

ESTIMATES OF RURAL POVERTY LEVEL AND INCOME DISTRIBUTION IN EBONYI STATE OF NIGERIA

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ABSTRACT

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Over 85% of the population of Ebonyi State reside in the rural heartland, where the economically active workforce is about 38%. The rural workforce income, in different employments, appeared rather small. The precise size and level of the perceived poverty incidence in Ebonyi State are not known. In a stratified random sampling, the core poverty indices measured to capture the severity of poverty, were income, consumption, dietary quality, and capacity utilization. Abject poverty lines established for single-person, four-person and six-person household units were annual income of ₦359160.00, ₦939510.00 and ₦1427880.00 respectively and their corresponding absolute poverty lines established were annual income of ₦1077480.00, ₦2818530.00 and ₦4283640.00 respectively. Widespread abject poverty level of 90% was observed and the magnitude of poverty indices obtained provided empirical support to the existence of poverty in the study area. There were greater income variability among single-person households, while income spread among six-person household units were more consistent. Rural income was positively, strongly associated with the consumption of carbohydrate diets and alcohol, attributable to the commodities easy availability, cheap price and excessive manual work performed by family members. Lorenz curve revealed that 40% of the population earned less than 20% of their minimum required income and or that 70% of the rural families earned less than 50% of their minimum required income. A Gini coefficient of 0.13, and Engel's coefficient of 0.77 confirmed that there were no rural income disparity but there were high poverty incidence respectively. The observed low rural capacity utilization of 8% was attributed to the perceived low literacy level of 12% and 69% of the population were predominantly farmers. Aggressive economic policies that can shift rural labour to industrial sector are urgently required to ease the pressure on rural resources.

Keywords: Ebonyi State, Rural households, Abject poverty, absolute poverty, capacity utilization.

INTRODUCTION

Background: Economic policies provide enabling environments for families to have access to goods and services, which they need, and their well-being is judged relative to others (Alan et al, 1998). However, the increased disparities in income and consumption among families contradict public economic policy intents. Recent observations suggest that most families neither experience income mobility nor a shift in position along their income scale. Hence, the rich remained rich and the poor remained poor. Poverty could be defined in either absolute or relative terms (Steenwinkel, 1979), and according to Katharine and Jane (2002), tracking the movement of families across a fixed threshold of income, updated for inflation, measured abject and or absolute poverty. The key policy questions therefore, are: what is poverty? What are the causes of poverty? How can poverty be measured and alleviated? Graham et al (1998) defined poverty as the situation facing people, whose material needs were least satisfied and its abject and absolute measures were earnings below some specified minimum level of income. According to Ansel (1988), poverty is the relationship between the "minimum needs" of people and their ability to satisfy those needs. The difficulty therefore is the meaning of "minimum needs" and the amount of money required to satisfy these needs. However, the absolute poverty approach defined minimum level of income required to sustain life while abject poverty defined minimum dietary needs and how it could be most cheaply met (David, 1992). The relative poverty approach defined poverty as occurring, if one's income is low compared to the rest of the community and the said individual or group are considered to be poor. As society grows richer, so the income levels defining poverty lines rises (David, 1992; Campbell and Stanley, 1999). Poverty incidence is usually high among rural families, large families, and families where the heads are female, uneducated and or unemployed (Tim, 1979 and McConnel et al, 2003). Family income depends largely on the marginal productivity of the available family resources and poverty exists not only because incomes are low but also because the needs have increased reasonably. At the cradle of civilization, basic needs of man were food, shelter and clothing. Today, these insatiable needs expanded to include education, healthcare, energy, portable water, transportation, information, communication and sustainable environments among others (Todaro and Smith, 2009).

Family size, age and educational background of family members are major determinants of the size and type of basic needs of household units. Civil wars, political and regional conflicts, deficit governance, high incidence of public debts, fiscal indiscipline, budgetary deficits, and lack of government political will to pursue prudent policies worsen the living conditions of the less privileged families (Tweenteen 1983; Paz, 1994). High population

growth rate holds down the living standards of most families (UNFPA, 1986) and according to Romer and Romer (1999) and Ansel et al (1988), the fundamental economic problems are that available resources and means for satisfying family needs are scarce or limited relative to the extent of the needs. Blinder (1986), observed that per capita real GNP are indicative of whether or not the performance of the economy, in terms of the average well-being of its citizens is improving or not. However, according to Atkinson (1983), per capita real GNP is not a perfect measure because it fails to take into account, the distribution of the economy's output within the population. For example, if few people got the bulk of the output while the masses are at subsistence level, per capita GNP would provide a distorted picture of individual well-being. According to Theodore (1987) and Reddy et al (2008), alternative measures of living standards ranged from income, consumption levels in value or volume to nutritional status and from possession of consumer durables including living quarters. Other measures of living standards are physical quality of life index (PQLI), Engel's coefficient, Gini coefficient and Lorenz curve.

Problem Statement: Majority of the rural families in Ebonyi State appeared to have not reaped the benefits of economic growth and development in Nigeria. This ultimately implied uneven distribution of income and wealth. High quality labour demand-supply gap created more pronounced income inequality problems; and the observed high poverty incidence among less educated families were fundamental economic problems not yet estimated quantitatively. Hence, the persistent difficulties encountered by government in helping rural families to satisfy their basic minimum needs, in all public poverty alleviation programmes. Again, the income required to satisfy their minimum needs were not known. Therefore, the key policy problem was the absence of defined indigenous rural abject and absolute poverty lines in Ebonyi state, which would have enabled Government to assist those living below the poverty lines.

Research objectives

The broad objective is to estimate the rural poverty level in Ebonyi State. Specifically, the objectives were to examine the socio-economic characteristics of the rural household units, establish the rural abject and absolute poverty lines and determine the extent of rural poverty levels, income inequality and distribution. Finally, to identify factors that accounted for the persistent high poverty incidence in the rural heartlands.

Justification of the study

An in-depth study on the cause, size, and level of rural poverty is an area where the stakes are high. Abject and absolute poverty are the most deleterious socio-economic problems (Adam, 2009). Greater research efforts to ameliorate poverty situation, are expected to abate the socio-economic threat which poverty imposed on the nascent democracy, currently in place in Nigeria. Abject poverty is highly associated with crime, food and health related problems. Hence investments on poverty studies have momentous policy implications, and according to Dennis (1998), poverty leads to inefficiency, and consequently it is imperative to search for policies that could reduce both poverty and the waste of economic resources. Therefore, the results of this study are expected to provide appropriate policy options necessary in making positive response to the economic events identified as causes of poverty. The policy framework created by this work explained the sources, size, level and amelioration of poverty in the rural heartlands of Ebonyi State.

METHODS

Area of study

This study was conducted in the rural heartland of Ebonyi State, which is located in the southeastern region of Nigeria. The state has a total population of about 2,173,501 and the rural population is about 1,847,476 (85% of the entire state population) based on 2006 year demographic data (NPC, 2006). Ebonyi State is endowed with abundant natural resources and the agricultural potential is great. The rural populations are predominantly farmers. Physical infrastructures (such as roads, portable water and electricity) and social services (such as education, healthcare, recreation and security) are not adequately provided. **Sampling Technique:** Stratified random sampling technique was employed in conducting the survey. Five Local Government Areas randomly selected out of thirteen Local Government Areas, were used for the survey sampling and the population separated into mutually exclusive strata of single-person, four-person, and six-person household units. From each stratum of family size, were drawn simple random samples and it was ensured that there were equal representations of each category of household units in the sample. A safe choice of 400 sample size having 0.5 maximum population variance and a standard error of the mean of 2.5% was made which was later adjusted to 2.6% for 353 sample size (Kish 1976). The period of the research was divided into three phases of six months planning period, twenty four months intensive implementation period and six months period of data analysis and report writing with a post research validity survey in 2009. The primary data on socio-economic characteristics of the household units were collected using personal interviews and structured questionnaires. Primary data collected on socio-economic characteristics of the household units were income, food consumption diversity, food expenditure, source of

water, and energy, type of house, level of education of household members, family size, age structure of family members, and access to healthcare among others.

Data Analysis: The socio-economic characteristics of the rural household units were used as index for analysis. Income distribution and income inequality were analyzed using Lorenz curve and Gini coefficients respectively. A Lorenz curve was derived from actual data on income distribution, which was expected to lie on the right side of the line of income equality (Ansel et al, 1988). If perfect income equality exists, the Lorenz curve would have been a straight line at 45° but the extent by which it deviated from the line of equality indicated the degree of income inequality. The rural families were divided into three numerically equal groups, indicating the income distributions among these groups. Gini Coefficient, defined as one minus twice the area under the cumulative probability distribution, must lie between zero and one (Alan, 1998). Gini Coefficient could be negative if low-income families have higher ownership rate than higher income families. As a measure of the inequality of income distribution, Gini Coefficient was obtained using Equation(1) according to David (1992):

$$G = 1 + \frac{1}{n} - \frac{2}{n^2 \bar{Y}} [y_1 + 2y_2 + 3y_3 + \dots + ny_n] \quad \dots \text{Eq (1)}$$

where Y_1, \dots, Y_n represented individual income in decreasing order of size, \bar{Y} is the mean income and n is the number of individuals. The Gini coefficient was a summary statistics of inequality derived from the Lorenz curve and it gives the area between the observed Lorenz curve and the line of absolute equality as a proportion of the total area under the line of absolute equality. Clearly, according to Robertson (2002), the Gini coefficient has a maximum value of unity (absolute inequality) and a minimum value of zero (absolute equality). Abject and absolute poverty lines were first established for the single-person, four-person and six-person household units. The abject poverty line was established by obtaining the minimum sustainable food budget cost at current domestic market prices, and which was required to provide a balanced diet from local foodstuff, for each respective category of household unit per annum. The annual balance food diet cost estimates obtained were multiplied by three to obtain the corresponding absolute poverty line for each category of household units, on the assumption that food budget expenditures represented about one-third of consumer behavioural spending (Ansel et al, 1988; Kumar, 1979). The safe assumption here was that most rural people would achieve balanced diet, if a wide variety of local foodstuff were mixed in moderation and consumed (Kumar, 1979; Sheila, 1979). To simplify this assumption, local foodstuff was disaggregated into seven categories as (1) milk and its products (2) meat and eggs (3) fish, (4) pulse and legumes (5) vegetables and fruits, (6) fats and oil and (7) starches, sugar and alcohol. From these categories, minimum sustainable balanced breakfast, lunch and supper diets were constructed at the prevailing domestic food market prices per annum for single, four and six person household units. From these, the overall dietary quality index (ODQI) was obtained and the components of the ODQI were the dietary quality index (DQI), which reflected protein, essential vitamins, minerals, fats and oil sources, and the caloric quality index (CQI), which reflected carbohydrate sources.

Table 1. Socio-economic characteristics of the rural households in Ebonyi State

	Afikpo South	Ebonyi		Ezza North	Ohaukwu	Onicha	Total	(%)
1. Family head sample size	80	80	80	80	80		400	100
2. Household members' age distributions in years.								
≤ 20 years	160	164	171	161	163		819	56
20 – 59 years	114	125	103	106	110		558	38
> 59 years	20	15	17	21	14		87	6
3. Household members educational attainment in years.								
< 1 year	149	164	211	186	124		834	57
1 – 6 years	95	106	66	77	110		454	31
> 6 years	49	22	15	30	60		176	12
4. Family heads Occupation distribution								
Farming	53	57		58	59	50	277	69
Artisan.	8	4		2	7	4	25	6
Trading	20	15		19	9	25	88	22
None	2	3		1	3	1	10	3

Source: Field Survey data 2009.

The combination of DQI and CQI provided the ODQI and the diversity in food consumption among the household units. The ODQI was derived from Equation(2) which was put forward by Kumar (1979):

$$ODQI = \sum_{i=1}^7 \sqrt{\frac{F_i(E_i)}{7}} \quad \dots\dots \text{Eq}(2)$$

Where $i = 1, 2 \dots 7$ were food categories, F_i was the frequency with which i^{th} -food category was consumed that year and E_i was the expenditure on i^{th} - food category for that year. Other tools that were employed in the analysis included Engel's coefficient, ANOVA, descriptive Statistics, Chi-square and Correlation analysis. Engel's coefficient is defined as the ratio of expenditure on food to the total household expenditure. The larger the percentage of total expenditure on food, the poorer the household was considered to be.

RESULTS AND DISCUSSION

Table I presents a fair analysis of the socio-economic characteristics of the rural households. The rural heartland was free from urban influence and was highly characterized by poor physical infrastructures and social services. These contributed to the weak economic base that was deterrent to better living conditions experienced across the rural heartland. With over 85% of the population in Ebonyi State living in the rural heartland, rural resources are under severe pressure. The rural demographic structure worsened the rural economic burden, given the observed high proportion (56%) of children between 0 – 19 years of age and the elderly people (6%) from 60 years and above in the population. This implied that about 62% of the rural populations were economically dependent on a smaller population of adult active work force (38%) for the supply of their basic needs. The observed high young dependency ratio of 146.8% was attributed to high rural fertility rate, which in the age distribution skewed in the direction of younger age groups. Given the old dependency ratio of 15.6%, the overall dependency ratio of 162.4% was considered very high. The literacy level of 43% across the rural heartland was considered very low, given that the intellectual capital assets possessed by those with primary six education (31%) included in this Ebonyi State literacy level are of very low quality. However, the observed overall 57% rural illiteracy level was high and 69% of the entire rural population were fully employed in agriculture. The urban cities dependence on rural economy for food, raw materials and unskilled labour further threatened the rural economy and explained the well-pronounced endemic food crisis in the area. These indices posed enormous challenge to policy makers and it was doubtful, if the rural heartland will ever trail the path of economic recovery in the next two decades (Jason and Maria,2009a and 2009b).

Table 2: Average observed poverty lines in naira per annum

Household Units	Abject poverty Line (₦)	Absolute poverty line (₦)
Single-person	359,160	1,077,480
Four-person	939,510	2,818,530
Six-person	1,427,880	4,283,640
Mean	908,850	2,726,550
Mean Per capita Income	227,212.5	681,637.5

Note that the mean family size was 4 – person household unit.
Source: Field survey data 2009.

The core indices measured to capture poverty size and levels across the rural heartlands were the perceived annual income, overall dietary quality index (ODQI) and food consumption diversity. The observed household income values revealed wide spread abject poverty across the rural heartland. The abject poverty lines established for the single-person, four-person and six-person household units (Table. 2) were ₦359, 160, ₦939, 510 and ₦1,427,880 respectively. The corresponding absolute poverty lines established were ₦1,077,480, ₦2,818,530 and ₦4,283,640 respectively for single-person, four-person and six-person, household units. The average abject poverty line obtained was ₦908,850 while the average absolute poverty line established for all category of household units was ₦2,726, 550 and which implied a mean per capita absolute income of ₦681,637.50 per annum as shown in Table 2. These results implied that rural families that earned income less than their respective household abject poverty lines per annum were therefore wretched in all ramifications. Hence such families were unable to provide adequate and appropriate balanced diets for their family members subsistence, including other basic needs necessary for better living conditions. Whereas, families that earned above their respective abject poverty lines but whose annual income were less than their respective absolute poverty lines were considered absolutely poor. This implied that such families had sufficient income to provide their respective family members

adequate and balanced diets but had difficulties in providing physical and social services required by their respective families. That is, such families had enough to eat but could not provide good housing, toilets, bathrooms, portable water, electricity, education, healthcare, security, transportation, and recreation and communication facilities among others for their families.

. Table 3 Average observed Rural Annual Income from all sources, for single-person, Four- Person household units in Naira.

LGA	Single-Person Household (₦)	Four- Person Household (₦)	Six-person Household (₦)	Mean (₦)
Onicha	200,280	201,310	205,830	202473
Afikpo-South	298,410	300,000	300,000	299470
Ebonyi	141,510	151,290	283,080	191,960
Ezza North	194,760	216,600	220,110	210,490
Ohaukwu	169,410	201,360	186,990	185,920
Mean	200,874	214,112	239,202	218,063
Per Capita Income	200,874	53,528	39,867	

Source: Field survey data 2009.

The observed rural income spread indices among the three categories of household units, when compared with the field observed poverty lines in Table 2, revealed that all rural families in Ebonyi State are living in abject poverty (Table 3). That is, they are poor in all ramifications. This explained the inability of rural family members to provide their basic needs of life.

Table 4. Summary of the observed annual income statistics

Family Size	DF	Mean (ȳ)	Std dev (δ)	C.V (%)	Observed F-Value	Tabular F-value (95%)	Gini Coefficient
Single person	2	0.2	0.054	27	0.1466	5.991	-
four person	2	0.21	0.0490	23	0.00174	5.991	-
six person	2	0.24	0.0424	18	0.0319	5.991	-
all Households	2	0.22	-	-	0.18024	5.991	0.13

Source: Field survey data 2009

At 95% confidence level, the observed differences in income among the three categories of household units were not significant (Table 4) and there were greater income variability among single-person household units compared to other households. Incomes among the six-person household units were higher and more consistent across the rural heartlands compared to other household categories (Table 4). That is, rural family income became more consistent with increased family size. The Gini coefficient has a maximum value of unity (absolute inequality) and a minimum value of zero (absolute equality). With a Gini Coefficient of 0.13 obtained (Table 4), which is nearer to absolute equality of zero, it was therefore confirmed that there were no disparity in income among majority of the rural families. This result gave the area between the observed Lorenz curve and the line of absolute equality as a proportion of the area under the line of absolute equality. In Fig. 1, the Lorenz curve revealed that 40% of the rural population earned less than 20% of their minimum required income and or 70% of the rural families earned less than 50% of their average rural minimum required income. This implied that 70% of the rural population earned income less than 50% abject poverty line. Hence the conclusion that the rural families lived in abject poverty.

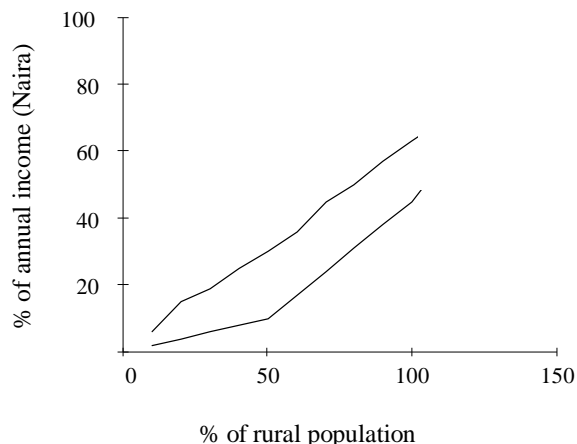


Fig.1: Lorenz Curve Of Income Distribution

Table 5 Engel 's Coefficient of the Observed Average Rural Household Expenditure Behaviour

Items	Single-person Household Unit	Four-person Household Unit	Six-Person Household Unit	Mean Household Unit	
Food	0.69	0.82	0.80	0.77	0.77
Health care	0.08	0.05	0.06	0.063	0.063
Education	0.04	0.06	0.05	0.05	0.05
Utility	0.05	0.03	0.04	0.04	0.04
Transportation	0.09	0.01	0.02	0.04	0.04
Others	0.05	0.03	0.03	0.037	0.037
Total	1.00	1.00	1.00	1.00	1.00

Source: Field survey data 2009.

The Engel's coefficient is an important indicator of standard of living and it provided the absolute measure of the rural households' welfare. Larger Engel's coefficients (Table.5) of the total family expenditures were associated with food, prompting the conclusions that the rural families were really poor.

Table 6. Observed minimum annual Overall Dietary Quality Index (ODQI) and diversity in food consumption indicating abject poverty lines.

Household Units	Dietary Quality Index (DQI)						Starches Sugar & alcohol CQI	Total ODQI	
	Milk	Meat & Eggs	Fish	Pulse & legumes	Vegetables & fruits	Fats & oil			Total DQI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Single Person	1.6	9.89	5.34	3.49	10.87	4.13	35.32	7.74	43.06
Four Person	2.26	16.05	8.4	5.92	15.64	5.77	54.04	14.61	68.65
Six Person	2.77	19.65	9.50	8.24	20.07	6.10	66.33	18.88	85.21
Mean	2.21	15.20	7.75	5.88	15.53	5.33	51.9	13.74	65.64

Source: Field survey data 2009.

Table 7: Average observed rural Overall Dietary Quality Index (ODQI) By Family size

Family size	Dietary Quality Index (DQI)						Total DQI	caloric quality Index CQI	Total ODQI
	milk	meat & Eggs	fish	pulse & legumes	vegetables & fruits	fats & oil			
	(1)	(2)	(3)	(4)	(5)	(6)		(7)	
Single Person	0.18	0.69	0.85	1.25	0.66	0.65	4.28	4.78	9.06
Four Person	0.10	0.41	0.56	0.66	0.73	0.46	2.92	2.72	5.64
Six Person	0.09	0.35	0.54	0.69	0.42	0.55	2.64	2.53	5.17
Mean	0.12	0.48	0.65	0.87	0.60	0.55	3.28	3.34	6.62

Source: Field survey data 2009.

On the average, an Engel's coefficient of 0.77 for food, implied that 77% of the rural family disposable income was spent on food provisions while 23% was left to take care of healthcare, education, utility and transportation problems among others. Comparatively, single-person household units were better off and the result suggested that single-person households were the most travelled families. Other rural families rarely travel out of their villages as evidenced by the least coefficients associated with transportation services (Table. 5). The minimum Overall Dietary Quality Index (ODQI) is a measure of abject poverty, which specifies the cost of minimum dietary quality, quantity and diversity, required to live a healthy, vigorous and fulfilled life (Ansel, 1988; David 1992; Graham 1998; Kumar 1979). The results in Table 6, revealed that the total minimum ODQI for single-person, four-person and six-person household units were 43.06, 68.65 and 85.21 respectively. This implied that the average minimum ODQI for rural families in Ebonyi State was 65.64 and the observed ODQI as shown in Table. 7, among the three categories of household units and across the rural heartland revealed that on the average, rural families consumed only 10% of the quantity and quality of their minimum required diets. This implied that the abject poverty level was 90%.

Table 8: Summary of correlation Analysis of rural income and DQI and between rural income and CQI

Variables	mean (\bar{y})	Standard deviation (δ)	Correlation Coefficient (r)
Income & DQI	-	-	0.3
Income & CQI	-	-	0.4
Income	0.22	0.0417	-
DQI	2.69	0.6375	-
CQI	2.52	0.5745	-

Source: Field survey data 2009.

The correlation analysis was first conducted to estimate the strength of the association or relationship between rural income and dietary quality index (DQI) and second, between rural income and caloric quality index (CQI). The observed closeness (Table. 8) of the relation between rural income and caloric quality index (CQI) was positively stronger (0.4) compared to the observed association (0.3) between rural income and dietary quality index (DQI). This implied that rural families were strongly associated with the consumption of such caloric food items as alcohol, cassava, yam, cocoyam, maize, rice, bread and sugar among other starchy or carbohydrate foods. This was attributed largely to the excessive manual work performed by the rural family members, including easy availability of these starchy food items at affordable prices compared to major dietary quality index food components, required to achieve balanced diets.

Table 9: Summary of the observed dietary quality and income based poverty levels in the rural heartlands

State	Abject Poverty Level (%)	Absolute Poverty level (%)	Mean Poverty level (%)	Capacity utilization (%)
single person	79	81	80	19
four person	92	92	92	8
six person	94	94	94	6
All Households	88	92	90	8

Source: Field survey data 2009.

The observed prevailing poverty level across the rural heartlands was 90%. This implied that rural families in Ebonyi State earned income of about 90% below their potentials and their food consumption behaviour was also about 90% deficient in quantity, quality and diversity. Hence it was possible to conclude that poverty level across the rural heartland in Ebonyi State was precisely 90% (Table. 9). The major source of this level of poverty in the rural heartland was the shift from cash crop production for industrial uses and international markets as it was the case in the pre-civil war era to the production of inferior starchy food crops mainly for family subsistence. Cash crop production gave rural families in Afikpo South higher income and better living conditions compared to other rural families (Table.3). The shift did not improve domestic food situation since the bulk of major food items such as rice, yam, beans, onions, paper, tomatoes, lettuce, carrots, cabbage, wheat, sorghum, millet, fish, beef, mutton and milk among others, were imported to satisfy domestic consumptions in Ebonyi State from states in the neighbouring geopolitical zones in Nigeria at higher prices. This also accounted for the observed high caloric quality index in consumption patterns across the rural heartland. Although no famine was recorded but meagre food reserves were easily depleted, prompting food imports from neighbouring geopolitical zones in Nigeria. Again, highest rural incomes earned were observed among all categories of households in Afikpo South Local Government Area (Table.3). This was attributed to their comparative and competitive advantages in palm oil and palm kernel production, which were not only of high domestic and industrial demands but were highly sourced in the area by middlemen for exports. These commodities (palm oil and Kernel) created all season trans rural border economic activities in Afikpo South. Similarly, the poorest families were observed in Ebonyi and Ohaukwu Local Government Areas. The average capacity utilization in the rural heartland, defined as the ratio of actual earnings to potential earnings, was 8% (Table .9). The highest capacity utilization (19%) observed among the single-person household units, was attributed to the capacity of families in this category to diversify their earning sources due to their age, background, and active participation in both civil service, farming, and local politics. The results (Table.7) did not conclude that there were no differences in ODQI among various rural families but that the numerical values of the ODQI obtained did not prove difference and or the differences were not significant. However, caloric quality index (CQI) across the rural heartland was more consistent (23%) compared to dietary quality index (24%). The greater variability observed in dietary quality index confirmed the earlier observation that rural income was positively, strongly associated with the consumption of high carbohydrate (CQI) food items (Table.8).

Table 10: ANOVA of food diversity analysis

Source of variation	DF	SS	MS	Observed-F value	Tabular-F value
1. Food Category	6	19.39	3.23	64.6***	2.51
2. Food diversity	4	1.04	0.26	5.2***	3.67
3. Experimental error	24	1.30	0.05		
Total	34	21.73	0.64		

Source: field survey data 2009. Note: CF =19.4 and CV =26%

The analysis of variance (ANOVA) revealed differences in food item diversity or mixture among rural families at 1% level of significance ($P > 0.01$). These differences in food diversity may be attributed to differences in agroecology and seasonality of most major indigenous foodstuff in the rural heartland of Ebonyi State. Ease of access to the food items in terms of availability and cost also contributed greatly to the food consumption diversity among the rural people. Therefore, the rural food market scenarios across the rural heartlands were similar but not identical in terms of content or commodities. The observed unequal ownership structure of

productive rural resources, created income inequality. Rural families living below poverty lines own small share of the highly rural productive and efficient resources, on which the market places high values. Inherited capabilities, education, training and experience were sources of unequal rural human capital quality and consequently, unequal marginal productivity. Differences in capital resources ownership among rural families were due to inheritance, and individual propensities to accumulate wealth. Those who inherited adequate capital investments had good start in life but some suffered setback due to poor personal qualities, and economic depression.

Conclusion Ebonyi State is endowed with abundant natural resources and agriculture remained dominant in the rural economy. The rural population explosion, mounted severe pressure on the rural resources and agriculture that was the dominant sector of the rural economy, was ill equipped to cope with the pressure. Slowdown in rural productivity gains were the chief sources of decline in real income per capita among rural families and this implied less gain in living standards across the rural heartland. That is, the productivity in the rural heartland was a significant element in the acceleration of the worsening economic conditions of the rural families. The weak performance of the rural economy reflected the performance of the dominant sector of the rural economy, which is agriculture. Government efforts to improve the rural income were inadequate and or inappropriate, which appeared to have inevitably contributed to earnings and overall dietary quality index level of 90% far below poverty lines. Hence, rural families were unable to provide for themselves, the basic needs of life and were therefore living in abject poverty. It was therefore, most disturbing that the entire rural population of about 1.8 million people were unable to receive enough daily calories, proteins, vitamins and minerals essentially required to sustain a healthy and vigorous life. Poverty therefore is a vicious circle that needs to be broken in our rural heartland. However, the required leadership, political will, and technology required to break the poverty vicious circle are not yet available in Ebonyi State. Therefore, the fate of rural families in the next decades ahead is uncertain. This study therefore recommends that: (1) Prudent rural banking policies are required to improve the menu of rural financial products and services; (2) Aggressive educational and economic policies that can shift rural labour to the industrial sector are urgently required to dismantle the severe economic pressure on rural resources and (3) a shift from subsistence food crop production to export crop production should be emphasised in the policy process in Ebonyi State.

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