

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)
Total Household Expenditure	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
	Urban	0.334936	0.337462
	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)
Total Expenditure on Purchased Food	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
	Rural	0.369831	0.414782
	Urban	0.345923	0.345678
			0.372084

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

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)
Total Expenditure on Education	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
	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.

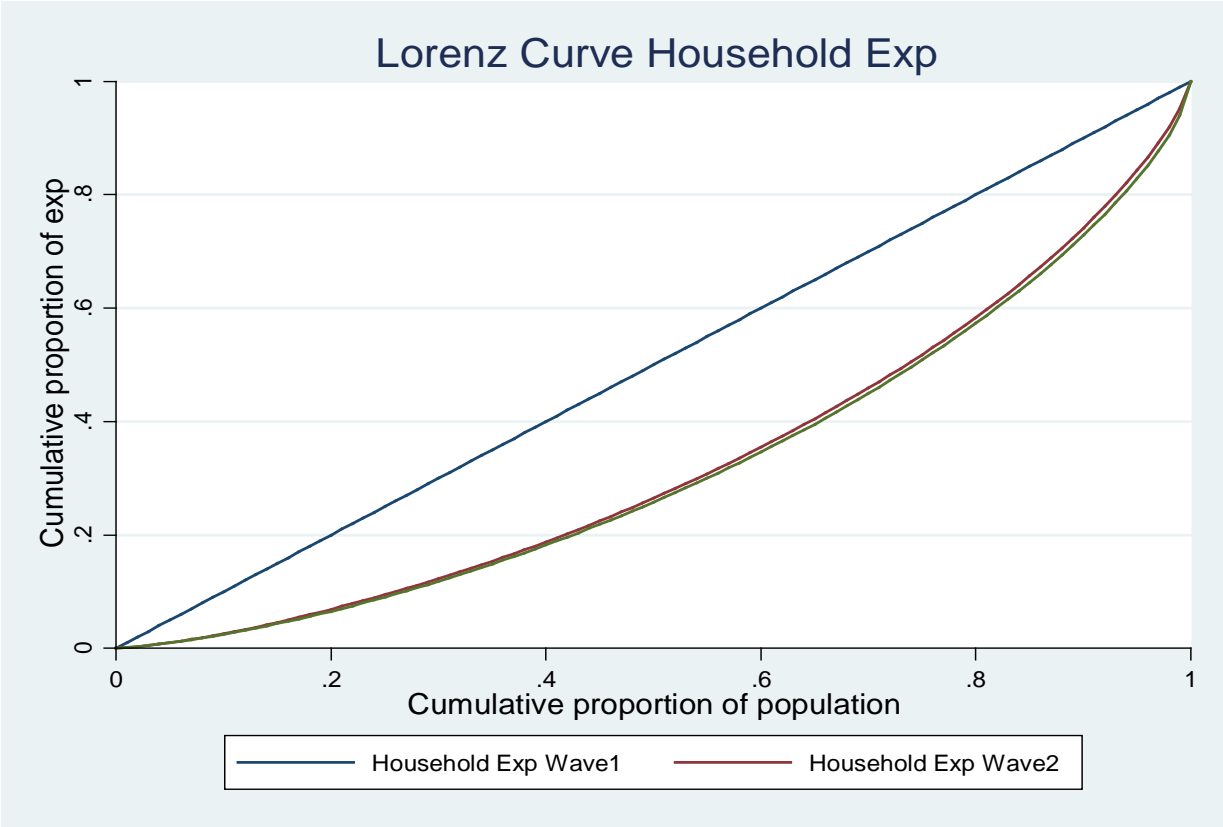
This result is not surprising because in Nigeria the citizens see education expenditure as part of public expenditure that government should provide. Unfortunately government's investment in education and infrastructure has deteriorated and remains relatively low due to lack of political will and corruption. 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



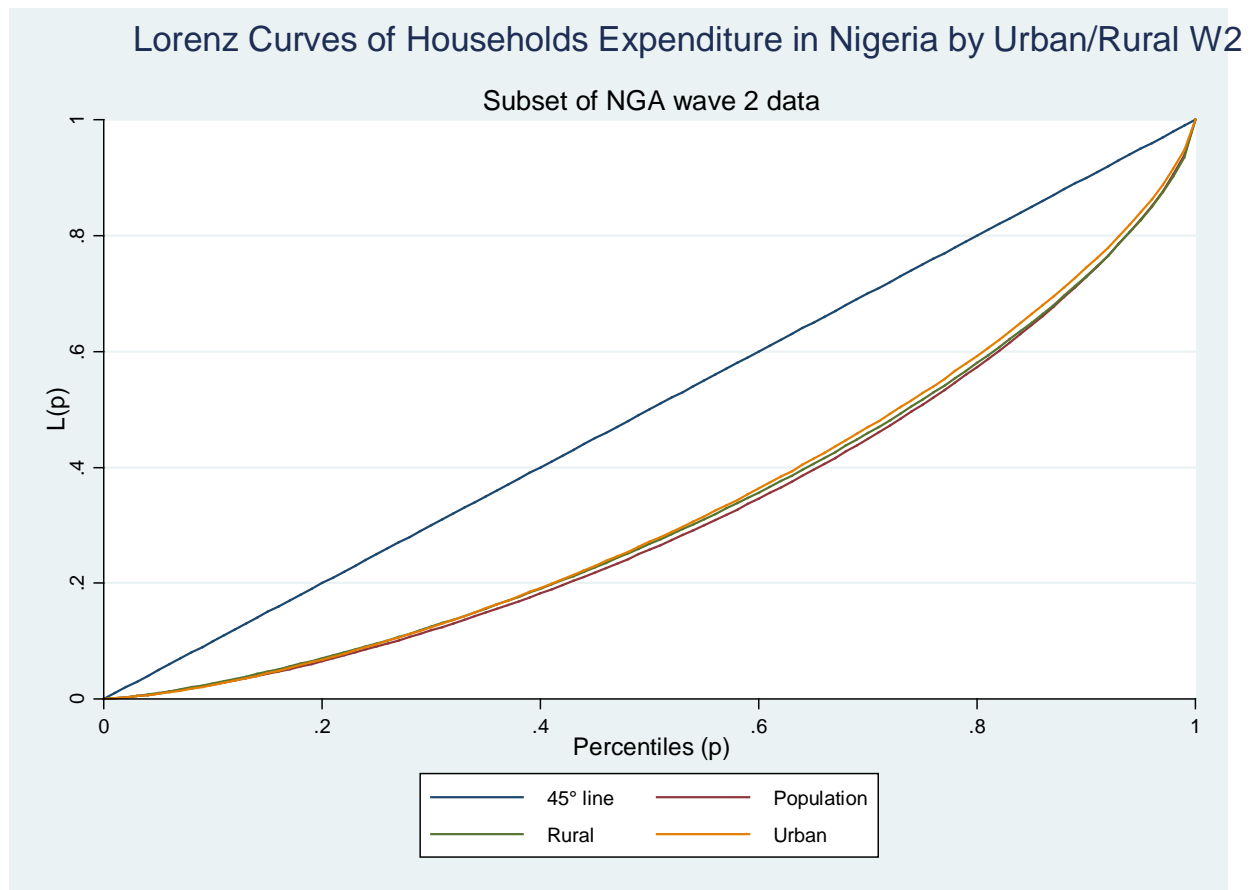
Source: Own calculations using Nigeria General Household Survey data for 2010-2011 and 2012-2013

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

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 Dependents

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 wave 1	Share	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 wave 1	Share	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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