

Magnitudes and Diagnostics of Spatial Disparity in Urban - Rural Household Welfare in Nigeria

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Abstract:-The purpose of the study was to analyze the magnitudes and diagnostics of disparity in urban-rural household welfare in Nigeria. This was necessitated by the fact that, apart from some pockets of income disparity analyses, no spatial analysis of urban-rural disparity in welfare presently exists in the country. To achieve the aim, relevant data were sourced from Annual Abstract of Statistics 2016 and 2017 Multiple Indicator Cluster Survey 2016-17. The welfare status was computed by weighted sum of household assets, while the disparities between rural and urban areas were computed by absolute and relative disparity indexes. The determinants of disparity in household welfare were analyzed by regression statistics. The results show that on the average rural households are 50.34% lower in welfare status than the urban areas while the regression model accounts for 95.6% of the urban-rural disparities in the country. This calls for concerted efforts toward reducing the inequality in development between the urban and rural areas in the country. To this end, it is recommended that rural-urban linkage development strategy be adopted and that massive rural infrastructure development particularly road construction and rural electrification be embarked upon by the three tiers of government in the country. This will not only reduce the imbalance, but will increase the interaction between urban and rural areas, which is necessary for the achievement of a balanced development.

Key Words: Balanced development; Disparity; Household welfare; Nigeria; and rural- Urban linkages

I. INTRODUCTION

It is not difficult to recognize unbalanced development between urban and rural areas across regions of the world as it is clear that, the living standards of those in rural areas lag behind those living in urban particularly in developing countries (UN, 2013; Madu, 2014). It is widely recognized that within each country, there are significant disparities or gaps among regions, between the sexes, between urban and rural areas and among ethnic groups in terms of income, opportunity, employment, wealth etc (Olawatayo, 2008; Bui and Imai, 2017) Accordingly the Oxford English Dictionary defines *Disparity* usually refers to a difference that is unfair: economic *disparities* exist among ethnic groups, there is a *disparity* between what men and women earn in the same job, urban and rural economy or disparity as meaning differences especially as those connected with unfair treatment'. Thus, in a pioneering work on income inequality in the United States, Kuznets (1955) observed that 'when we say income

inequality, we mean simply differences in income, without regard to their desirability'.

Disparity is a feature of all societies including the developed societies. For instance, a recent study of European countries by Shucksmith, Cameron, Merridew and Pichler (2009), indicates that in the poorer countries of the east and south, rural areas have a much lower level of perceived welfare and quality of life. The issue of Disparity has received wide attention as one of the most daunting challenges of our time. The UN 2030 Agenda for Sustainable Development goes beyond a narrow definition of inequality/disparity as inequality based on wealth and income, to consider all aspects of inequality as it relates to economic, political and social exclusion. Reducing inequality will thus be a key to achieving the Sustainable Development Goals 10 (UNDESA, 2016).

Globally, research has shown that 1.2 billion people are in extreme poverty and that three quarters of the poor work and live in rural areas (IFAD, 2001; Epstein 2003). Even though there is poverty in urban context, the fact that there is better support and infrastructure and a better chance of obtaining assistance (in the form of social services), exist more in urban areas, hence the inequality (Balfour, Mitchell and Moletsane, 2008). Specifically, Zhou and Wan (2003) have shown that China's economic reforms in the past two decades have resulted in remarkable economic growth although there have also been increasing and widening income disparities between the east and west, the urban and rural, and the rich and the poor. In India, Cali (2007) observes that although not all welfare indicators are worse in rural than urban areas but at any point in time the average difference in poverty rates between rural and urban areas is not less than eight percent, indicating a substantial, though very variable gap between rural and urban areas across Indian states.

Disparity between urban and rural areas results from many factors including natural differences, socio-cultural conditions and policy decisions. One of such important socio-cultural cause is the development of capitalist economy. It is therefore not difficult to recognize unbalanced development between urban and rural areas (i.e., development that does not benefit both spatial locations more or less equally) across regions of the world as it is clear that, the living standards of those living in rural areas lag behind those living in urban (Sahn and Stifel, 2002). This is because whether in the monetary or non-monetary level rural areas are more affected by poverty than

rural areas (Kid, Faye and Faye, 2007). Consequently, most people with low social development are concentrated in rural areas and thereby making rural dwellers become more vulnerable to poverty (Fernando, 2008; Oluwatayo, 2008)

Ajaero, Nzeadibe, Obisie-Nmehielle and Ike (2017) opined that households' welfare significantly increases when they have an international migrant and receive remittances. Other variables that significantly affected the household welfare in the area were age of the head of household, household size, region of residence, education and rural-urban place of residence. Improvement in economic welfare of household in Nigeria is driven more by the attainment of tertiary education by household heads, relative to other levels of education (Ogundari and Aromolade, 2012, Bui and Imai, 2017).

In addition, Bandara, Appleton and Owens (2018) explore the urban-rural welfare gap in Sri Lanka and observe that the urban-rural welfare gap to have fallen considerably between 2002 and 2009/10. At a given point in time, the welfare gap is larger between richer urban and rural households relative to poorer households. They suggest that individual characteristics such as education, employment in the services sector, the presence of children in the household and receiving remittance income have a positive association with per capita household expenditure, whereas household size and employment in the agriculture sector have a negative association with per capita expenditure. A number of factors contribute to the urban-rural welfare gap, including urban-rural differences in the levels of education, regions, industrial structure, and household size.

The fore going indicates that generally speaking, urban-rural disparities have extensively been discussed. However, most of the studies have concentrated on income disparities. In Nigeria in particular apart from the focus on income disparities no composite picture of urban-rural disparities presently exist. This is unfortunate because for a country as large as Nigeria there is the need for a proper understanding of spatial disparities in terms of urban-rural differences especially in welfare in order to identify the lagging areas and to deal with the factors responsible for the perpetuation of the disparities. This important task described by Kremer (2008) as knowing your enemy has not been given adequate attention in Nigeria. This is particularly important in Nigeria, a country with a wide geographical diversity in which the rural population remains neglected (Madu, 2009) and yet constitutes half (50%) of the entire population (PRB 2017).

Problem Statement/Justification

In Nigeria, apart from the focus on income disparities no composite picture of urban-rural disparities presently exist. Rather analysis of urban-rural differences in household welfare in appear to focus strongly on economic analysis of poverty, its incidence and distribution (Akerele et al 2012; Chukwu 2018; Eighbiremolen, 2018,). This is unfortunate because for a country as large as Nigeria there is the need for a proper understanding of spatial disparities in terms of urban-

rural differences especially in welfare in order to identify the lagging areas and to deal with the factors responsible for the perpetuation of the disparities. This important task described by Kremer (2008) as knowing your enemy has not been given adequate attention in Nigeria. This is particularly important in Nigeria, a country with a wide geographical diversity in which the rural population remains neglected (Madu, 2009) and yet constitutes over half (51%) of the entire population (PRB 2017). Moreover, It is now widely recognized that there exists an economic, social and environmental interdependence between urban and rural areas which necessitates the need for a balanced and mutually supportive approach to development of the two spatial units. This means that the discrete consideration of rural development as completely distinct from urban development is no longer valid (Okpala, 2003). This study will provide empirical evidence for designing relevant rural –urban linkages strategies that will ensure inclusive and balanced spatial development.

Aim and Objectives of the Study

The aim of the study is to ascertain the magnitude and diagnose the determinants of spatial disparity in urban-rural households' welfare in Nigeria. This is necessitated by the fact that, apart from some pockets of income inequality analyses, no spatial analysis of urban-rural disparity in welfare presently exists in the country both on a regional or national level. This is ironical because accounts of the despoliation and neglect of the countryside are both old and numerous in literatures. Worse still, in Africa generally, rural and urban areas are two worlds' apart as very wide gaps in income and welfare exist so that where people are born or where they live have a lasting influence on their lifelong chances (United Nations, 2013 ;Madu, 2014) . Yet, no quantitative determination of the magnitude of the spatial disparity in welfare between urban and rural areas has been made for a country as large and populous as Nigeria with a known high rate of urbanization that is propelled by rural-urban migration. Accordingly, the objectives of the project will be to:

1. Construct and map welfare indices using households' asset in Nigeria;
2. Ascertain the degree of spatial disparity in household welfare between urban and rural areas in the country.
3. Examine the relationship between urbanization and rural-urban disparity in welfare.
4. Proffer evidence based rural-urban linkages development approach that would not only promote urbanization but also address the challenges facing rural development in the country.

II. LITERATURE REVIEW

Spatial disparities in living conditions exist both within and between localities and recent research indicates that there also exists spatial differences in living standards between urban and rural households, with rural areas often lagging behind the urban areas (Madu 2006; Sahn and Stifel

2004). Indeed, it has argued that the urban-rural living standards diverge as countries develop and become more urbanized, converging only once they reach relatively high development threshold (World Development Report 2009). This report further stated that at early stages of development, economic growth and urbanization tend to increase spatial inequalities.

In an earlier study on household welfare in urban and rural India, Pradhan, Roy, Saluya and Venkatram (2002) looked at income, expenditure and social sector indicators of households in rural-urban India and concluded that there is a wide disparities in levels of living in terms of economic and social indicators in rural and urban India. Similarly, Bui and Imai (2017) examined determinants of rural-urban inequality in Vietnam using decomposition analysis based on the UQR decomposition by Fortin, et al, (2011) combined with the reweighting technique. These authors indicated that the problem of growing inequality has emerged especially in the form of widening the gap between and within urban and rural residents. Rural poor with higher qualifications are still more disadvantaged in attaining employment than their urban counterparts. They concluded that public policy should ensure easier access to education for the rural poor, support the self-employed to rise and stabilize their income and make it easier for rural agricultural households to diversify their activities into the non-farm sector.

Instructively, urban-rural differences in household welfare in Nigeria appear to focus strongly on economic analysis of poverty, its incidence and distribution (see, for example, Erubami et al 2003; Oyekale et al. 2004; Akerele et al 2012; Chukwu 2018; Eigbiremolen, 2018,). In an empirical analysis of the determinants of poverty and household welfare in South Africa, Biyase and Zwane (2018) found that educational levels (primary, secondary, matrices and tertiary) of the household head reduced the probability of being poor. These results suggest that investing in education and improving the economic conditions of the rural dwellers (traditional rural areas) could be a major plank for poverty alleviation efforts in South Africa. Similarly, Chukwu (2018) examined Poverty Impact of Variations in Within-group and Between-group Inequality in Nigeria using Two Household Survey Data and found out that within-group inequality and between-group inequality estimates are sensitive to the choice of Foster–Greer–Thorbecke (FGT) poverty measure, and might as well be sensitive to the choice of poverty line; second, that non-homogeneity is due to variations in the initial sub-group distributions; finally, that altering within-group inequality will have more important impact on poverty reduction than altering between-group inequality.

In a related study, Adebowale and Lawson (2018) indicated that the relationship between access to formal finance and poverty reduction lies at the heart of the development literature and policy discourse, particularly in developing countries, where access to financial services is often argued to have poverty-alleviating potential. Using a

nationally representative panel data set of households, the paper explored the effect of access to formal finance on household welfare dynamics in Nigeria.

The influence of social capital on household welfare was the focus of Achida, Garba and Abdullahi (2018) in a study on Sokoto metropolis, Nigeria. The research revealed that among the seven proxies for social capital identified in this study, three are significant and negatively related to household welfare. It was therefore concluded that social capital does not enhance welfare in the metropolis but rather reduces it. The implication of these findings is that engagement of households in the three measures of social capital will reduce household welfare among households in Sokoto metropolis. More importantly, the receipt of remittances as an indicator of household welfare was examined by Akanle and Adesina (2017) who claimed that remittances receiving households mostly spend remittances on consumptions. Expression of welfare was also found to be beyond the commonly noted to include important intangible welfare credits like community respect for remittances receiving households. It is concluded that development experts, partners, governments, groups and individuals should therefore better appreciate and appropriate both the financial and non-material effects of remittances on inequality and poverty in developing countries especially of Africa.

While it may be argued that the above studies do not adequately account for the urban-rural disparity in household welfare. Ajaero, Nzeadibe, Obisie-Nmehielle and Ike (2018) took the debates a notch higher by examining the linkages between international migration, remittances and household welfare in Nigeria. This study concluded that households' welfare significantly increases when they have an international migrant and receive remittances. Other variables that significantly affected the household welfare in the area were age of the head of household, household size, region of residence, education and rural-urban place of residence. On the other hand, Ogundari and Aromolade (2012), studied the impact of education on household welfare in Nigeria using the double hurdle (DH) model and Quantile regression (QR) and concluded that the improvement in economic welfare of household in Nigeria is driven more by the attainment of tertiary education by household heads, relative to other levels of education.

In all these studies, however, the spatial perspective has been clearly missing. Although previous studies have noted the imperative of the spatial perspective in the analysis of rural-urban disparities (see, for example, Madu 2006) and have also argued in favour of its integration in development (Madu 2016), the magnitude of the spatial disparity in urban-rural households' welfare in Nigeria remains unexplored in the literature and quest for development. This is the gap that the present study attempts to fill.

III. METHODOLOGY

Data collection

The study area is made up of all the 36 states in Nigeria and Abuja, the Federal Capital Territory. The data for the research were obtained from different sources including General Household Survey (2010-11/2012-2013), Annual Abstract of Statistics, 2017 and 2017 Multiple Indicator Cluster Survey. The data were based on both rural/urban characteristics and geographic variables and were normalized by converting them into natural logarithms before they were analyzed. The normalization was necessary in order to effectively combine all the variables which are denominated in different units. They were aggregated and analyzed at state level using SPSS software and mapped using ArcGIS software. The following analyses were done:

Constructing welfare index

A welfare index were constructed from households’ asset data. The index was the outcome of a factor analysis of various assets about which the research sought information on including; household characteristics (water source, toilet facilities, and construction material) and durables (ownership of radio, television, refrigerator, bicycle, motorcycle and/or car), as well as education of the household head as in table 1 .The assumption is that there is a common factor, “welfare” that explains the variance in the ownership of these assets. The factor analysis is allowed to define that factor as a weighted sum of the individual assets (Sahn and Stifel, 2002) .Accordingly, urban or rural welfare indices were calculated as follows:

$$W = Yai_1 + Yai_2 + Yai_3.....Yai_k.....(1)$$

Where W is welfare index, $ai_1 - ai_k$ are the urban or rural household assets and Ys are Component Scores obtained from factor analysis which were used to weight the indicators.

Table 1: Household welfare variables

Household assets (Percentage of households that own)

Car or truck	Modern stove
Motorcycle	Radio
Bicycle	Mobile phone
Canoe	Watch
Livestock	Television
Electric iron	Refrigerator

Water and sanitation

Use of safely managed drinking water (Percentage of household members with an improved drinking water source)

Education

- Literacy (young men)
- Literacy (young women)
- Literacy rate among young people
- Percentage of children of primary school age currently attending primary school
- Percentage of children of secondary school age currently attending secondary school

Ownership of dwelling

- Owned by a household member

Housing Characteristics (Percentage of households with)

- Finished floor
- Finished roofing
- Finished walls
- Electricity

Measuring the Urban-rural disparity

The household welfare indices were used to ascertain the urban-rural disparity indexes by computing the absolute and relative differences as follows:

$$AD = U_w - R_w \dots\dots\dots 2$$

$$RD = (R_w / U_w) \times 100 \dots\dots\dots 3$$

Where AD and RD are absolute and relative differences and U_w and R_w are the urban and rural welfare indices respectively. In equation 3 urban welfare indexes was used as a reference index because it represents the welfare status desirable by the rural population.

Modeling the Urban-Rural Gaps

Finally a linear regression model was used to ascertain the determinants of urban-rural disparity in household welfare in the country. The variables used in the regression are shown in table 2. We estimated the following model as follows

$$\ln DIFF = \hat{\alpha} + \hat{\alpha}_1 \ln COM + \hat{\alpha}_2 \ln HSIZE + \hat{\alpha}_3 \ln RATIO + \hat{\alpha}_4 LAND + \dots\dots \hat{\alpha}_N + e \dots\dots\dots (4)$$

Where $\ln DIFF$ is the natural log of gap in welfare, natural log of household income, natural log of household sizeN as shown in table 2.

Table 2: Variables used in the regression

Absolute disparity- dependent variable	
Population size	Rural population
Population density	Road density
Agricultural population	Household income
Road density, No of LGAs	
Road length, unemployment (inverse)	
Availability of electricity	Literacy
Dependency ratio	Household size
Urban population	Family planning

Mapping of spatial disparity

The states in the country will be grouped according to the magnitudes of urban-rural disparity, using hierarchical cluster analysis and mapped by Arc View GIS 3.2a, which is a type of Geographical Information Systems (GIS) software.

IV. RESULTS

The computations of the urban –rural household welfare indicate that in all the states in Nigeria, urban welfare is higher than the rural welfare (Table 4). The table shows that while the mean urban household welfare index is 43.25 that of the rural areas are only 21.22. The table also shows that there are much larger absolute differences in household welfare because of the differences between households in highly developed metropolitan areas and remote villages.

Table 4: Levels and differences in Urban – Rural Welfare in Nigeria

S/No	State/FCT	No of sample	Urban welfare	Rural welfare	Absolute difference	Relative difference (%)
1	Abia	960	54.89	26.22	28.67	47.77
2	Adamawa	960	36.74	20.91	15.83	56.91
3	Akwa Ibom	960	52.13	25.7	26.44	49.29
4	Anambra	960	54.45	24.62	29.83	45.21
5	Bauchi	960	24.4	13.75	10.65	56.37
6	Bayelsa	960	54.91	25.24	29.67	45.96
7	Benue	960	41.23	22.99	18.24	55.76
8	Borno	960	40.03	18.64	21.38	46.58

9	Cross River	960	54.06	26.2	27.86	48.47
10	Delta	960	52.84	24.53	28.31	46.42
11	Ebonyi	960	45.98	24.65	21.34	53.6
12	Edo	960	53.09	22.97	30.13	43.26
13	Ekiti	960	55.83	25.55	30.29	45.76
14	Enugu	960	56.48	26.7	29.78	47.27
15	Gombe	960	25.85	14.83	11.02	57.36
16	Imo	960	55.74	26.64	29.1	47.79
17	Jigawa	960	17.72	10.99	6.73	62.02
18	Kaduna	960	38.62	18.99	19.63	49.17
19	Kano	1920	37.79	20.34	17.45	53.83
20	Katsina	960	29.72	18.17	11.55	61.13
21	Kebbi	960	21.85	12.55	9.3	57.43
22	Kogi	960	51.88	25.16	26.72	48.5
23	Kwara	960	45.97	20.81	25.16	45.26
24	Lagos	1920	54.33	22.35	31.98	41.15
25	Nassarawa	960	45.03	23.01	22.01	51.11
26	Niger	960	34.97	17.71	17.27	50.62
27	Ogun	960	51.59	22.95	28.63	44.49
28	Ondo	960	53.26	24.84	28.42	46.64
29	Osun	960	51.71	23.13	28.58	44.73
30	Oyo	960	49.52	22.41	27.12	45.24
31	Plateau	960	43.15	23.05	20.11	53.41
32	Rivers	960	54.43	25.59	28.84	47.01
33	Sokoto	960	24.13	12.43	11.7	51.5
34	Taraba	960	35.5	19.62	15.88	55.26
35	Yobe	960	20.48	12.5	7.98	61.04
36	Zamfara	960	29.76	16.32	13.44	54.84
37	FCT	960	49.63	22.02	27.61	44.37
38	Mean	1012	43.25	21.22	22.02	50.34

Source: Authors' calculation.

From the results, it is clear that both the absolute and relative differences are positive and this illustrates that welfare status in rural areas lag behind urban areas. On the average rural households are 50.34% lower in welfare status than the urban areas. However, in some of the states the rural households' welfare are much lower than the national average. Specifically, the highest differences occur in the northern states of Jigawa (62.02%), Katsina (61.13%) Yobe (61.04%), Kebi (57.43%) and Gombe (57.04%). Lagos state on the other hand with 41.15% has the lowest relative difference in urban- rural welfare status in the country. As is expected,

Lagos is the most urbanized state in the country and even though inequality exists, majority of the rural households in the state has some of the basic households' assets thus the relative low difference in welfare status. This is followed by Edo (43.26%), FCT (44.37), Ogun (44.49%), Osun (44.73%) and Anambra (45.21%).

Figure 1 shows the pattern of rural urban difference in Nigeria. The figure shows the southern states generally have low disparity while the northern states generally have higher urban-rural disparity in welfare

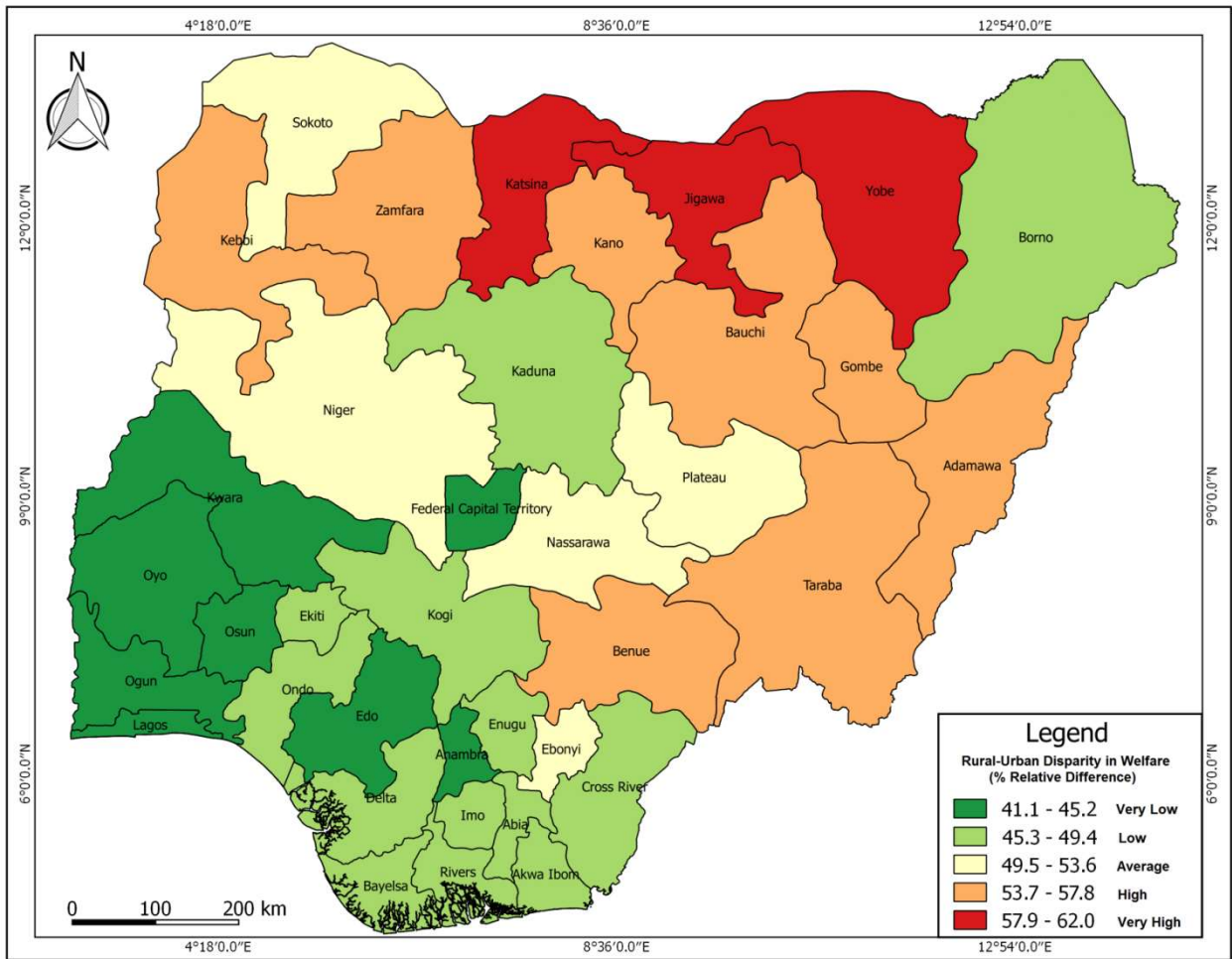


Fig 1: Rural-Urban Disparity in Nigeria

In other to ascertain the factors that influence the disparity, regression statistics was employed as earlier indicated using the relative disparity as the dependent variable. The regression model which yielded a coefficient of determination of 0.920, an F-value of 16.100 and a p-value of 0.000 are shown in table 5. The table indicates that land area, electricity, rural population, agricultural population, urban population, income and length of roads are the significant variables. Thus, income, infrastructure represented by electricity and length of road, urbanization represented by percentage of urban population and rural characteristics represented by percentage of rural population and agricultural population are the underlying determinants of disparity in urban rural welfare in the country.

In an earlier study, Oyekale et al (2004) explains that a high level of inequality exists between Nigerian rural and urban areas because urban dwellers usually earn more than rural dwellers because they have invested time and money to acquire skills. Similarly the concentration of roads and

industries in the urban areas accounts to large extent for the urban-rural disparity in the country.

Specifically, the regression shows that a unit increase in land area which is an important feature of rural areas because of the predominant of agricultural occupation brings about a decrease of disparity by -1.134 while provision of electricity will have an effect of reducing disparity by -0.525. Similarly, an increase in rural and urban populations and income with the standardized coefficients and t-statistics of -3.386, -275 and -0.309 respectively have significant and negative impacts on disparity in the country. This implies that unit increase in each of them will have corresponding percentage decrease of -3.386%, -0.275% and -0.309%.

On the other, an increase in agricultural population brings about a corresponding increase on disparity by 3.301%. This can be explained by the fact that it increases the ruralisation of the environment which reduces the diversification of the rural economy that is necessary of reducing urban rural welfare disparity.

Table 5: Regression Coefficient

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	294.422	81.015		3.634	.002
Dependent pop	5.654	4.737	.134	1.194	.246
Land area	-7.530	3.298	-1.134	-2.283	.033
Pop dense	-.483	.584	-.098	-.827	.418
Electricity	-6.706	1.274	-.525	-5.262	.000
Household	.859	.418	.158	2.054	.053
Family plan	-.947	.752	-.175	-1.259	.222
Rural pop	-40.699	13.696	-3.386	-2.972	.007
Agric pop	39.551	13.000	3.301	3.042	.006
Literacy	-4.063	2.683	-.207	-1.514	.145
Urban pop	-2.123	.905	-.275	-2.346	.029
Income	-39.711	12.219	-.309	-3.250	.004
Road density	-71.257	52.976	-.468	-1.345	.193
Total pop	62.496	33.362	.323	1.873	.075
Road length	6.324	2.893	.612	2.186	.040
employment	.198	.112	.322	1.763	.093

Source: Author's calculation

Policy Implication for A Balanced Development And Conclusion

The paper has clearly shown that gaps exist between urban and rural areas in welfare status in Nigeria. The disparities result from the imbalance in development between the urban and rural areas which in turn is the outcome of the concentration of population, socio-economic activities and infrastructure in the urban areas of the country. Consequently, the desired economic, social and environmental interdependence between urban and rural areas in the country is not harnessed for the development of rural areas in the country.

As a result of the desired complementarities between urban and rural areas, there becomes the need to adopt approaches to ensure balanced development in the country. This calls for the creation of equal opportunities to people in both rural and urban areas to participate in, contribute to and benefit from development. In other words, the government should ensure that a level playing ground is established and maintained in both urban and rural areas. This can be achieved by adopting rural-urban linkage development strategy, which posits urban and rural areas as the two ends of human settlements continuum. The strategy while emphasizing policies that are supportive of urbanization and at the same time addresses challenges facing rural development. The strategy if adopted in the country will enhance the development of both urban and rural areas in general and rural areas in particular through increased flow of people (by way

of migration and commuting), public and private capital, and trade, ideas, and information and innovation diffusion.

It has also been noted that road development in particular and infrastructure in general are important determinants of urban- rural disparity in welfare in Nigeria. Again this could be explained by the concentration of infrastructure facilities in urban areas so that the more of the infrastructures in urban areas to the detriment of rural areas, the wider the gaps between the spatial units. Therefore, adequate investment in rural infrastructure will not only improve rural productivity and increase access to markets, jobs and public services in rural areas but will also reduce the inequality between urban and rural areas. Moreover, adequate provision of infrastructure is the backbone of the urban-rural development linkage here proposed for the achievement of balanced development in the country.

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