gini coefficient. The overall Gini coefficient for total household expenditure for wave 1 is 0.34 and 0.35 for wave 2, which suggests that inequality in total expenditure in Nigeria is slightly higher in wave 2. This can be attributed to two factors related to Boko Haram: the spate of Boko Haram attacks in the zone which forced many businesses to close down due to fear of attacks and loss of customers, and that the Boko Haram crisis discouraged potential investors from opening new businesses in the zones, which led to unemployment, inequality and poverty among the people in the zone.

Table 6.11: Inequality in Household Expenditure of Purchased Food by Zone for wave 1 and 2

Category of Expenditure	Zone/ Sector	Gini Coefficient	Wave 1 (2010-2011)	Wave 2 (2012-2013)
Expenditure on Autonomous and Purchased Food	North Central	Gini Coefficient	0.312004	0.306486
	North East	Gini Coefficient	0.309351	0.321418
	North West	Gini Coefficient	0.318635	0.364827
	South East	Gini Coefficient	0.343514	0.345610
	South South	Gini Coefficient	0.320410	0.323079
	South West	Gini Coefficient	0.302289	0.327604
	Rural	Gini Coefficient	0.317131	0.343205
	Urban	Gini Coefficient	0.321776	0.318081
		Gini Coefficient	0.322708	0.338288

Source: Own calculations

The most notable feature of the result is that inequality in this category of expenditure is fairly low compared to the other categories of food expenditure. The overall Gini coefficients for this category of expenditure for wave 1 and wave 2 are 0.32 and 0.33 respectively, indicating a lower inequality. In addition to this, inequality in both the urban and rural sectors for wave 1 and wave 2 are relatively lower at 0.32 for wave 1 and 0.31 for wave 2 respectively in the urban area and 0.31 and 0.32 respectively for the rural area. The Gini coefficients for the zones are given below. Given this result it implies that, in terms of household expenditure on purchased and autonomous food consumption, the most unequal zone is the South East zone followed by the South South zone, while North Central and South West have the lowest inequality in this category of expenditure with 0.31 and 0.30 Gini coefficients respectively.

6.6.2   Inequality in Household Health Expenditure in Nigeria by zone and sector

The result in table 6.12 presents inequality in household health expenditure by zone and sector in Nigeria. The individual Gini coefficients of the six geopolitical zones as well as the rural and urban sectors are indicated in the table. The summary of the result reveals that inequality in total health expenditure in Nigeria shows slight variations among the zones in terms of the Gini coefficient. The overall Gini coefficient for total household health expenditure for wave 1 is 0.74 and for wave 2 is 0.70. This shows that in general, inequality in health expenditure is very high in Nigeria. There are various explanations for this high inequality. Many people in Nigeria consider expenditure in health and education as a public good and as a result there is heavy reliance on the government to provide these services which results in low expenditure on health and education, especially among the poor and the middle class. Therefore a significant portion of household expenditure on health is understood to be expended by the rich households – mostly businessmen, top civil servants and politicians – while the majority of households patronise government hospitals and traditional medical practitioners. Another very important factor is that, while the government has been the major provider of health care services in Nigeria, it has not provided very good health care due to corruption. While the quality of health care is deteriorating in government hospitals in Nigeria, private hospitals remain very expensive and beyond the reach of the poor due to high charges. This finding is consistent with the findings of Ajayi (2007), Ogunleye and Audu (2011) and Aderinde (2014).

Table 6.12: Inequality in Household Expenditure on Health in Nigeria by zone/sector, wave 1 and 2

Category of Expenditure	Zone/ Sector	Gini Wave 1 (2010-2011)	Gini Wave 2 (2012-2013)
Total Expenditure on Health	North Central	0.762874	0.724906
	North East	0.749564	0.698915
	North West	0.774076	0.743573
	South East	0.641336	0.592664
	South South	0.728950	0.676247
	South West	0.724643	0.681073
	Rural	0.766441	0.704337
	Urban	0.709538	0.699021
		0.743838	0.704717

Source: Own calculations

The result revealed that the most unequal zone in terms of health expenditure is the North West zone with Gini coefficients of 0.77 in wave 1 and 0.74 in wave 2. This is followed by North Central with a coefficient of 0.76 for wave 1 and 0.72 for wave 2. The zone with the lowest expenditure inequality in health expenditure is the South East zone followed by the South West. These results are expected because they support the relationship between income inequality and consumption inequality because the North West zone is one of the most unequal zones in the country in terms of income inequality. This finding has confirmed the positive relationship between income and consumption inequality as put forward by Anyim (2009) and Zafar (2014).

6.6.3   Inequality in Household Expenditure on Education in Nigeria by zone/sector

There is a consensus among economists that education and health care are the most important components of human capital, as investment in education and health care has direct and indirect positive effects on productivity and thus economic development.

Table 6.13 below presents inequality in household expenditure on education in Nigeria by zone and sector.

Table 6.13: Inequality in Household Education Expenditure by zone/sector for wave 1 and 2

Category of Expenditure	Zone/ Sector	Gini Wave 1 (2010-2011)	Gini Wave 2 (2012-2013)
	North Central	0.713247	0.743699
	North East	0.780754	0.765701
	North West	0.819629	0.790084
	South East	0.754711	0.740167
	South South	0.728314	0.726723
Total Expenditure on Education	South West	0.729439	0.724472
	Rural	0.791309	0.786349
	Urban	0.774959	0.775715

Source: Own calculations

The Gini coefficients for the rural areas in Nigeria stand at 0.79 for wave 1 and 0.78 for wave 2 and for the urban sector, 0.72 for wave 1 and 0.72 for wave 2. The results show that expenditure on education is the most unequal component of household consumption expenditure. The most unequal zone in terms of educational expenditure is the North West zone with a Gini coefficient of 0.81 for wave 1 and 0.79 for wave 2, followed by the North East zone with 0.78 for wave 1 and 0.76 for wave 2.

This result is not surprising because in Nigeria the citizens see education expenditure as part of public expenditure that government should provide. Unfortunately government's investment in education and infrastructure has deteriorated and remains relatively low due to lack of political will and corruption. This has resulted in poor quality of educational services received at the public schools in Nigeria at all levels. The deterioration in the quality of public school education has gradually forced many households to resort to seeking better educational services from privately-owned schools. The rising demand for private education coupled with low investment by the private sector in education makes educational services very expensive and unaffordable to the poor. This view is shared by Mpuga (2008), Lawanson (2010) and Adewunmi (2013). Another reason for the high inequality in household education expenditure in Nigeria is the

existence of demographic and environmental variations which are greatly influenced by the heterogeneity of zones in terms of prices, population income, population and cultural factors. Nwanko (2008), Esther (2010) and Iroha (2010) argue that demand pressure differentials among the zones contribute to aggravating consumption inequality in Nigeria.

6.6.4 The Lorenz Curves for Household Consumption Inequality in Nigeria

The evolution of inequality in household consumption expenditure in wave 1 and wave 2 at the national level is shown below using Lorenz curves. The Lorenz curve in figure 6.12 below illustrates the functional relationship between the cumulative proportion of household expenditure for wave 1 and wave 2 and the cumulative proportion of the population.

Figure 6.12: Lorenz Curve for Household Total Expenditure in Nigeria, wave 1 and wave 2
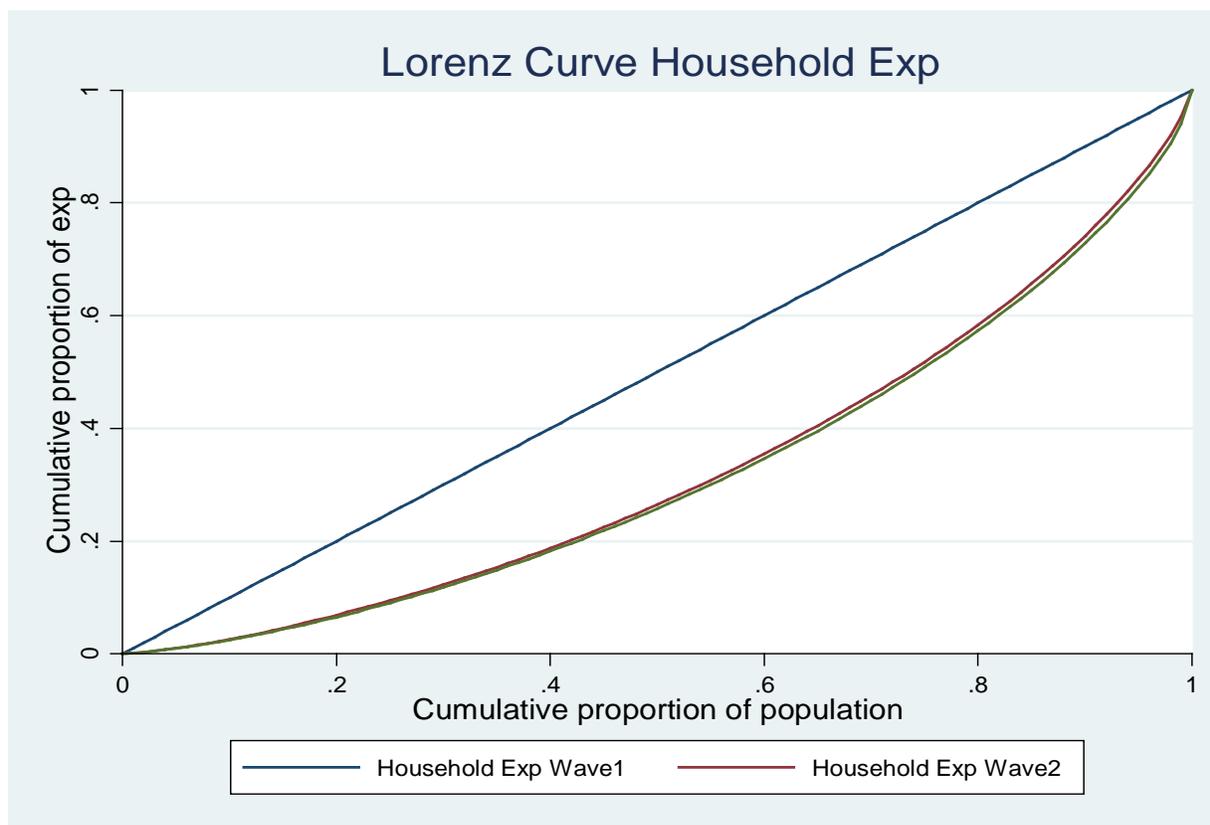
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The Lorenz curve cumulative proportion represents the distribution of household expenditure in Nigeria in terms of the population. For example, in both wave 1 and wave 2, the Lorenz curve

above indicates the distribution of total expenditure and shows that relative equality exists in terms of households' total consumption expenditure within the country in the periods 2010-2011 and 2012-2013. This is indicated by the gap between the Lorenz curve for wave 1 and wave 2 as well as the gap between the wave 1 and wave 2 Lorenz curves with the line of equality. The gap between the Lorenz curves of wave 1 and wave 2 is not wide and the gap between the wave 1 and wave 2 Lorenz curves with the line of equality is also not wide.

Inequality in total household expenditure for wave 1 by zones

The Lorenz curve in figure 6.13 below explains inequality in total household consumption expenditure in wave 1 by zone. Figure 6.13 illustrates the functional relationship between the cumulative proportion of households' expenditure for wave 1 and the expenditure of the cumulative proportion of the population by zone.

Figure 6.13: Lorenz Curve for Household Total Expenditure in Nigeria by zone, wave 1
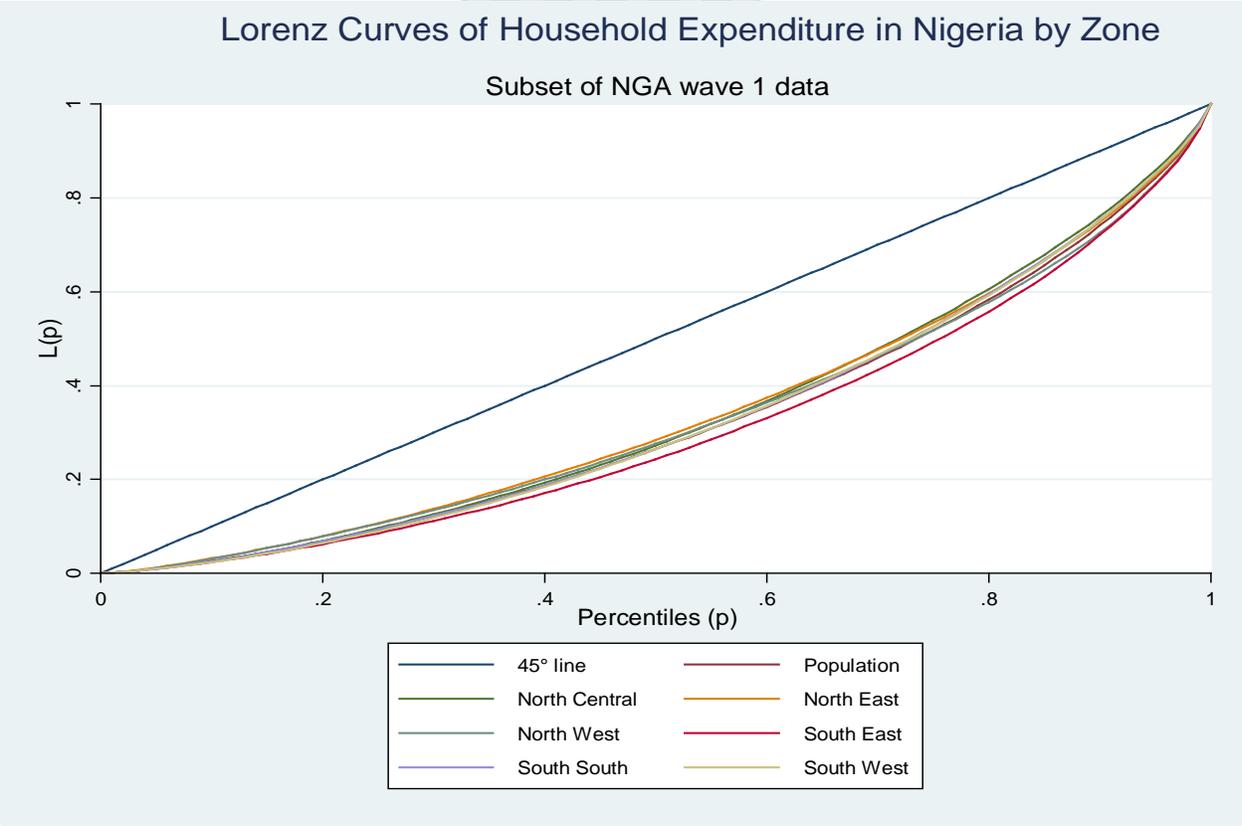
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

In order to compare and analyse inequality of household total expenditure in wave 1 among the six geopolitical zones, a set of Lorenz curves was presented for each geopolitical zone for wave 1. The sets of Lorenz curves in figure 6.13, based on the distribution of total expenditure per adult equivalent among the zones in wave 1, show that relative inequality existed among the geopolitical zones between 2010 and 2011. In other words, the Lorenz curves indicate that total expenditure per adult equivalent among the six geopolitical zones in 2010-2011 has a semblance of equality. However the Lorenz curve for the South East zone indicates that inequality in the zone is the highest in Nigeria. This is because the zone's Lorenz curve lies below the Lorenz curves of other zones and also the Lorenz curve for South East is further away from the line of equality. The behaviour of the Lorenz curve has equally agreed with the outcome of the Gini index presented earlier which shows a general downward trend of 0.34 points in the inequality of total expenditures among the zones over the 2010-2011 period.

Lorenz Curve of Household Expenditure by zone in Nigeria, wave 2

The sets of Lorenz curves below present the ranking of inequality in terms of total household consumption expenditure in wave 2 among the six geopolitical zones at the national level. The Lorenz curves in figure 6.14 below illustrate the functional relationship between the cumulative proportion of household expenditure for wave 2 and the cumulative proportion of the population in terms of household total expenditure among the geopolitical zones in Nigeria by zone.

Figure 6.14: Lorenz Curve for Household Total Expenditure in Nigeria by zone, wave 2
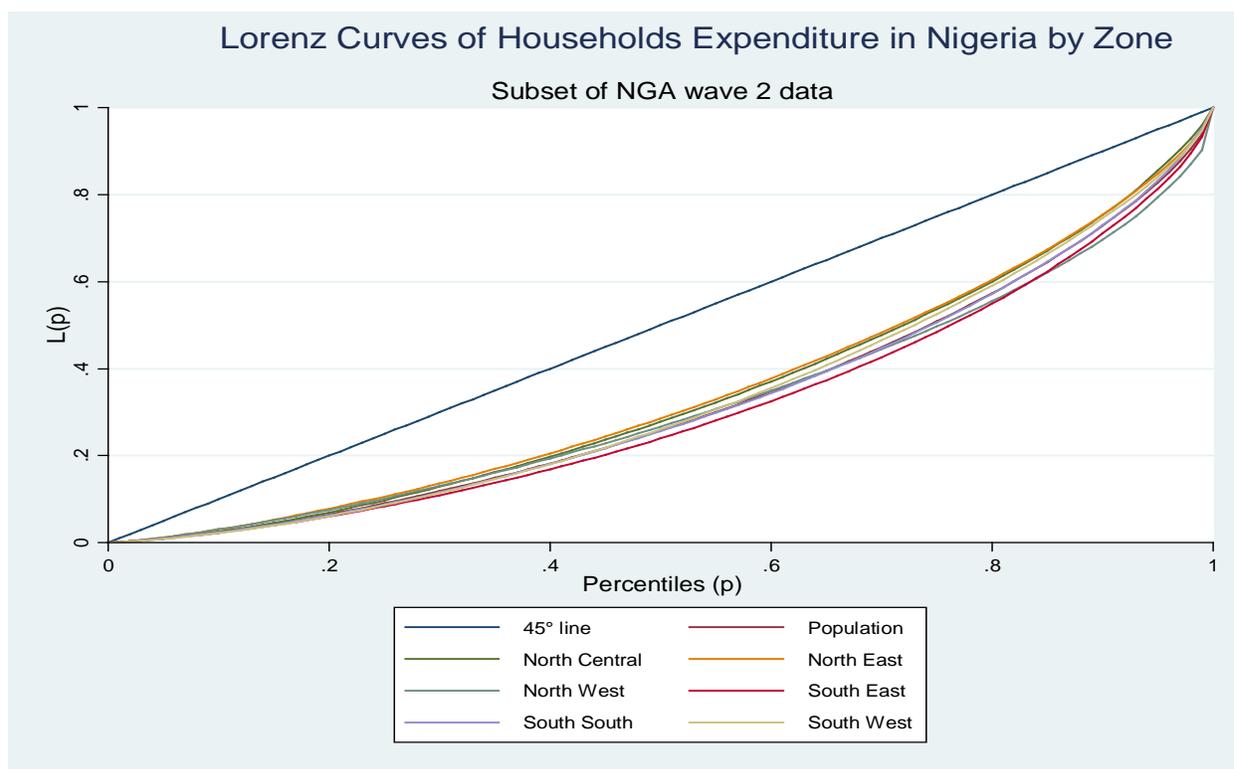
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The comparison of the sets of Lorenz curves of the six geopolitical zones in figure 6.14 is based on the distribution of total expenditure per adult equivalent. There is a slight increase in inequality among the six geopolitical zones between 2012 and 2013. This is indicated by the distance between the sets of Lorenz curves. The South East zone is the most unequal among the zones in terms of total expenditure per adult equivalent. The behaviour of the Lorenz curve has confirmed the result of the Gini index analysis presented earlier. The result of the Gini analysis revealed a general upward trend of inequality from 0.34 in wave to 0.35 in wave 2 among the zones.

Lorenz Curve of Household Expenditure by Urban/Rural Sector in Nigeria, wave 1

In order to use the Lorenz curve to compare inequality between the urban and the rural sectors it is necessary to plot the two Lorenz curves representing inequality in total household consumption expenditure in wave 1 by urban and rural sectors at the national level. The Lorenz curves in figure 6.15 below illustrate the functional relationship between the cumulative

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proportion of household expenditure for wave 1 and the cumulative proportion of the population in the urban and rural sectors for wave 1.

Figure 6.15: Lorenz Curve for Household Total Expenditure in Nigeria by urban and rural sector, wave1
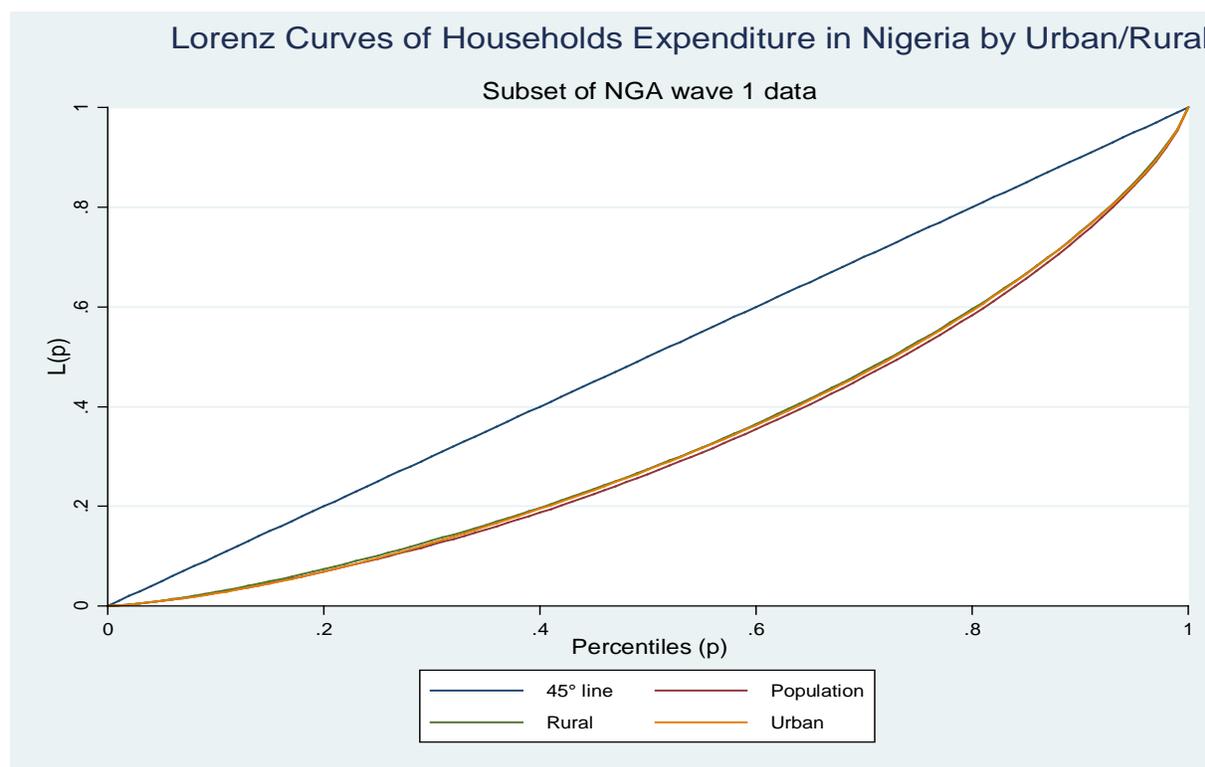
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The Lorenz curves confirm the initial finding that there is relatively low inequality between the urban and rural sectors in Nigeria in terms of the distribution of total household expenditure per adult equivalent for 2010 and 2012. However the inequality is slightly higher in urban areas than in the rural areas as indicated by the Lorenz curve of the urban area lying below the Lorenz curve for the rural area. The Lorenz curve has also conformed with the result of the Gini index presented earlier which shows low inequality of total expenditures between rural and urban areas over the 2011-2012 period.

Lorenz Curve of Household Expenditure by Urban/Rural Sector in Nigeria, wave 1

The Lorenz curve in figure 6.16 below illustrates the functional relationship between the cumulative proportion of household expenditure for wave 2 and the cumulative proportion of the population in both urban and rural sectors for wave 2.

Figure 6.16 Lorenz Curves of Household Expenditure in Nigeria by Urban/Rural Sector, wave 2
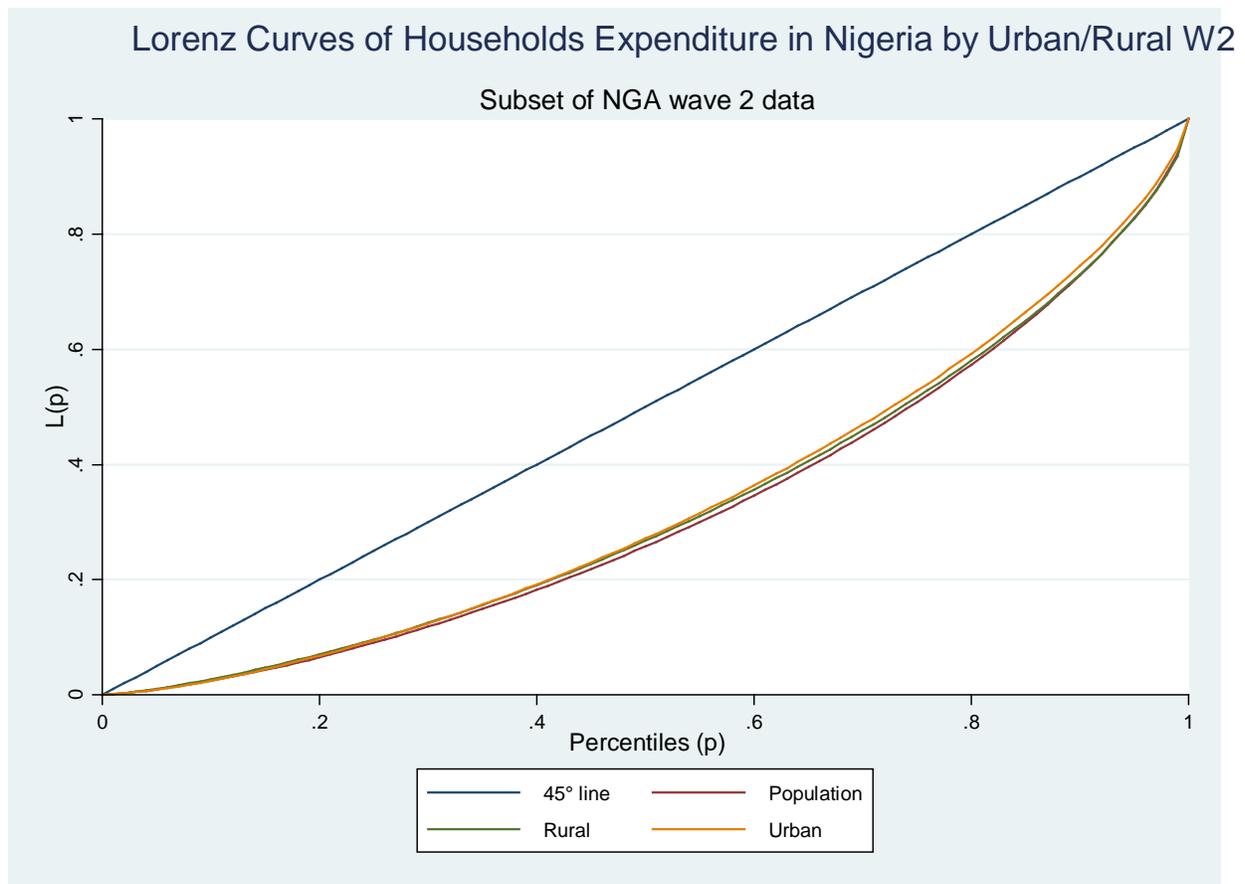
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The Lorenz curves confirm the initial finding that there is relatively low inequality between the urban and rural sectors in Nigeria in terms of distribution of total household expenditure per adult equivalent for 2012 and 2013. However the inequality is slightly higher in urban areas than in the rural areas as indicated by the Lorenz curve of the urban area lying below the Lorenz curve

for the rural area. This result indicates that in Nigeria there is no inequality between rural and urban areas in terms of total household expenditure.

6.7   MEAN SHARE OF HOUSEHOLD EXPENDITURE BY QUINTILES

Since the classic work of Ernst Engel in 1857, household expenditure and studies on the relationship between income and expenditure on different commodities have attracted considerable scholarly attention. Engel's law states that as income increases, the share of household expenditure on food in relation to the total household expenditure tends to decrease. In other words the more prosperous a household is the lower is the fraction of the household's expenditure on food such that the elasticity of income/consumption of food expenditure will be less than one. A further explanation of the law by Working (1943) and Leser (1963) specifies that the household share of expenditure on food is linearly related to the natural log of total consumption expenditure or income.

A quintile is normally used in survey data to distinguish between the population according to their income, welfare or any sample attribute, and it involves breaking the data into five equal categories of 20%. When the sample households are divided into five the first quintile represents the lowest-earning households and the fifth quintile represents the highest or wealthiest households (Michael, 2014:20). The quintiles rank the population from the poorest 20% to the wealthiest 20%. This section will examine the mean of household expenditure by quintile to determine the mean consumption pattern of households in Nigeria between the wealthiest 20% and poorest 20%.

Mean Share of Household Food Expenditure by Quintiles

Food expenditure is one of the most important components of household expenditure in terms of both a theoretical perspective and policy perspective. Table 6.14 gives an overview of the mean share of household food expenditure by quintiles for both wave 1 and wave 2. Although the expenditure is classified based on five quintiles, in this section emphasis will only be made on the expenditure of households categorised within the first quintile and the last quintile. In wave 1 the mean share of households in the first quintile is 75% while in wave 2 the mean rose to 76%. This result is consistent with Engel's law that states that poor households spend a significant

proportion of their income on food. This result has shown that food expenditure accounts for 70% of the consumption expenditure of poor households in the country. However for the households in the fifth quintile it has a mean food expenditure of 62% in wave 1 and 64% in wave 2. This means that the richer households in Nigeria spend less on food as a proportion of their income when compared with the poorer households.

This result is also consistent with Engel's law which states that as households' incomes rise, the proportion or the percentage of the household income spent on food expenditure will fall.

Table 6.14: Mean Share of Food Expenditure by Quintiles for wave 1 and wave 2

Expenditure Quintiles	Mean	Std. Err.	[95% Conf. Interval]	
Wave 1				
1.	.75	.0040029	.7435098	.759205
2.	.75	.0043484	.7504493	.7674994
3.	.73	.0045426	.7234454	.7412571
4	.70	.0046351	.6959234	.7140975
5.	.62	.0056866	.6174573	.6397546
Wave 2				
1	.76	.0036335	.755378	.7696251
2	.76	.003672	.7553128	.7490073
3	.75	.0037804	.7490073	.7490073
4	.71	.0045975	.7105295	.7105295
5	.64	.0058989	.6357375	.6357375

Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

Mean Share of Household Health Expenditure

Expenditure on health is equally important because health is one of the components of human capital and thereby a crucial ingredient for economic development. It should be noted that because of the importance of health care to the well-being of the households, the more they spend on health expenditure the more sustainable health outcomes they will have, and the less they spend the poorer will be the health of the households' members.

Table 6.15: Mean Share of Health Expenditure by Quintiles for wave 1 and wave 2

Expenditure Quintiles	Mean	Std. Err.	[95% Conf. Interval]	
Wave 1				
1.	0	0		
2.	0	.0000536	.0004219	.0006321
3.	0	.0000909	.0031501	.0035064
4	.009	.000236	.0085959	.0095214
5.	.027	.0008501	.0251877	.0285208
Wave 2				
1	0	0		
2	0	.000054	.0012063	.0014181
3	.004	.0001135	.0040941	.0045392
4	.009	.0002682	.0085194	.0095712
5	.023	.0007926	.0215744	.024682

Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The information in table 6.15 represents the mean share of household expenditure on health care in Nigeria by quintiles for wave 1 and wave 2 covering the period 2010-2011 and 2012-2013. The mean health expenditure for households in the first quintile in wave 1 is 0%, while in wave 2 the mean share is also 0%. This result of zero mean share of health expenditure indicates that the share of household health expenditure is very low and constitutes an insignificant share of the overall household consumption expenditure in the lowest quintile category. This is in sharp contrast to the mean share of food expenditure of 75%, signifying a high concentration ratio of household expenditure on the food components. On the other hand, the mean share of health expenditure for the richest households in the fifth quintile for wave 1 and wave 2 was 2.7% and 2.3% respectively. The result indicates that although their mean share of health expenditure is higher than the share of households in the lowest quintile group, the mean health expenditure is still very low. The result shows that for both the richest and poorest households in Nigeria, expenditure on health is very low because it accounts for an insignificant share of the total household expenditure.

From the perspective of the poorer households in the first quintile the reasons why they are grossly underspending on health care can be seen from two perspectives. First of all, a very significant portion of the income is spent on food expenditure and the little that is left of it is shared among other components such as health, education and non-food, hence they cannot afford the cost of expensive health care. Therefore they may choose not to seek health care at all, seek health care in government hospitals or resort to self-medications and traditional medicines. This view corresponds to the view of Omotosho and Emanta (2016). Secondly, there is a notion among many Nigerians that health spending is a public not private expenditure and for this reason most of the households in this quintile expect to get health care services from government hospitals. This view conforms with the findings of Folahan (2014). Another factor contributing to low health expenditure in Nigeria is a lack of a developed payment mechanism wherein most households' payments are dominated by out-of-pocket expenses as well as a comparative lack of prepayment mechanisms such as health insurance. As a result of this most households in the country are without full health insurance coverage. This view is shared by Uju (2012) and Uzochukwu (2015).

The reason for low expenditure on health among the richest households in the fifth quintile can be attributed to medical tourism in which wealthier Nigerians travel abroad to seek medical services in places like Europe, the USA, India and the Middle East. Statistical data released by the Indian High Commission in Nigeria showed that in 2014 alone 47% of Nigerians who visited India were there for medical care. These visitors numbering 18,000 persons spent ₦41.6 billion, or about $260 million (Indian High Commission in Nigeria, 2014). Similarly, according to Elebeke (2014), in the course of seeking health care abroad about 30,000 Nigerian medical tourists are estimated to have spent about $1 billion abroad annually. It should be noted that medical tourism is not only restricted to wealthier Nigerians but also includes government officials and political officeholders. The president of Nigeria for example, spent over six months in London for medical reasons between 2016 and 2017. The reasons why Nigerians seek health care abroad include the fact that many hospitals in Nigeria lack the appropriate medical equipment for diagnosing and treating major ailments. Where they exist they are not readily accessible and lack quality and reliability. Secondly, there is a dearth of skilled doctors and health workers in Nigeria and health care services are inefficient. Furthermore, there is a lack of investment in health care.

Mean Share of Household Education Expenditure

As one of the components of human capital, education expenditure is required to allow individuals to acquire skills and knowledge that translate into human capital which will promote economic growth and act as an important means of combating poverty.

Table 6.16: Mean Share of Education Expenditure by Quintiles for wave 1 and wave 2

Expenditure Quintiles	Mean	Std. Err.	[95% Conf. Interval]	
Wave 1				
1.	0	0		
2.	.005	.0002124	.0053036	.0061365
3.	.021	.0004904	.0208931	.0228161
4	.057	.001218	.0550273	.0598032
5.	.16	.0034917	.1558541	.169545
Wave 2				
1	0	0		
2	.004	.0001643	.0045523	.0051967
3	.019	.0004262	.0189407	.0206117
4	.05	.0010303	.0484015	.0524412
5	,14	.0035605	.1414964	.155457

Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

The result in table 6.16 above presents the mean share of education expenditure for households in Nigeria by income quintiles for wave 1 and wave 2. The mean education expenditure for households in the first quintile in wave 1 is 0%, while in wave 2 the mean share of education expenditure is also 0%. The zero mean share for education expenditure in Nigeria indicates that household expenditure on education is generally low and accounts for an insignificant proportion of the overall household consumption expenditure among the households in the lowest quintile category. This is in sharp contrast to the mean share of food expenditure of 75% among the households in the poorest quintile, signifying a high concentration ratio of household expenditure on the food components. On the other hand, the mean shares of health expenditure for households on the fifth quintile in wave 1 and wave 2 are 16% and 14% respectively. From the

result we can see that the mean share of education expenditure increases with income within and between years. However it appears that in wave 1 the mean share was 16% which is higher than the mean of 14% in wave 2. This indicates that the mean share of education expenditure among the wealthiest decreased within the period 2012-2013.

The outcome of the result has shown that wealthier households (fifth quintile) appear to have a higher mean education expenditure compared to the poorest households (first quintile) in both wave 1 and wave 2. Also this result indicates that, as with health care, the mean education expenditure among the poorest households is zero. The poorest households are low-income earners and because a significant portion of their income is spent on food it is difficult or impossible for them to spend on education. Over the years in Nigeria, a proliferation of private schools was meant to provide alternative educational services to the people. However the private schools, due to the absence of economies of scale, are very expensive and unaffordable for the poorest households. Therefore the private schools serve the middle class and the richest people while the children of the poorest households will be forced out of school or seek educational services at government schools which are inefficient with poor service provision.

Mean Share of Household Non-Food Expenditure

The information in table 6.17 represents the mean share of household non-food expenditure by quintiles for both wave 1 and wave 2. From the table, the mean share of household non-food expenditure for the first quintile is 14%, while in wave 2 the mean expenditure rises to 15%. However, for the household grouping in the fifth quintile, the mean share of non-food expenditure for wave 1 is 45% and for wave 2 is 43%.

Table 6.17: Mean Share of Non-Food Expenditure by Quintiles for wave 1 and wave 2

Expenditure Quintiles	Mean	Std. Err.	[95% Conf. Interval]	
Wave 1				
1.	.14	.0025945	.1426542	.1528271
2.	.21	.0025945	.2050255	.2163397
3.	.26	.0028856	.2630679	.2750095
4	.34	.0036265	.3355816	.349801
5.	.45	.0047327	.4441296	.4626866
Wave 2				
1	.15	.002617	.1521736	.1624346
2	.20	.0026672	.2039795	.2144376
3	.24	.0028097	.2413327	.2523495
4	.30	.003234	.2963793	.30906
5	.43	.0051411	.4255548	.4457129

Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

6.8 ESTIMATION OF HOUSEHOLD EXPENDITURE SHARE USING THE ENGEL CURVE

This section aims to empirically estimate the budget share of household statistical properties of unconditional household budget share distributions with respect to food, education, health and non-food components of expenditure in Nigeria. Specifically, this section will establish the household expenditure distribution in Nigeria among the aforementioned components of expenditure. The Engel curve is estimated to determine the budget share of household expenditure in Nigeria using the Nigeria General Household Survey data of household expenditure and income.

One of the issues that requires further explanation is the independent variable. A usual procedure of analysing family budgets in econometrics is to appropriately use total expenditure rather than total family income as the independent variable when estimating Engel elasticity of demand for various commodities. There are arguments put forward by economic scholars in this regard. Poder (1971:24) is of the opinion that the use of net family income rather than gross family

income is more appropriate when estimating demand issues because people normally forget how much their exact figure of refunds on income tax was; hence they find it difficult to give their actual net income. In Nigeria many households are employed in the informal sector so it is difficult to determine their income. According to Friedman (1957) in his permanent income hypothesis, what determines a household's expenditure is permanent income, not actual measured income. Arguing along the line of this study, Currie (1972:43) states that the record of household income recorded in a particular period may likely be distorted by transitory components. Thus it is better as an explanatory variable in household budget studies to use total expenditure. Based on the preceding arguments, in this study total household expenditure is used as the explanatory variable to determine the household budget share and impact of household size on consumption.

Budget share for food

The information in table 6.18 represents the result for the regression on the budget share of food expenditure for households in Nigeria. In the regression all the variables are statistically significant.
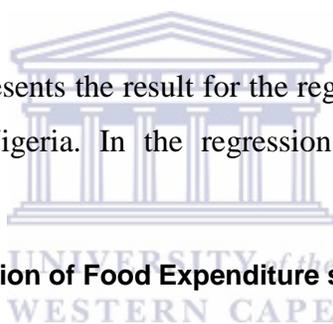
Table 6.18: Result for the Regression of Food Expenditure share

Food Share	Coefficient	Std. Err	T	p>[t]	95% confidence interval
Logpce	-.068637	.0031295	-21.93	0.000	-.0747724 -.0625017
_cons	1.510395	.0355156	42.53	0.000	1.440767 1.580024

From the equation in table 6.18 above, the sign of the natural log in the result is -.068637 which is negative, implying that the proportion of the amount spent on food falls with an increase in income. The result is consistent with Engel's law which indicates that the proportion spent on food declines with an increase in the household's income.

Budget share for Health

Table 6.19: Result for the Regression of Health Expenditure share

Health Share	Coefficient	Std. Err	T	p>[t]	95% confidence interval
Logpce	-.0003987	.0003992	-1.00	0.318	-.0011813 .0003839
_cons	.0129853	.0045302	2.87	0.004	.0041039 .0218668

The information in table 6.19 above represents the result for the regression to determine the budget share for the health expenditure of households in Nigeria. In the equation the minimum sample is 2,235, the log of per capita expenditure is not significantly different from zero. The result indicates that health expenditure in Nigeria is a luxury and as shown by the previous results, health expenditure is very low because most of the people are poor. It should be noted that health expenditure in Nigeria accounts for an insignificant share of the total household budget because most households in Nigeria are poor with most of their income going to food and little to health.

Budget Share for Education Expenditure

Table 6.20: Result for the Regression of Education Expenditure share

Education Share	Coefficient	Std. Err	T	p>[t]	95% confidence interval
Logpce	.0140603	.0017468	8.05	0.000	.0106358 .0174848
_cons	-.1136572	.0198234	-5.73	0.000	-.1525209 -.0747934

The information in table 6.20 above represents the result for the regression to determine the budget share of household education expenditure in Nigeria. From the result the minimum sample is 2,235, the log of per capita education expenditure is .01, indicating that an increase in income will also lead to an increase in the percentage share of education by the households in

Nigeria. The education expenditure as previously observed is very low because most of the poor households cannot afford it. This makes it a luxury even though it is a necessity. Although education expenditure is very important and necessary the failure of the government to provide educational services has forced many households in Nigeria to patronise the private sector. Unfortunately due to low levels of investment and lack of economies of scale, the services rendered by the private schools in Nigeria are inefficient and very expensive which resulted in low expenditure on education by the households.

Budget Share of Non-Food

The information in table 6.21 represents the result for the regression to determine the budget share of households' non-food expenditure in Nigeria. From the result the minimum sample is 2,235.

Table 6.21: Result for the Regression of Non-Food Expenditure share

Non-Food Share	Coefficient	Std. Err	T	p>[t]	95% confidence interval
Logpce	.068637	.0031295	21.93	0.000	.0625017 .0747724
_cons	-.5103952	.0355156	-14.37	0.000	-.5800236 -.4407668

The value of the log of per capita expenditure is .06, indicating that an increase in income will lead to an increase in expenditure on non-food items. The result of the equation shows that non-food expenditure is a luxury because it accounts for a very insignificant proportion of the household budget. Nigeria's consumption pattern, like many developing countries, is dominated by food expenditure, because food expenditure accounts for the largest proportion of the household budget. As a result of this, very little of the household income is allocated to the non-food component. The data in the study shows that expenditure on non-food is very low when compared to food expenditure.

6.9   ESTIMATING THE WORKING-LESER FORM OF THE ENGEL CURVE

In this section the Nigeria General Household Survey data will be used to estimate the Working-Leser form of the Engel curve to determine the impact of household size on consumption expenditure among the six geopolitical zones in Nigeria. The categories of household consumption expenditure that were considered are food, health, education and non-food.

Regression for Food Expenditure

From the estimation of the Working-Leser form of Engel curve the results indicate that a 1% increase in household per capita expenditure will cause the average food share to drop 0.00070 (which is a 0.07 percentage point decrease) *ceteris paribus*. On the other hand, the log household size coefficient indicates that an increase in household size of 1% will result in a 0.00054 decrease in the average food share (which is a 0.054 percentage point decrease) *ceteris paribus*. In order to interpret the zonal demographic variables the coefficients on the zone dummy variables can be interpreted against the base category, which is the North Central zone. Therefore from the result in Table 6.22, households in the North East zone have, on average, a 0.02525 (2.52 percentage point) higher food share (*ceteris paribus)* relative to the base category which is North Central. The North West zone has a 0.0449512 (4.49 percentage point) higher food share (*ceteris paribus)* relative to the base category. However the South East zone has a 0.076219 (7.62 percentage point) lower food share (*ceteris paribus)* relative to the base category, while the South South and South West zones have respectively a 0.0781357 and 0.0911774 (7.81 and 9.11 percentage point) lower food share relative to the base category.

Table 6.22: Result for Regression on Food Expenditure and Dependants

Food Share wave 1	Coefficient	Std. Err	T	p>[t]	95% Confidence Interval	
Logpce	-.0711701	.0013338	-53.36	0.000	-.0737843	-.0685558
Logn	-.0541022	.0020361	-26.57	0.000	-.0580931	-.0501114
dependants_PH	.0075182	.0004318	17.41	0.000	.0066719	.0083645
Zone						
North East	.0252535	.0023966	10.54	0.000	.0205561	.029951
North West	.0449512	.0022954	19.58	0.000	.0404521	.0494503
South East	-.076219	.0025934	-29.39	0.000	-.0813023	-.0711358
South South	-.0781357	.0025276	-30.91	0.000	-.0830899	-.0731816
South West	-.0911774	.0027245	-33.47	0.000	-.0965176	-.0858372
e-cons	1.629883	.0162831	100.10	0.000	1.597968	1.661799

Regression for Education Expenditure

Table 6.23 below indicates that a 1% increase in the household per capita expenditure will cause the average education share to rise by 0.000269749 (which is a 0.0269 percentage point increase) *ceteris paribus*. On the other hand the log household size coefficient indicates that an increase in household size of 1% will result in a 0.000586128 decrease in the average education share (which is a 0.0586 percentage point increase) *ceteris paribus*.

Table 6.23: Result for Regression on Education Expenditure and dependants

Education Share wave 1	Coefficient	Std. Err	T	p>[t]	95% Confidence Interval	
Logpce	.0269749	.0007545	35.75	0.000	.0254961	.0284537
Logn	.0586128	.0011518	50.89	0.000	.0563553	.0608703
Dependants_PH	-.0084844	.0002443	-34.74	0.000	-.0089632	-.0080057
Zone						
North East	-.0252562	.0013557	-5.78	0.000	-.0274773	-.0135663
North West	-.0183858	.0012985	-5.71	0.000	-.0254785	-.0124469
South East	.0376372	.0014671	9.47	0.000	.0259509	.0394971
South South	.0248799	.0014298	6.05	0.000	.0142986	.0279989
South West	.0423026	.0015412	10.14	0.000	.0290189	.0429352
e-cons	-.3379409	.009211	-12.62	0.000	-.3231769	-.2362435

For education expenditure, in order to interpret the zonal demographic variables, the coefficients on the zone dummy variables can also be interpreted against the base category – in this case the base category is the North Central zone. The North East and North West zones have lower education shares (2.5 and 1.83 percentage points lower) than the base category which is North Central (*ceteris paribus)*. The result shows for the South East, South South and South West zones education shares of 3.7, 2.48 and 4.23 percentage points respectively, relative to the base category.

The number of people in the household increases the education share, but increasing the number of dependants in the household will decrease the share of the household budget that goes to education. Households spend more on education as a proportion of their budgets in the south than in the north.

Regression for Health Expenditure

Table 6.24 shows very low response rates to the share of household budgets going to health expenditure in the event that there is an increase in income. On the other hand the log household size coefficient indicates that an increase in household size of 1% will result in a 0.00000181

increase in the health share, which is also close to zero. Increasing the number of dependants in the household also has a negligible impact on the share of health.

The North East and North West zones have lower health shares (0.07 and 0.3 percentage points lower) than the base category which is North Central (*ceteris paribus*). The result showed that for the South East, South South and South West zones health shares were 1.48, 0.36 and 0.01 percentage points higher relative to the base category.

Households spend more on health as a proportion of their budgets in the south than in the north.

Table 6.24: Result for Regression on Health Expenditure and dependants

Health Share wave 1	Coefficient	Std. Err	t	p>[t]	95% Confidence Interval
Logpce	-.0013496	.0001826	-7.39	0.000	-.0017074 -.0009918
Logn	.000181	.0002787	0.65	0.516	-.0003652 .0007273
dependants_PH	.0000428	.0000591	0.72	0.469	.0000731 .0001586
Zone					
North East	-.00075138	.0003281	-1.57	0.117	-.0011568 .0001292
North West	-.0031404	.0003142	-10.00	0.000	-.0037563 -.0025246
South East	.0148103	.000355	41.72	0.000	.0141145 .0155061
South South	.0036372	.000346	10.51	0.000	.0029591 .0043154
South West	.0001552	.0003729	0.42	0.677	-.0005757 .0008862
e-cons	.0210141	.0022289	9.43	0.000	.0166454 .0253828

Regression for Non-Food Expenditure

Table 6.25 below indicates that a 1% increase in the household per capita expenditure will cause the average non-food share of the budget to increase by 0.007 (which is a 0.7 percentage point increase) *ceteris paribus*. On the other hand the log household size coefficient indicates that an increase in household size of 1%, will result in a .000541022 decrease in the average non--food share (which is a 0.05 percentage point increase) *ceteris paribus*.

The North East and North West zones have lower non-food shares (2.5 and 4.4 percentage points lower) than the base category which is North Central (*ceteris paribus*). The result showed that for the South East, South South and South West zones non-food shares were 7.6, 7.8 and 9.1 percentage points higher relative to the base category.

Households spend more on non-food as a proportion of their budgets in the south than in the north.

Table 6.25: Result for Regression on Non-Food Consumption Expenditure and dependants

Non-Food Share wave 1	Coefficient	Std. Err	T	p>[t]	95% Confidence Interval
Logpce	.07117	.0013338	53.36	0.000	.0685558 .0737843
Logn	.0541022	.0020361	26.57	0.000	.0501114 .0580931
dependants_PH	-.0075182	.0004318	-17.41	0.000	-.0083645 -.0066719
Zone					
North East	-.0252535	.0023966	-10.54	0.000	-.029951 -.0205561
North West	-.0449512	.0022954	-19.58	0.000	-.0494503 -.0404521
South East	.076219	.0025934	29.39	0.000	.0711358 .0813023
South South	.0781357	.0025276	30.91	0.000	.0731816 .0830899
South West	.0911774	.0027245	33.47	0.000	.0858372 .0965176
e-cons	-.6298832	.0162831	-38.68	0.000	-.661799 -.597967

6.10 SUMMARY OF FINDINGS AND DISCUSSION

The purpose of this study is to examine the trends in household consumption expenditure among the six geopolitical zones in Nigeria using the Nigeria General Household Survey data for the years 2010-2011 and 2012-2013. In particular, the study focused on the following objectives: examining the trends in household consumption expenditure within the period; determining consumption expenditure inequality among households across the six geopolitical zones; determining if there are consumption economies of scale among households by estimating the Working-Leser form of the Engel curve; and estimating the food share of total household expenditure through the estimation of the Engel curve for the six geopolitical zones of Nigeria.

In order to achieve the stated objectives, the Working-Leser model was estimated using regressions and simple descriptive analysis that used CDF, mean and Kernel density analysis to determine the trends in household consumption in Nigeria, while Gini coefficient and Lorenz curves were used to analyse consumption inequality among the six geopolitical zones and in the urban and rural sectors. Finally, to determine the mean share of various components of household expenditure of the total expenditure, quintiles analysis was employed.

Based on the analysis of the results, the following are the findings of the study.

In terms of the trends in household consumption expenditure in Nigeria the study finds that from wave1 period to wave2 there is an upward trends in the total household expenditure, this means that total household expenditure in Nigeria in the period 2011- 2012 witnessed an upward trend. With respect to the individual components of household expenditure the pattern showed a quantitative as well as qualitative increase in food consumption in both the wave 1 and wave 2 periods, while the education, health and non-food categories experienced a decline in both wave 1 and wave 2. This finding of the study is in conformity to Engel's law because, due to low income among most households in Nigeria, food expenditure has the dominant share of household expenditure while health, education and non-food expenditures account for a lower share. The implication of this finding is that, for most households in Nigeria health, education and non-food are luxury expenditure items while food is a necessity.

From the descriptive analysis the findings of the study show a variation in the mean total expenditure in Nigeria in both wave 1 and wave 2, with the mean expenditure of wave 2 higher than in wave 1. The analysis of the annual mean total expenditure by zones indicated a significant variation in the annual mean total expenditure among the six geopolitical zones in Nigeria. The three zones in southern Nigeria have a higher mean total expenditure than the zones in northern Nigeria. The implication of this finding is that the zones in southern Nigeria spend more than the zones in the northern Nigeria and this is due to the fact that the zones in southern Nigeria are richer than the zones in northern Nigeria.

With respect to consumption inequality among the six geopolitical zones and the rural and urban sectors the study makes the following findings. Firstly, there is low inequality in total consumption expenditure in Nigeria when compared with other countries in Africa because

inequality in total household expenditure in Nigeria from the result was 0.34 for wave 1 and 0.35 for wave 2. Details of inequality among the six geopolitical zones indicate that in terms of total expenditure, the South East zone has the highest inequality with Gini coefficients of 0.37 and 0.38 in wave 1 and wave 2. The most important finding of this study with respect to urban-rural inequality is that in general, rural-urban consumption inequality is lower. In fact consumption inequality in rural areas is lower in all categories of household expenditure, except in education expenditure, which is very high. This finding conforms to the findings made by Chukuwma and Felix (2008), Gbolaham (2012) and Ojonta (2015). Another finding of the study with respect to inequality among the various components of household expenditure is that health expenditure is the most unequal component of household expenditure in Nigeria among the six geopolitical zones, followed by education. Food expenditure has the lowest inequality because most of the households spend their income on food, an indication that a great number of households in Nigeria are poor. This finding is indeed disturbing because the existence of inequality in health and education expenditure is a clear indication that poverty may be silently ravaging poor families in both rural and urban areas in Nigeria.

The estimation of the Engel curve to determine the budget share of food, education, health and non-food expenditures of the total household expenditure yielded the following findings. Food expenditure accounts for the largest share of the total household expenditure in both wave 1 and wave 2, with 0.75 and 0.64 respectively. This finding has adverse consequences with respect to income distribution and the level of poverty in Nigeria which is seemingly on the rise. This result is also consistent with Engel's law that states that as households' incomes rise, the proportion of the households' expenditure on food will decline, even if their consumption of food increases, due to expenditure on other goods rising even more.

Çağlayan and Astar (2012:318) report that, in most developing countries, expenditure on food is the largest component which dominates the household budget, and the share of food expenditure decreases with a decrease in the household income. The study of Ademola (2012:45) on Engel's law and household food expenditure in Nigeria found that an increase in income of the household has a tendency to distribute household consumption expenditure to no other expenditure but food. Household data within the four-year period of the study shows that food

expenditure is the largest component of the household expenditure. This study's findings concur with and support these studies.

Estimation of the regression supports a finding that health, education and non-food expenditure have the lowest share in the total household expenditure in Nigeria. This finding suggests that health and education cannot be assumed to be high-priority components of household expenditure in Nigeria, as education, health and non-food expenditure account for an insignificant share of the household total expenditure. This indicates that these items are luxuries for most households in Nigeria.

Finally, based on the estimation of the Working-Leser version of the Engel curve to determine the relationship between the household per capita expenditure and household size, the result showed that household size in Nigeria affects the consumption expenditure of some categories of expenditure while other categories of expenditure are not affected. The study established that there are economies of scale in food expenditure in Nigeria which means that family size does not affect the demand for food. However, the finding is different at the level of the zones. For example, in the three geopolitical zones in northern Nigeria, family size affects the demand for food because an increase in family size increases the food expenditure, which means there are no economies of scale in food expenditure. However for the three geopolitical zones in southern Nigeria, household size reduces food expenditure which shows that there are economies of scale in food expenditure among the zones in southern Nigeria. This finding is inconsistent with the findings of Idahosa (2014:65), whose findings downplay the concern that larger households reduce consumption and reduce welfare. His findings indicate that in larger households there is no tendency of food poverty, due to economies of scale. This argument is based on the fact that additional children do not bring an extra burden to the household in terms of extra expenditure. A study by Osita (2015:56) on household size, poverty and inequality using the Working-Leser model, indicated that per capita poverty lines are declining with household size. However, headcount rates rise with household size and do not pose any burden to the household since children consume less food. Another study related to the findings of this study is the work of Paxson (2010:42) whose study focuses on economies of scale, household size and food expenditure and finds that if total household expenditure per capita is held constant, with increase in household size, expenditure per head on food will fall. In his study, Onoma (2015:56)

finds that there is a large effect of economies of scale due to household size in Ghana, Nigeria and Benin. For these countries, the estimate shows that, with PCE held constant, a 1% rise in the log of household size will lead to a fall in the budget share of food expenditure by 5% and lead to a decrease in per capita expenditure on food by more than 10%. Therefore it is the conclusion of this study that in Nigeria, economies of scale exist in food expenditure. However at the level of the zones, some zones have economies of scale in food expenditure while in other zones there are no economies of scale in food expenditure.

Given the above, a very important finding of this study with respect to economies of scale is that the location of a household has a significant effect on the household's per capita consumption and family size. The study found that family size affected the per capita expenditures on food and non-food among the zones in northern Nigeria but the family size does not affect health and education expenditures. This means that the zones in northern Nigeria have economies of scale in health and education expenditure while the zones have diseconomies of scale in food and non-food expenditures. On the other hand, the study shows that family size affects the per capita expenditures on health and education among the zones in southern Nigeria but family size does not affect food and non-food expenditures in these zones. Based on this, the zones in southern Nigeria have economies of scale in food and non-food expenditure, while in terms of education and health expenditure the zones have diseconomies of scale in consumption expenditures. These findings are consistent with the findings of Burney and Khan (1992) who find variation in consumption economies of scale among regions in Pakistan due to differences in location. The finding is also consistent with the findings of Julie (1988) of variation in consumption economies of scale among the states in the United States due to differences of location.

CHAPTER SEVEN: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 SUMMARY OF THE CONDUCT AND RESULTS OF THE STUDY

The purpose of this study is to examine the trends in household consumption expenditure among the six geopolitical zones in Nigeria, by analysing the Nigeria General Household Survey data for the 2010-2011 (wave 1) and 2012-2013 (wave 2) periods. The study set out to:

- Determine the trends in household consumption expenditure in Nigeria.

- Examine the food, health, education and non-food expenditures of households in Nigeria

- Estimate the food share of total household expenditure through the estimation of the Engel curve for the six geopolitical zones of Nigeria.

- Determine if there are consumption economies of scale among households by estimating the Working-Leser form of the Engel curve.

- Examine consumption inequality among households in the six geopolitical zones of Nigeria.

In Chapter 2 a comprehensive review of literature was undertaken. The review provided knowledge of the current issues in the area of study to form the basis for an in-depth evaluation essential for acquiring adequate knowledge of the major theory used in the study. The chapter reviewed all the relevant theories as well as conducted an empirical review of related literature on household expenditure within the context of Engel's law. The Engel curve and the Working-Leser model discussed cover aspects of household food expenditure, budget share, elasticities as well as the impact of household size on expenditure.

In Chapter 3 a comprehensive empirical review of the relevant and related studies was undertaken. In particular, effort was made to examine the implication of Engel's law in both developed and developing economies which involved the review of various studies that analysed household consumption in developed and developing economies within the context of Engel's

law. The chapter reviewed a variety of studies on consumption inequality in Nigeria and other countries.

The fourth chapter described the methodology of the research. The chapter clearly examines the theoretical model, empirical model and the regressions model that were used in the study in order to be able to understand and accurately measure various parameters relating to household consumption expenditure among the six geopolitical zones in Nigeria. As the Nigeria General Household Survey data was selected as the data source to be used for the study, the chapter examined in detail the structure and nature of the data for the study and identified the various weaknesses and shortcomings of the data. One of the greatest shortcomings was the quantity of missing files in the datasets that compelled the study to revise its intention to use wave 1, wave 2 and wave 3 data and reduce the analysis to the first two waves only. However, in the main, the GHS surveys proved themselves as a valuable and rich source of economics data and the study was able to extract sufficient data to achieve its research objectives.

Chapter 5 looked at the profile of Nigeria and its six geopolitical zones and described in detail the major economic activities in the geopolitical zones, as well as aspects of poverty, unemployment and revenue generation. The chapter compared the six geopolitical zones in terms of unemployment, poverty, population and internally generated revenue. The main conclusion was that most resources, wealth and infrastructure are concentrated in the southern zones. Conversely, poverty, as revealed also by consumption expenditure, is most stark in the northern zones.

Chapter 6 dealt with descriptive statistics and interpretations of the results of the regressions. The descriptive aspect of the chapter examined the mean household expenditure for Nigeria and the six geopolitical zones, using CDF graphs, Kernel density, Gini coefficient and the Lorenz curve. The aspects of the regression looked at were mean household expenditure by quintiles, regression for budget share and the estimation of the Working-Leser form of the Engel curve to determine economies of scale of consumption among the six geopolitical zones. In all, the models performed well and revealed the trends the study sought to uncover or confirm.

As anticipated, using the tools of descriptive statistics enabled the study to establish trends in household consumption expenditure in Nigeria. The first trend observed in the data was that total

household expenditure generally follows an upward trend with household expenditure in wave 2 slightly higher than expenditure in wave 1, signifying an increase in total expenditure in Nigeria in the period of study. Secondly, annual mean expenditure on food was high in both wave 1 and wave 2, while mean expenditure on education, health and non-food was low. With respect to the individual components of household expenditure, the pattern shows a quantitative as well as qualitative increase in food consumption in both wave 1 and wave 2 while the education, health and non-food categories of expenditure declined in both wave 1 and wave 2. These trends conform with Engel's law showing that the bulk of expenditure in many households in Nigeria goes to food expenditure, with considerably less spent on health, education and non-food expenditure.

Despite its high revenues from oil production, the low share of health, education and non-food expenditure are characteristics of a poor country in terms of consumption (Nwoka, 2014:12). This is because with almost all their income spent on food, Nigerian households have very little left to spend on health, education and non-food.

Two conclusions can be inferred from this. One, taking expenditure as a proxy of income and following Engel's law, the vast majority of households in Nigeria live in poverty. Two, given that expenditure on health care and education is widely accepted as investment in human capital with long-term positive effects on development and wealth, the fact that households invest so little in these expenditures proves that poor people are not able to invest in growing human capital. This holds serious implications for poverty reduction in Nigeria and may mean that many Nigerians are already caught in a poverty trap.

The analysis of the wave 1 and wave 2 data also revealed that most Nigerians, in rural and urban communities and across the zones, are victims of poor infrastructure and service delivery by government. While the data cannot show the reasons for this, from some of the literature reviewed in Chapter 3 and the analysis of the Nigerian economy in Chapter 5, several factors are indisputably implicated in this poor service delivery, among which are:

- A skewed economy overly reliant on oil for revenues and subsistence agriculture for jobs;
- Government's inability to resolve the Boko Haram insurgency or reconstruct and develop the parts of the economy disrupted by terrorism;

- An education system that is unable to deliver outcomes that will stimulate the economy;

- The widespread perception and reality of government corruption and collusion with a wealthy elite that diverts funding away from economic and social development;

- A federal system that combines a national revenue collection system founded on a low tax base, with inefficient and bureaucratic disbursement through a complicated administrative structure that sometimes lacks cultural sensitivity and local democratic participation;

- A hopelessly inadequate electricity supply that stifles local and foreign investment and entrepreneurship, and forces the poor to invest in environmentally risky and expensive alternatives to ensure a basic quality of life.

These fundamental weaknesses have national effects that are by no means equitable. The study revealed that across a range of expenditures, there was a clear regional difference in wealth and poverty, with the analyses showing that the northern zones were clearly poorer in nearly every surveyed aspect than the southern zones. While the study proved a distinct inequality between north and south, neither was homogenous. Within northern Nigeria, the North East zone is more disadvantaged than its two northern neighbours, while in the south, the South East zone lags far behind the South South and South West zones in revenues, economic development and opportunities. As a result, unemployment is highest in the North East and South East geopolitical zones with adverse effects on income and consumption.

Another trend highlighted in the study is the fact that (until recently) many years of oil-driven growth in GDP have had no positive effect on income inequality, nationally or within the zones. In fact, this study found that there is high consumption inequality in Nigeria, especially in education, non-food and health. In wave 1 consumption inequality increased significantly. At national level consumption inequality is high in health and education at 0.74 and 0.77 respectively, and at the level of the zones the highest consumption inequality is 0.81 and 0.77 in the North West in health and education expenditures respectively. Thus not only are more people poor, but the gap between poor and wealthy has widened.

Urban-rural consumption inequality is generally low in Nigeria: consumption inequality in rural areas is lower in all categories of household expenditure except education and health This is

similar to what Gbolaham, 2012, Chukuwma and Felix, 2008, and Ojonta, 2015, found in their studies on rural-urban consumption inequality.

The estimation of the Working-Leser version of the Engel curve to determine the relationship between household per capita expenditure and household size showed that household size in Nigeria affects the consumption expenditure of some categories of expenditure while other categories of expenditure are not affected. In terms of economies of scale in household consumption expenditure there is variation among the six geopolitical zones in Nigeria. The study established that location of a household has a significant effect on the household per capita consumption and family size. The study found that family size affected the per capita expenditures of food and non-food in northern Nigeria but does not affect health and education expenditures, while in the south, family size affected the per capita expenditures of health and education expenditures but does not affect food and non-food expenditures. This means that the zones in northern Nigeria have economies of scale in health and education expenditure but diseconomies of scale in food and non-food expenditures. The zones in southern Nigeria have economies of scale in food and non-food expenditure, and diseconomies of scale in education and health expenditure. The zones in northern Nigeria have consumption economies of scale in health and education and consumption diseconomies of scale in food and non-food expenditures, while the zones in southern Nigeria have consumption economies of scale in food and non-food expenditures and consumption diseconomies of scale in health and education expenditures.

7.2 CONCLUSION

The study achieved its main objective and was able to obtain a clear picture of the trends in household consumption expenditure in Nigeria, through the analysis of the Nigeria General Household Survey data, which revealed the results discussed above.

The estimation of the Engel curve using the Nigeria General Household Survey data has improved our understanding of the behaviour of household consumption expenditure in Nigeria. Through the estimation of the Engel curve to determine the budget share of food, health, education and non-food in the total household consumption expenditure, it is established in this study that the food component of the household expenditure accounts for the largest share of the expenditure of households, indicating that it is a necessity. This finding applies to the nation as a

whole as well as to all the geopolitical zones. This finding is consistent with Engel's law and is in line with the studies of Fasarati (2004:3) and Alimi (2014:22). Other components of household expenditure such as education, health and non-food account for an insignificant share of the household budget. Despite the country's high revenues from oil production, the low expenditure on health, education and non-food are characteristic of a poor country in terms of consumption (Nwoka 2014:12). That is, because almost all their income is spent on food, Nigerian households have very little left to spend on health, education and non-food.

The study has established a positive relationship between family size and household food expenditure in the geopolitical zones in northern Nigeria while for the geopolitical zones in southern Nigeria between household size and food expenditure. This means that the zones in southern Nigeria have economies of scale in food expenditure while the zones in northern Nigeria have no economies of scale in food expenditure. On the other hand the study also established a negative relationship between family size and expenditures on education and health among the zones in northern Nigeria, but a positive relationship between family size and expenditures on education and health in the zones in southern Nigeria. This means that there are economies of scale in education and health expenditure among the zones in northern Nigeria while there are no economies of scale in education, health and non-food expenditure in all the zones of southern Nigeria.

The study has also established the existence of consumption inequality among the six geopolitical zones in Nigeria as well as across the urban-rural divide in Nigeria. According to Fischer, Johnson, Latner, Smeeding and Thompson. (2015) income, consumption and wealth are the most important parameters of determining the level of poverty and inequality in any country. In Nigeria, there is consumption inequality among the six geopolitical zones between the components of expenditure examined by the study, namely food, non-food, health and education. In contrast to many developing and low-income countries, urban-rural consumption inequality in Nigeria is generally low. This finding is similar to the findings of Gbolaham, 2012, Chukuwma and Felix, 2008, and Ojenta, 2014, who indicate that inequality in rural areas in Nigeria is lower in all categories of household expenditures except education and health expenditure, where inequality is very high. The most disturbing aspect of consumption inequality in Nigeria is in health care and education, two of the most important categories of household expenditure. The

highest expenditure inequality among the households in Nigeria is in the health and education expenditures, while inequality in food expenditure is the lowest. This finding is disturbing because education and health are regarded as key components of human capital with long-term benefits for economic growth development. The existence of inequality in health and education expenditure is a clear indication that poverty among poor families in both rural and urban areas in Nigeria is high despite the level of economic growth. In Nigeria many poor families are heavily reliant on the state to provide health care and education.

The importance of this study lies in the fact that it provides a clear picture of the behaviour and patterns of household consumption expenditure in Nigeria. It was noted that most research on consumption in Nigeria dealt with macroeconomic perspectives using aggregated data instead of the household micro-consumption data. There is a huge gap in consumption literature in Nigeria due to the neglect of the micro aspect of consumption. The study's focus on household consumption behaviour in the six geopolitical zones in Nigeria has addressed this gap in scholarship.

Using the Nigeria General Household Survey data enabled the study to successfully examine the various components of household consumption expenditure, their percentage share of household expenditure, as well as consumption economies of scale. The methodology employed in the analyses of the data enabled the study to illustrate and compare trends in consumption within and between the six geopolitical zones of Nigeria.

7.3 RECOMMENDATIONS

Recent trends in development economics literature have emphasised the use of consumption to determine the welfare and standards of living of people. Within the context of Nigeria and its six geopolitical zones this study revealed implications for both future policies and research in Nigeria.

The results of this investigation of the trends in household consumption expenditure among the six geopolitical zones in Nigeria have serious policy implications that require proactive measures by the federal government of Nigeria and the state governments of the six geopolitical zones. It should be noted that in a developing country like Nigeria, there are situations when markets by

themselves cannot correct problems, especially as they relate to household consumption expenditure. Hence there is sometimes a need for governments to intervene as this study will argue.

This study has incontestably shown that food expenditure accounts for the largest share of total household consumption expenditure in Nigeria across its six geopolitical zones, while expenditure on education, health and non-food accounts for an insignificant share of the total household expenditure, indicating that they are luxuries while food is a necessity. This proves that the majority of Nigerians are low income earners and poor. This study argues that there is a need for government to reduce the household expenditure imbalance by, among other measures, increasing the income of the households. One intervention could be at the level of wage earners, since at the current minimum wage of ₦18,000 a month, most salaried workers in Nigeria are spending a significant proportion of their income on food expenditure with a small amount available for non-food, education and health expenditures. By increasing the minimum wage the federal government would help to raise the earnings of salaried workers and this will help to increase their consumption expenditure on health, education and non-food, as per Engel's law of consumption.

The federal government should also consider increasing access to income and financial grants for all Nigerians, but especially those in the informal sector as that will help to enhance their businesses' financial capacity. Such capital injections will enable entrepreneurs to start or expand their businesses. This will increase their earnings and their consumption expenditure not only on food but on education and health care services, as well as their support of other businesses and services, thus providing a considerable and sustainable boost to economic growth.

This study concurs with numerous others that regard education and health as two important components of human capital which facilitate economic development. In Nigeria, people most have better access to education and health care to enable the citizens to reach their potential in life and also to participate optimally in the economy, earn a decent income and enhance their standards of living and quality of life. In this regard government must ensure universal and equitable access to affordable health care, possibly through health insurance schemes and government-funded health programmes. This which will reduce the already strained burden of out-of-pocket payments experienced by households. Similarly government must provide quality

and affordable education nationally and throughout the education system. This should be initiated through massive investment in educational infrastructure, training and resourcing. There is a need for government to encourage more private sector investment in education and health through broad investment incentives and public-private partnerships which will promote economies of scale and lower the cost of service delivery. Aside from improving health and skills of the citizenry, these infrastructure investments will also bear a return on investment in terms of creating sustainable jobs and increasing public spending in impoverished communities and thus stimulate economic growth in all the zones.

The study has established that at national level and among the three geopolitical zones in northern Nigeria there is a positive relationship between household size and expenditure indicating the absence of economies of scale in consumption. With every additional member to a household studies suggest that additional income is needed to cater for increased expenditure by the households with respect to food, education, health and non-food. In order to reduce this negative effect and the expenditure burden of large households over the long term, government should improve family planning programmes throughout the country but especially among the zones in Northern Nigeria, to slow population growth and the growth of large households. In the short term, government should take additional measures to reduce the general costs of producing and supplying goods and services in the country. By encouraging prices of essential and basic goods and services in the country downward, the current burden of high expenditure incurred by households with large size in the country can be reduced.

The study has established the existence of consumption inequality at national level, between the urban and rural sector, and among the six geopolitical zones in Nigeria. The government in Nigeria must implement policies aimed at addressing consumption inequality in the country, especially with respect to education and health expenditures. These policies could include subsidising health and education expenditures for the poor and vulnerable. Similarly, government should consider implementing policies that will ensure a more equitable income distribution for all the citizens so that the skewed focus of household consumption on food experienced by the majority of citizens can shift to allow an increase in the consumption of non-food as well as education and health. Such social investment will undoubtedly grow human capital and facilitate economic development.

One option available to the federal government of Nigeria that would reduce the economic imbalance and consumption inequality among the six geopolitical zones in Nigeria, and massively stimulate economic growth, is for the government to address the decay of infrastructure in the country such, especially the electricity, roads and water supply. The development of this infrastructure is critical to promote rapid industrialisation, the development of informal businesses in the country, diversification in the economy and reduced reliance on oil revenues. This will help to revive the ailing industries across the country thereby creating more jobs and income for Nigerians. Much of this infrastructural development can be undertaken in the form of public works, which in the short term tend to provide large numbers of jobs for less skilled workers, thus immediately and directly addressing poverty.

Finally, there is a need to address the current insecurity persisting in different parts of the country. The study found that poverty and skewed consumption are particularly characteristic of the states and zones that have been most affected by the Boko Haram insurgency. This is because the insurgents deliberately target economic and administrative infrastructure and disrupt communities, with severely disruptive consequences for economic activities and income, and thereby devastating consequences for consumption by the affected communities. The Nigerian government must address the security challenges in the North East zone particularly and end the Boko Haram insurgency by whatever means necessary so that economic activities in the zone can recover. Similarly, the government must address security challenges in other parts of the country such as kidnapping, armed robbery and militancy which, like the Boko Haram insurgency, are damaging the economic base of the society, scaring off investors and contributing to deepening the level of poverty and inequality among Nigerians.

7.4 IMPLICATIONS FOR FURTHER RESEARCH

The study was based on Engel's law and in this regard, the study estimated the Working-Leser version of Engel's law to determine household budget share and consumption economies of scale among the six geopolitical zones in Nigeria.

The estimation of the Working-Leser versions of the Engel curve used the Nigeria General Household Survey data to improve the understanding of the behaviour of household consumption expenditure in Nigeria. The estimation of the regression equation to determine the budget share

of food, health, education and non-food in the total household consumption expenditure using the double-log and semi-log forms fit into the data very well for most of the components of household consumption expenditure.

Based on the limitations and areas covered in this study, there is however a need for further research with respect to the following:

- Further studies in Nigeria using the various forms of Working-Leser, with the purpose of estimating all the models using Nigerian household expenditure data, in order to calculate expenditure elasticities, equivalence scales and economies of scale for Nigeria.

- Deeper research in consumption inequality using the Gini coefficient, Theil and Atkinson indexes to assist finding the levels of variation among these indices with respect to inequality in Nigeria, especially among the zones.

- The problem of missing data files should be addressed to enable all three waves of the General Household Survey data for Nigeria to be analysed and systems implemented to ensure the integrity and safeguarding of future datasets.

- Further studies that will break down the various components of household expenditure in Nigeria to deepen economists' understanding of the content and composition of household expenditure in Nigeria, and thereby cast more light on the trends and fluctuations in poverty and resource distribution in the country.

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