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POVERTY DYNAMICS AND DURATIONS IN NIGERIA: EVIDENCE FROM GENERAL HOUSEHOLD SURVEY

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Abstract

Most of the existing poverty studies in Nigeria are static leading to the failure to capture three possibilities; namely poverty exit; poverty entry and poverty re-entry. Building on the argument that static poverty estimate drawn from independent cross-surveys tend to understate the extent of poverty and unable to provide information on individual poverty experiences across time and space. Hence, this study examined poverty dynamics and durations in Nigeria between 2010 and 2016, using the GHS panel data. The data consists of 4,455 households in three different periods (waves), giving a total of 13,365 observations. Three research questions were posed: how intensive is household poverty in Nigeria in the last decade? How long does it take for the poor to exit the poverty zone in Nigeria? Is household poverty in Nigeria static or dynamic? Using the spell-based method (SBM), the study finds that household poverty in Nigeria is high and intensive; with poverty headcount, poverty gap and poverty severity indices of 82.67%; 50.53% and 35.6%, respectively; across the six geo-political zones, gender and place of residence. Second, if the income/expenditure of the currently poor households in Nigeria continue to grow at less than 10% it will take the poor more than 10 years to exit poverty. Third, more Nigerians are vulnerable to poverty, with a high entry rate (57.08%); low exit rate (8.97%), and possibility of re-entry (7.41%). Based on the findings of this study, we recommend among others that the government and relevant stakeholders should pursue rigorous intervention policies that will help reduce poverty, policy as social safety nets.

Keywords: Keywords: Keywords: Poverty dynamics, durations, general household survey, Nigeria
JEL Codes: I1, I32, E31

1. Introduction

Global statistics on poverty present a disturbing reality. According to the World Bank (2021) global extreme poverty rose in 2020 for the first time in over 20 years as the disruption of the COVID-19 pandemic

compounded the forces of conflict and climate change, which were already slowing poverty reduction progress. About 120 million additional people are living in poverty as a result of the pandemic, and this number is expected to rise to about 150 million by the end of 2021. In Africa, the situation is even worrisome. For instance, in Africa, one in ten people live on less than between US$1 and US$1.90 a day - the internationally agreed poverty line. The majority of the global poor live in sub-Saharan Africa, almost half of poor people in sub-Saharan Africa live in just five countries: Nigeria, the Democratic Republic of Congo, Tanzania, Ethiopia, and Madagascar (World Bank, 2021). Table 1.1 paints a clear picture of the global poverty profile as of December 2020.

Table 1.1: Poverty profile across continents

Continents	Population	People living in extreme poverty	% of people living in extreme poverty	Target escape rate (People/min)	Current escape rate (People/min)
Africa	1,336,570,978	481,251,093	36%	90	-18
Asia	4,579,404,953	224,546,864	5%	42	66
Europe	735,434l465	2,426,246	0.3%	Nil	0.2
N/America	592,400,646	10,957,555	2%	Nil	0.5
S/America	434,974,677	30,846,072	7%	5.6	-2.1
Oceania	40,737,501	2,904,063	7%	0.5	-0.1

Source: *World Poverty Clock (https://worldpoverty.io/map, December 1, 2020)*

Africa tops the global poverty profile with about 36% of its population living in extreme poverty. With a negative escape rate, 18 people fall into poverty in Africa every minute. This trajectory suggests that in the next ten years, at least an additional 93 million people in African will fall into poverty. There is a consensus that poverty is detrimental to sustainable development and that it encourages all forms of social vices. Poverty encourages negative and unsustainable natural resource exploitation practices. Poverty poses a big challenge to sustainable development; hence its eradication is one of the greatest challenges facing the world. Consequently, poverty has featured prominently in global discussions on sustainable growth and development. For instance, the United Nations (2021) currently lists 21 Global Issues and poverty is one of them. The UN has also set 17 goals to be achieved by 2030 and poverty

is goal number one (SDG 1). The Sustainable Development Goals (SDGs) build on the Millennium Development Goals (MDGs) which also emphasized poverty as the priority.

In Nigeria, poverty appears to be systemic. Many Nigerians now live in extreme poverty. The number of Nigerians living in extreme poverty is expected to increase in the next ten years. In its recent update on Nigeria, the World Bank (2020) holds that 40% of Nigerians (83 million people) live below the poverty line, meaning that on average, 4 out of every 10 individuals in Nigeria live below the poverty line. Though this is a huge number, in some quarters, it is argued that the number does not reflect the true poverty situation in Nigeria. The argument is based on the understanding that there is high income inequality in Nigeria. For instance, Panchal (2020) is of the view that about 50% of Nigeria's population lives in severe poverty.

Though, there may be disagreement on what the exact number of Nigerians living in poverty is, what is clear is that many Nigerians are poor, and this number is expected to rise unless something is done. One of the challenges of poverty is that poverty according to Bastiaensen, De Herdt and D'Exelle (2005) is not an individual characteristic, but rather characterizes the situation in which individuals or groups of people find themselves at a point in time, making poverty an intractable problem for social scientists and policymakers (Rupasingha & Goetz, 2003). Hence, solving poverty problems in Nigeria will begin with understanding its nature. For example, is poverty static or dynamic? How severe is poverty in Nigeria? Does poverty manifest in a symmetric form across places and individuals? What is its duration? Providing empirical answers to these questions would be a precondition for effective pro-poor development strategies in Nigeria.

The interest in poverty dynamics and durations has grown considerably in recent times. The growth in this area of research is based on the understanding that cross-sectional poverty analysis, which is static in form can represent very different realities, they do not say whether the same people are poor or non-poor from year to year or whether the group of poor largely consists of people with short poverty durations. By implication, static poverty studies have failed to capture three possibilities. First, the possibility of the poor or the non-poor remaining poor or non-poor from time to time respectively. Second,

the possibility of the poor or the non-poor becoming non-poor or poor overtime respectively. Third, the possibility of people who were formerly poor becoming poor again after being non-poor over time. Thus, the basic issue underlying dynamic poverty analysis is the issue of poverty exit, poverty entry and poverty re-entry.

This is the concern this study tries to address, in addition to the length of time the poor remain poor given their growth rate of expenditure. To some extent, this issue has not been conclusively queried in Nigeria, at least to the best of our knowledge. Most of the existing poverty studies in Nigeria are static — providing the incidence of poverty and its correlates at a given time, for example, Aiyedogbon and Ohwofasa, (2012); Akerele et al., (2012); Anyanwu, (2005); Anyanwu, (2013); Apata et al (2010) etc. This approach does not allow us to see how households' poverty changes over time, or to identify factors responsible for such dynamics. By implication, static poverty studies have failed to capture three possibilities; namely poverty exit; poverty entry and poverty re-entry. Thus, the basic issue underlying dynamic poverty analysis is the issue of poverty exit, poverty entry and poverty re-entry. This is the major concern this study tries to address, in addition to the length of time the poor remain poor.

We are not discounting the fact that there are studies in Nigeria that have attempted to provide some understanding of poverty dynamics and durations. For instance, the few known poverty dynamic studies in Nigeria were; Ikelu and Onyukwu (2016); Dapel (2018); Eigbiremelen (2018). While this study is similar to those of Ikelu and Onyukwu (2016) and Eigbiremelen (2018) in that they all make use of the same dataset, it is distinct in three respects. First, is the approach we adopted in developing the panel dataset. The GHS assigns a unique identity (ID) to the selected households, using this unique ID; we were able to follow the same set of households for the period, removing/filtering households that have not been consistent. Second, unlike Ikelu and Onyukwu (2016); Eigbiremelen (2018), we extended the dataset to include the third wave of GHS, hence allowing us to examine the issue of poverty re-entry and new poverty entry. Third, we took cognizance of Nigeria's geo-political divide and place of residence in our analysis; hence we examined poverty dynamics in Nigeria across the six geo-political zones and places of residence.

2. Literature Review

2.1 Conceptual Framework

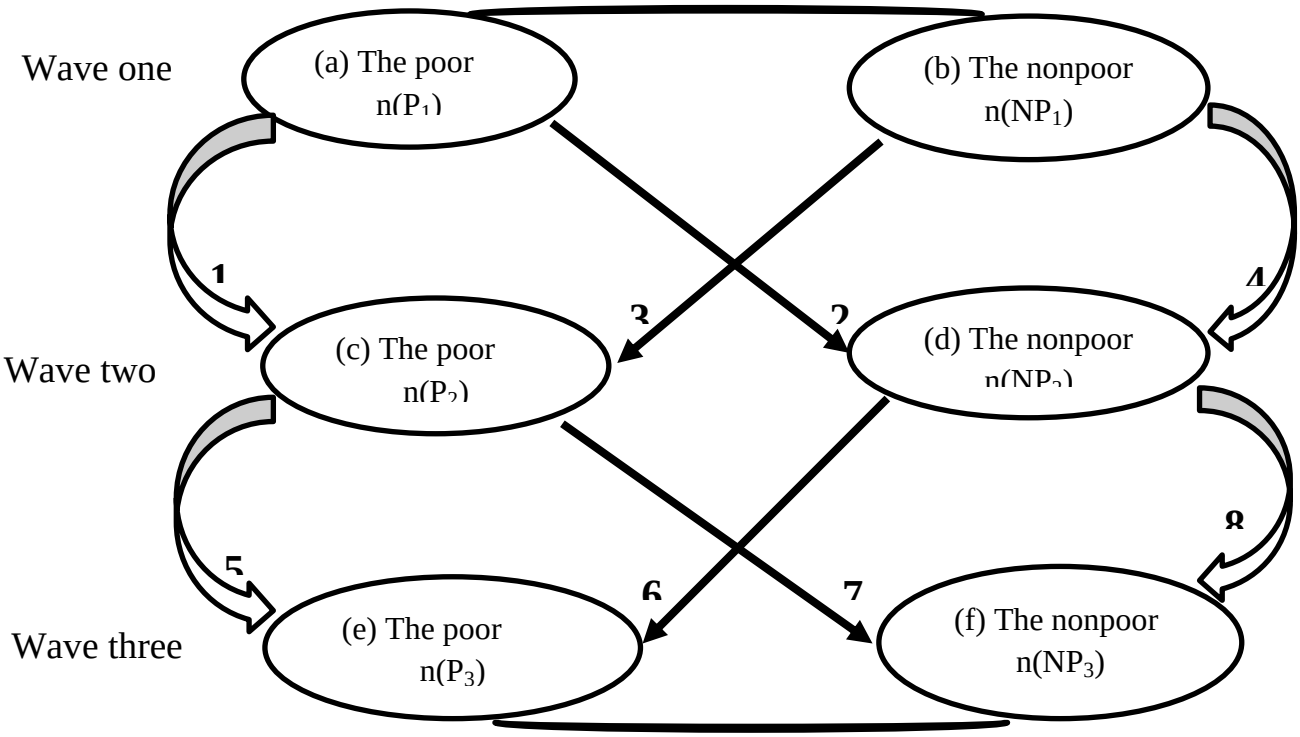


Figure 2.1: Conceptual framework for dynamic poverty analysis

Source: Authors' Conceptualisation, (2022)

Points (a), (c) and (e) are sets containing all the households whose incomes/expenditures fall below the defined poverty line in wave one, wave two and wave three respectively, while points (b), (d) and (f) are sets containing all the households whose incomes/expenditures are above the established poverty line. The households in sets (a), (c) and (e) are considered poor. Those in sets (b), (d) and (f) are nonpoor households. The dynamic nature of the framework is made obvious by the fact that households can transit from one point to another over time. These possibilities are depicted by the eight arrows.

The first arrow [point (a) to point (c)] represents the fraction of the sample population that was poor in the first round of

the survey (wave 1) and still poor in the second round of the survey (wave 2). The second arrow [point (a) to point (d)] represents the fraction of the sample population that was poor in the first round of the survey (wave 1) and non-poor in the second round of the survey (wave 2). This possibility defines the poverty exit or escape. The third arrow [point (b) to point (c) represents the fraction of the sample population that was nonpoor in the first round of the survey (wave 1) and poor in the second round of the survey (wave 2). Again, this possibility defines the poverty entry. The fourth arrow [point (b) to point (d) represents the fraction of the sample population that was nonpoor in the first round of the survey (wave 1) and remained nonpoor in the second round of the survey (wave 2).

Possibilities 1, 2, 3 and 4 hold for a two-period analysis. If we extend the analysis to three rounds, we have possibilities 5, 6, 7 and 8 and each of these arrows has two possibilities. The fifth arrow [point (c) to (e)] has two possibilities. First, those households that were poor in the first round of the survey (wave 1), were still poor in the second round of the survey (wave 2) and remained poor in the third round of the survey (wave 3). The second possibility is those households that were nonpoor in the first round of the survey (wave 1), became poor in the second round of the survey (wave 2) and remained poor in the third round of the survey (wave 3). These possibilities may suggest chronic poverty, depending on the length of time of the analysis. The sixth, seventh and eighth arrows all have two possibilities as summarised below:

(6a) Nonpoor → nonpoor → poor and (6b) poor → nonpoor → poor. (7a) poor → poor → nonpoor and (7b) Nonpoor → poor → nonpoor; (8a) poor → nonpoor → nonpoor and (8b) Nonpoor → nonpoor → nonpoor

2.2 Empirical Literature

The literature is replete with issues on poverty, but given our scope, we review empirical studies along two key dimensions -- studies on static poverty and the ones on dynamic poverty with a special focus on Nigeria studies. For instance, Anyanwu (2005) studied the profile of rural poverty in Nigeria, what accounts for it, and what specific measures can be taken to reduce it, using the 1996 National Consumer Survey data set. The results show that by 1996, the proportion of the rural population living under the poverty line stood at 71.7%, up from 46% in 1992. The depth of poverty in rural Nigeria was 33 compared with 18.9% severity during the same year. A logistic regression model was

also estimated based on the data, with the probability of a household being poor as the dependent variable and a set of personal, demographic, economic and locational variables as explanatory variables. From the multivariate analysis, the variables that are positively and significantly correlated with the probability of being poor in rural Nigeria are household size, primary education level and below, and rural occupations in the clerical, production and 'other' activities. The variables that are negatively and significantly correlated with the probability of being poor are quadratic household size, and residence in the North-Central, South-East and South-South zones of rural Nigeria.

Apata, et al. (2010) examined the determinants of rural poverty in South-Western Nigeria. Using a probit model on a sample of 500 smallholder farmers, the study attempted to establish the factors influencing the probability of households escaping chronic poverty. The study found that access to micro-credit, education, participation in agricultural workshops/seminars, livestock assets, and access to extension services significantly influence the probability of households existing in chronic poverty. In the same vain, Akerele, et al. (2012) explored both the socioeconomic determinants of poverty and poverty incidence among urban households in South-West Nigeria. A multistage sampling approach was used to select 80 households who were interviewed using a well-structured questionnaire. The data collected were analysed through the poverty index and Tobit regression model. The study found that 41% of the households covered by the study were poor. The incidence and depth of poverty were higher among female-headed households with values of 0.26 and 0.43, respectively. The same pattern was also found among households with a larger number of dependents with values ranging from 0.74 to 1.00 for incidence of poverty and from 0.70 to 0.77 for depth of poverty. On the determinants of poverty, dependency ratio, household assets and educational status of household head, among others, are socio-economic factors influencing poverty.

Anyanwu (2013) re-examined the poverty profile as well as the factors driving poverty in Nigeria using data from the Nigerian National Consumer Survey (NCS) of 2003/2004. The probability of a household being poor was examined for the nation as a whole, as well as male-headed and female-headed households and for urban/rural geographical areas. In particular, the variables that are positively and significantly correlated with the probability of

being poor nationally are household size, lack of education, residence in the North Central zone, being single, and being a Moslem. The variables that are negatively and significantly correlated with the probability of being poor are the age of the household head, quadratic of household size and residence in an urban area, post-secondary (tertiary) education attainment, being a Christian, and residence in the South-South, South-East, South-West and North-East zones of the country.

Similarly, Ogwumike and Akinnibosun (2013) investigated the determinants of poverty among farming households in Nigeria. The study adopted the National Bureau of Statistics (NBS) measure of poverty and employed the logit regression model to estimate the effect of the socio-economic variables on poverty among farming households. The results show a high incidence of poverty among farming households. Age, size of household, income, and the number of farms are major determinants of poverty among farming households. Further, living in the North-East, North-Central, South-East, and South-South geo-political zones relative to the North-West are major determinants of poverty. The results of marginal effects analysis reinforce the conclusion that the above factors are major determinants of poverty among farming households.

Some of the earliest studies on poverty transitions/dynamics were carried out in the USA. For example, Ellwood and Bane (1986) examined poverty dynamics in the USA among persons Under Age 65 using Panel Study of Income Dynamics (PSID) data covering the periods 1970 – 1982. Using Bivariate Hazard Rate, the study evaluated poverty exits, events and duration among persons Under Age 65 in the USA. Their main finding was that while most of those who fall into poverty exit poverty quickly, the bulk of those poor in a particular period are in the midst of a long poverty spell. They also estimated that less than 40% of poverty spells begin because of a drop in the heads' earnings, while 60% of the spells end when the heads' earnings increase. Similarly, studies like Cellini, McKernan and Ratcliffe (2008); Valletta (2006) found the annual entry rate to poverty to be around 4-5 per cent. While the exit rate from poverty normally lies between 25 and 45 per cent. Exit rates do however differ dramatically between groups with different poverty durations. Damioli (2009) found the same pattern of decreasing exit rates, although at different levels in 11 European countries (excluding Sweden). This

reduction can be attributed to the effect of the selection of more vulnerable people into higher durations, or of so-called duration dependence or state dependence where previous poverty affects the risk of continuing in poverty.

In Nigeria, the issue of poverty dynamics has not been fully explored. One of the reasons for this gap is the unavailability of a panel dataset at the household level. This type of data implies that the same set of households would need to be followed or studied beyond the current period. To overcome this problem, the researcher would have to construct panel datasets out of multiple rounds of cross-sectional data. In Nigeria, we are aware of a few such studies, including Ikelu and Onyukwu (2016); Dapel (2018); Eigbiremelen (2018).

Ikelu and Onyukwu (2016) investigated the dynamics of poverty in Nigeria across two periods: post-planting and post-harvest seasons. Two poverty levels were used in analysing the household survey data. The results show that about 82.11% of the population was categorized as living under US$2/day in the post-planting season and 83.32% in the post-harvest season. However, 61.93% of the population was said to be extremely poor during the post-planting season and 62.02% in the post-harvest season. In actual sense, an increase of 0.09% in poverty levels was noticed after the first visit for the extremely poor and an increase of 1.21% in poverty levels was seen after the second visit for the merely poor.

Dapel (2018) using the available six sweeps of household surveys of Nigeria, spanning from 1980 to 2010 studied poverty mobility in Nigeria. The study estimated the rates of poverty transitions and the two components of poverty dynamics. In addition, the study examined whether different processes are at work in determining the estimated two components of poverty. The study found that between 1980 and 1985, about 0.11–9.5 per cent of Nigeria's population escaped poverty while 21.94–32.27 per cent moved into poverty during the period. Similarly, Eigbiremolen (2018) examined the incidence and trends of poverty as well as poverty dynamics in Nigeria using the General Household Survey panel data. Estimates show a considerably lower poverty incidence compared with previous figures. Poverty incidence, however, increased, albeit marginally, within the periods under study. Results from the transition model indicate that small households and male-headed households are less likely to remain in poverty, less likely

to fall into poverty and more likely to stay non-poor.

3 Data and Methodology

3.1 Data and Data Sources

The study made use of the Panel Component of the General Household Survey. The GHS is a cross-sectional survey of 22,000 households throughout the country. The panel component (GHS-Panel) is now being applied to 5,000 households of the GHS and covers a wide range of socio-economic topics. The GHS is undertaken by the National Bureau of Statistics (NBS) in collaboration with other agencies/organizations like the World Bank, the Federal Ministry of Agriculture and Rural Development, the National Food Reserve Agency and the Bill and Melinda Gates Foundation. The GHS has been following the same set of 5, 000 households for almost a decade now. Currently, the GHS has four waves, each in two visits (post-planting and post-harvest visits). The first wave started in 2010 and ended in 2011. The second wave started in 2012 and ended in 2013. The third wave started in 2015 and ended in 2016. The fourth commenced in 2018 and ended in 2019. This paper made use of the first three waves because the identified households have been consistently followed up to the third wave. In the fourth wave, a new set of households totalling 3,600 were added, retaining just 1,400 of the original households. Since our objective is to explore poverty dynamics amongst households, including wave four will substantially reduce our sample and consequently bias the results.

3.2 Theoretical Framework

Building on the permanent income hypothesis, we adopt Bane and Ellwood's (1986) framework for analysing the poverty dynamic. Dynamic poverty analysis, unlike a point-in-time (or snapshot) analysis of poverty, exposes how people experience chronic and/or transient poverty across time and space domains. It traces the same individuals or households over time and reveals the proportion of the population that (i) transits in and out of poverty; (ii) stays in poverty; and (iii) stays out of poverty. There are two main categories of frameworks in the literature for measuring and analysing poverty dynamics. The first is the spell-based framework pioneered by Bane and Ellwood (1986). This framework has been used extensively in poverty dynamic and has undergone some improvements by authors such as; Jarvis and Jenkins (1995), Jenkins (2001); Cappellari and Jenkins (2002); and recently, Dang, et al., (2014). The second is the component-based

framework of Jalan and Ravallion (1998), and Duclos, Araar and Giles (2010).

The major difference between the two frameworks is that the spell-based method (SBM) focuses mainly on the movement back and forth across the poverty line in income (or consumption) of households, and does not capture poverty dynamics evident in income variability that occurs below the poverty line. The component-based method (CBM) captures this variability in income/expenditure, not just around the poverty line, and decomposes total poverty into two components: transient and chronic. This current study, however, adopts the spell-based method, because it adequately addresses our research objectives.

Expanding on the basic concepts of the SBM, Hulme and Shephard (2003) provide a four-tier categorization of poverty experiences across time: (i) the *always poor*—those with income (or consumption) in each available observed period below a given poverty line; (ii) the *usually poor*—the longitudinal average of their living standards, overall observed periods, is below the defined poverty threshold, but non-poor in at least one of the periods; (iii) the *churning poor*—the living standards, over time, fluctuates around the poverty line; they stay out of poverty as much are they stay in; (iv) the *occasionally poor*—their time-mean (a surrogate of permanent income) is above the poverty line but they have, at least, experienced a poverty spell.

3.3 Empirical Model

To achieve the stated research objectives, we specify some models; namely the spell-based model for poverty dynamic, the poverty intensity model and the poverty duration model.

3.3.1 Poverty Dynamic: Spell-based model

We present this model in two scenarios

Scenario 1: We are interested in estimating the degree of movement into and out of poverty over two periods. Our baseline model captures the fractions of households in the population that are below the poverty line in period 2 after being above the poverty line in period 1. Thus:

$$P\ (Y_{i1} > Z \text{ and } Y_{i2} < Z_{i2}) \quad (3.1)$$

Where: P = poverty indicator such that P = 1, if $Y_i < Z$ (i.e. (the household is considered poor) and P = 0, if $Y_i > Z$ (the household is considered nonpoor). Y_{i1} and Y_{i2} = consumptions (in real terms) of the *i*th household in the first and second periods respectively. Z = (time-invariant) real poverty line for the two periods of interest.

In the spell-based model, the following cases are of interest: comparing *i*th household's consumption Y_{it} with poverty threshold Z fixed in real terms, over two periods, $t = 1, 2$: for movement between two periods, we estimate the fraction, from the entire population, of:

$$Y_{i1} < Z \text{ and } Y_{i2} < Z \quad (3.2)$$

Poor households who remained poor in both periods of the survey, poverty immobility, i.e., poor in the first period and remained poor in the second period.

$$Y_{i1} < Z \text{ and } Y_{i2} > Z \quad (3.3)$$

Poor households in the first period of the survey who escaped poverty in the second period of the survey, i.e., mobility out of poverty or poverty exit.

$$Y_{i1} > Z \text{ and } Y_{i2} < Z \quad (3.4)$$

Non-poor households in the first period of the survey who became poor in the second period of the survey, i.e. transition into poverty or poverty entry.

$$Y_{i1} > Z \text{ and } Y_{i2} > Z \quad (3.5)$$

Nonpoor households remained nonpoor in both periods of the survey, i.e., nonpoor in the first period and remained nonpoor in the second period.

Scenario 2: To analyse poverty mobility beyond two periods, we extend this method to a case where there are three rounds of the survey. We are, therefore, interested in estimating the following values:

$$Y_{i1} < Z;\ Y_{i2} < Z \text{ and } Y_{i3} < Z \quad (3.6)$$

Poor households in the first period of the survey who remained poor in the second and third periods of the survey, i.e. chronic poverty.

$$Y_{i1} > Z;\ Y_{i2} < Z \text{ and } Y_{i3} < Z \quad (3.7)$$

Non-poor households in the first period of the survey who became poor in the second period of the survey and remained poor in the third wave of the survey, i.e. transition into poverty or poverty entry.

$$Y_{i1} > Z;\ Y_{i2} > Z \text{ and } Y_{i3} < Z \quad (3.8)$$

Non-poor households in the first period of the survey who remained nonpoor in the second period of the survey but became poor in the

third wave of the survey, i.e. new entry into poverty.

$$Y_{i1} < Z;\ Y_{i2} > Z \text{ and } Y_{i3} < Z$$

(3.9)

Poor households in the first period of the survey who were nonpoor in the second period of the survey but became poor again in the third wave of the survey, i.e. re-entry into poverty.

$$Y_{i1} < Z;\ Y_{i2} < Z \text{ and } Y_{i3} > Z$$

(3.10)

Poor households in the first period of the survey who remained poor in the second period of the survey but became nonpoor in the third wave of the survey, i.e. new poverty exit.

$$Y_{i1} > Z;\ Y_{i2} < Z \text{ and } Y_{i3} > Z$$

(3.11)

Nonpoor households in the first period of the survey who became nonpoor in the second period of the survey but became nonpoor in the third wave of the survey, i.e. poverty exit

$$Y_{i1} < Z;\ Y_{i2} > Z \text{ and } Y_{i3} > Z$$

(3.12)

Poor households in the first period of the survey who became nonpoor in the second period of the survey and remained nonpoor in the third wave of the survey, i.e. nonpoor.

$$Y_{i1} > Z;\ Y_{i2} > Z \text{ and } Y_{i3} > Z$$

(3.13)

Nonpoor households in the first period of the survey who remained nonpoor in the second and third periods of the survey i.e. nonpoor.

3.3.2 Poverty Durations: Time taken to exit

For an economy like Nigeria that is trying to evolve poverty reduction strategies, it may be useful to show how long it would take, at different potential economic growth rates, for the average poor person to exit poverty. We derive this statistic using Morduch's (1998) approach. The statistic is decomposable by population sub-groups and is also sensitive to how expenditure (or income) is distributed among the poor. For the *j*th person below the poverty line, the expected time to exit poverty (i.e., to reach the poverty line), if consumption per capita grows at a positive rate *g* per year is:

$$t_g^j \approx \frac{\text{Ln}(Z) - \text{Ln}(Yj)}{g} = \frac{(W)}{g}$$

(3.14)

Where t_g^j is the time it will take jth individuals/households to exit poverty given the growth rate of their expenditure (g), Z is the poverty line, and Y is the household

expenditure. The log difference between the poverty line and expenditure is W, which is the watt index.

3.4 Estimation Procedure/Techniques

The household characteristics such as gender, marital status, place of residence, household size and geopolitical areas, for each of the three waves is presented using descriptive statistics while the poverty dynamics in Nigeria is estimated using the spell-based method (SBM). A total of 4,455 households in three different periods (waves), that is 13,365 observations were used for the analysis. The dataset used for this study was extracted from the Nigeria General Household Survey (GHS – Panel), different waves.

4. Empirical Results

As a preliminary analysis, the dataset is summarized in Table 4.1.

4.1 Household Characteristics

Table 4.1: The Household Characteristics

Characteristics	Wave 1 2010 – 2011		Wave 2 2012 – 2013		Wave 3 2015 – 2016	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Gender:						
Male	3812	85.6	3812	85.6	3812	85.6
Female	643	14.4	643	14.4%	643	14.4
Marital Status:						
Married (Monogamous)	2808	63	2628	59	2378	53.4
Married (Polygamous)	830	18.6	872	19.6	828	18.6
Widowed	540	12.1	571	12.8	541	12.1
Others	277	6.1	245	5.4	207	4.5
Missing System	----	----	139	3.1	501	11.2
Place of Residence:						
Urban	1363	30.6	1370	30.7	1381	31
Rural	3092	69.4	3085	69.3	3074	69
Household size:						
1 – 5 Person	2186	49.2	1865	41.9	1468	33
6 – 10 Persons	1895	42.5	2071	46.5	2254	50.6
11 Persons +	374	8.3	519	11.6	733	16.4
Zone/Region:						
North-Central	769	17.3	772	17.3	783	17.6
North-East	621	13.9	621	13.9	616	13.8
North-West	870	19.5	868	19.5	869	19.5
South-East	741	16.6	741	16.6	741	16.6
South-South	713	16	713	16	713	16
South-West	741	16.6	740	16.6	733	16.5
Total	**4455**	**100%**	**4455**	**100%**	**4455**	**100%**

Source: The Authors' Computation (2022)

Table 4.1 shows the distribution of the households across gender, marital status, place of residence, household size and zone in each wave. Out of the 4,455 households studied, about 85.6% (3,812) were males, while 14.4% (643) were females. This number is the same across the three waves. Of course, we don't expect gender to change, since it is time-invariant. The majority of the households are married and living with their spouses (either in monogamous or polygamous settings). About 12% of the households are widowed, while less than 6% of them are in an informal union, divorced, separated or never married, this we classified into others. On average, about 41.4% of the households live in a family of size less than five persons. On the other hand, more than 50% of the households live in a family of size six and above persons. Rural households make up about 70% of the population, while about 30% of the households are urban dwellers. The distribution of households across geopolitical zones appears to be evenly distributed, except for about ±3% point deviations from the mean value observed in the North-West and North-East zones respectively. From the foregoing analyses, it is clear that the survey captured typical Nigerian households, and hence appropriate for poverty dynamic analysis in Nigeria.

4.2 Estimates of Poverty Dynamic

We estimate the rate of poverty exit, entry and re-entry (poverty dynamic) among the households, we provide a schema showing the poverty incidence in the three waves. To do this, we reproduce the table in the conceptual framework, but this time, with their known values. This is shown in Table 4.2.

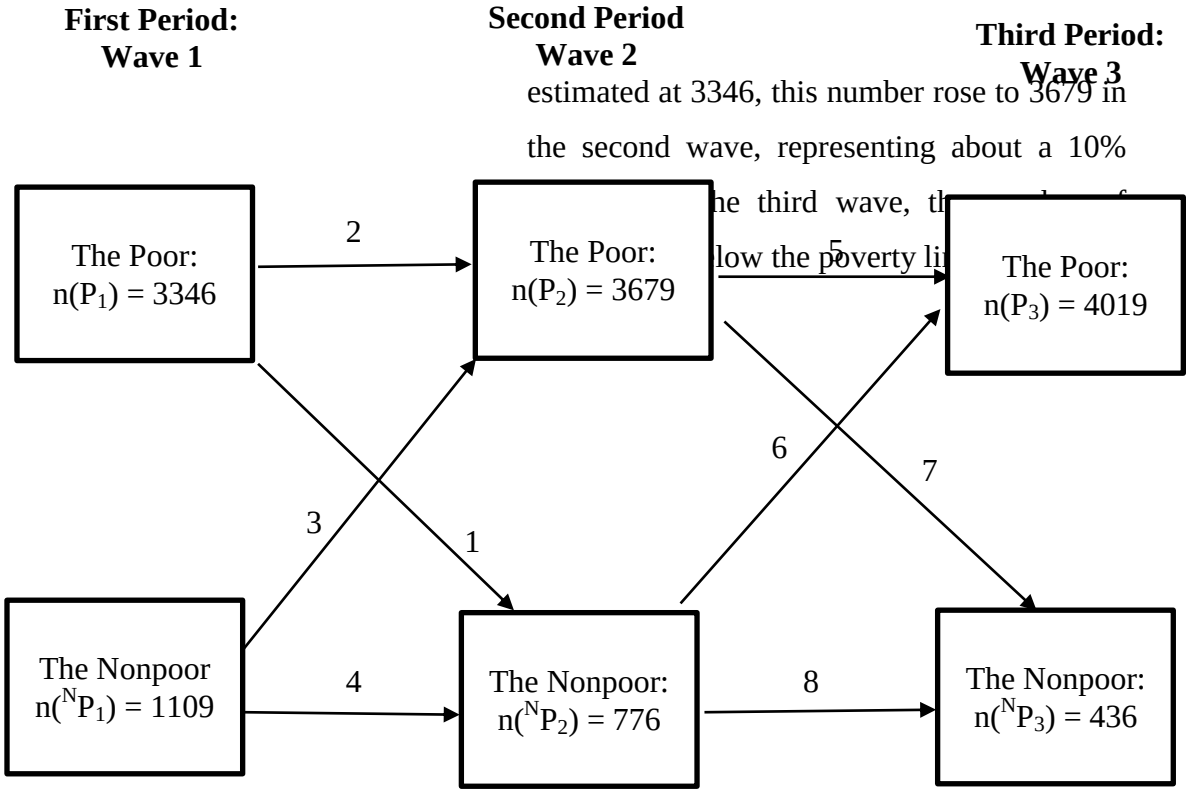


Figure 4.2: Schema showing movement in poverty among selected households in Nigeria
Source: The Authors' Computation, (2022)

The schema shows a snapshot of poverty movement among selected households in Nigeria as indicated by the Panel GHS between 2010 and 2016. The data shows that the number of people living below the poverty line has been growing. In the first wave, for instance, the number of the poor was estimated at 3346, this number rose to 3679 in the second wave, representing about a 10% [illegible] the third wave, th[illegible] low the poverty li[illegible] further by 9.

2% to settle at 4029 persons. On the other, the number of the nonpoor has been falling. What this schema does not reveal to us is the proportion of people who exited, entered or re-entered poverty during these periods. This information is documented in the next subsections under two different scenarios, namely: a two-case scenario and a three-case scenario.

4.2.1 A Two-Case Scenario

We present spell-based non-parametric rates of poverty mobility estimates in Nigeria using Wave 1 and Wave 2 of the GHS. The results are summarised in Table 4.2

4.2: Spell-based Non-parametric Rates of Poverty Mobility Estimates for waves 1 & 2

	Poverty Status			
Category	**P → P (Remain Poor) (3.2)**	**P → NP (Poverty exit) (3.3)**	**NP →P (Poverty entry) (3.4)**	**NP → NP (Remain Nonpoor) (3.5)**
Full Sample	91.03	8.97	57.08	42.92
Place of Residence:				
Urban	80.71	17.70	50.0	48.53
Rural	93.35	6.05	62.12	35.58
Zone:				
North-Central	90.59	9.08	49.69	49.69
North-East	93.73	5.89	54.74	45.26
North-West	95.11	4.62	70.15	29.10
South-East	90.79	9.21	61.62	38.38
South-South	88.84	10.94	54.66	45.34
South-West	88.16	16.42	53.68	45.59

Source: The Authors' Computation (2022)

Table 4.2 shows the poverty mobility in a two-case scenario for the full sample (national), place of residence and geopolitical zone. For the full sample, the result indicates that 91.03% of those who were poor in the first wave (2010/2011), remained poor in the second wave (2012/2013). 8.97% of those who were initially poor (in wave 1) exited poverty in the second wave. However, about 57.08% of the initial nonpoor entered poverty in the second wave. Further, about 42.92% of the initially nonpoor (wave 1), remained nonpoor in the second wave.

In terms of place of residence, the estimates show that 80.71% of the initially poor in the urban area remained in poverty in the second wave, the fraction is about 93.35% for rural dwellers. While 17.7% and 6.05% of the initially poor escaped poverty in urban and rural areas, 50% and 62.12% of the initially

nonpoor entered poverty zone in urban and rural areas respectively, during these periods. A fraction of the initially nonpoor households who remained nonpoor in the urban and rural areas are respectively, 48.53% and 35.58%.

Looking at poverty mobility across geopolitical zones, the results indicate that in the North-Central, 90.59% of those classified as being poor in the first wave, remained poor in the second wave. While the exit rate in the North-Central is about 9.08%, the entry rate is about 49.69%. On the other hand, the fraction of the total population that was initially nonpoor in the North-Central and remained nonpoor in the second wave is about 49.69%. In the North-East, the fraction of households who were classified as being poor in the first wave and still poor in the second wave is about 93.73%. The exit rate is about 5.89%, while the entry rate is about 54.74%. The fraction of the initially nonpoor in this zone that remained nonpoor in the second wave is about 45.26%. In the North-West, the fraction of those that were classified as being poor in the first wave that remained poor in the second wave is about 95.11%, with an exit rate of about 4.62%. The entry rate in the North-West is about 70.15%. The fraction of the initially nonpoor in this zone that remained nonpoor in the second wave is about 29.10%.

In the South-East, the results indicate that 90.79% of those that were classified as being poor in the first wave, remained poor in the second wave. The exit rate in the South-East is about 9.21%, while the entry rate is about 61.62%. The results further indicate that the fraction of the total population that was nonpoor in the first wave that remained nonpoor in the second wave is about 38.38%. In the South-South, the fraction of those who were classified as being poor in the first wave that remained poor in the second wave is about 88.84%. The exit rate is about 10.94%, while the entry rate is about 54.66%. The fraction of the initially nonpoor in this zone that remained nonpoor in the second wave is about 45.34%. In the South-West, the fraction of those that were classified as being poor in the first wave that remained poor in the second wave is about 88.16%, with an exit rate of about 16.42%. The entry rate is about 53.68%. The fraction of the initially nonpoor in this zone that remained nonpoor in the second wave is about 45.59%.

4.2.2 A Three-Case Scenario

We present spell-based non-parametric rates of poverty mobility estimates in Nigeria using the three waves of the GHS. The results are summarised in Table 4.3.

Table 4.3: Spell-based Non-parametric Rates of Poverty Mobility Estimates for Wave 1, wave 2 and wave 3

Category	Poverty Status[1]							
	Poor ^{C} (3.6)	Poor (3.7)	Entry ^{N} (3.8)	Re-entry (3.9)	Exit ^{N} (3.10)	Exit (3.11)	Nonpoor (3.12)	Nonpoor (3.13)
Full Sample	88.55	49.23	23.62	7.41	2.48	7.84	1.55	19.30
Residence:								
Urban	76.31	43.20	25.55	13.55	4.40	6.80	4.15	22.98
Rural	90.82	53.10	20.53	5.34	2.57	9.03	0.71	15.04
Zone:								
North-Central	88.94	44.17	31.29	7.76	1.65	5.52	1.32	18.40
North-East	92.21	47.37	21.05	5.89	5.89	7.37	0.57	24.21
North-West	93.21	64.18	16.42	4.21	1.90	5.97	0.41	12.69
South-East	86.92	51.01	20.71	6.81	3.87	10.61	2.39	17.68
South-South	83.26	43.72	23.89	9.01	6.01	10.93	1.93	21.46
South-West	80.17	47.43	24.26	12.79	2.99	6.25	3.62	21.32

Source: The Authors' Computation (2022)

[1] (3.6): P → P → P (3.7): NP → P → P (3.8): NP → NP → P (3.9): P → NP → P (3.10): P → P → NP (3.11): NP → P → NP (3.12): P → NP → NP (2.13): NP → NP → NP

In Table 4.3, we show the poverty mobility in a three-case scenario for the full sample (national), place of residence and geopolitical zone. In the full sample, the result indicates that 88.55% of the initially poor households are poor, these are the households who were poor in all three rounds of the survey. These households, at the operational level, can be deemed chronically poor, though we did not do a formal evaluation of this, it can be deduced from the model. The fraction of the initially nonpoor households who have remained nonpoor in three rounds of the survey is 19.30%. Almost 24% of the households that were nonpoor in Wave 1 and Wave 2 became poor in Wave 3 (new entry), while 7.41% of the initially poor households (wave 1), that escaped poverty in Wave 2 became poor again in Wave 3 (re-entry). Equations (3.10) and (3.11) present interesting pictures, we have a new exit and exit. The fraction of the initially poor households who remained poor in the second wave who escaped poverty in the third round is about 2.48% (i.e. the new exit), while 7.84% of the initially nonpoor households who entered poverty in wave 2 escaped in wave 3. There are also the nonpoor households in Wave 1 who entered the poverty zone in Wave 2 and remained poor in Wave 3 (equation 3.7) that fraction is about 49.23%. Similarly, there are poor households in Wave 1 who escaped poverty in Wave 2 and remained nonpoor in Wave 3 (equation 3.12), that fraction is about 1.55%.

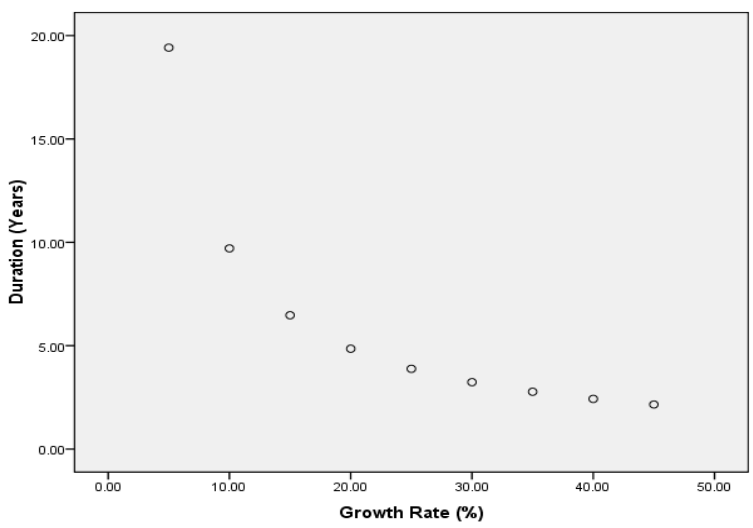
The estimates for the place of residence for the geopolitical zones follow the same interpretation, for instance, those that have remained poor all through the three waves in the urban and rural areas are 76.31% and 90.82% of the initially poor households respectively. The re-entry rates are 13.55% for urban dwellers and 5.34% for rural dwellers. For the Northern region, the re-entry rates for North-Central, North-East and North-West are 7.76%, 5.89% and 4.21%, respectively. Similarly, for the Southern region, the re-entry rates for South-East, South-South and South-West are 6.81%, 9.01% and 12.79% respectively.

4. 3 Poverty Duration

We attempt to characterise the time (in years) it will take a poor individual given a certain growth rate of expenditure. We explore this using the different alternative growth rates of expenditure. The results are presented in Table 4.4.

Table 4.4: Time to Exit Poverty at Alternative Expenditure Growth

Growth rate (%)	Duration (Years)
5	19
10	10
15	6
20	5
25	4
30	3
35	3
40	2
Watt index:	
Wave 1	0.7962
Wave 2	0.9065
Wave 3	1.2098
Average	0.9708



Source: The Authors' Computation (2022)

As shown in table 4.4, if the income of households below the poverty line grows by 5%, it will take them 19 years to exit the poverty zone. For poor households whose income would grow by 10%, 15% or 20%, it will take them 10 years, 6 years or 5 years, in that order to exit poverty. The graph on the right hand summarises these alternative exit times at various growth rates of income/expenditure

5. Conclusion, Policy Implications and Recommendations

This study, examined poverty dynamics and durations in Nigeria between 2010 and 2016, using the GHS panel data in three different waves with 4,455 households in three different waves. The assessment of poverty exit and entry (that is the two-case scenario) shows that a good number of the poor households in the first wave remained poor in the second wave. While the rate of poverty exit is negligible, the entry rate is very disturbing. When evaluated based on the place of residence, the results indicate that urban residents have a greater possibility of exiting poverty than rural residents. Again, the entry rate is higher in rural areas than the urban areas. Similarly, when we look at the poverty dynamic across the six geo-political zones, the reveals that the exit rate is higher in the South than in the North, with the South-West having the highest exit rate. On the contrary, the entry rate is higher in the North with the North-West having the highest entry rate.

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that a good number of the poor households in the first wave remained poor in the second wave. While the rate of poverty exit is negligible, the entry rate is very disturbing. When evaluated based on the place of residence, the results indicate that urban residents have a greater possibility of exiting poverty than rural residents. Again, the entry rate is higher in rural areas than the urban areas. Similarly, when we look at poverty dynamics across the six geo-political zones, the reveals that the exit rate is higher in the South than in the North, with the South-West having the highest exit rate. On the contrary, the entry rate is higher in the North with the North-West having the highest entry rate. Based on the findings of this study, we recommend that the government and relevant stakeholders should pursue rigorous intervention policies that will help reduce poverty, like minimum wage increase, social safety nets (SSNs) in the form of in-kind and food transfers, conditional and unconditional cash transfers, fee waivers, public works, and school feeding programs. Again, sustainable and sincere effort should be adopted in creating jobs to make the transition from school to work for the large youthful population in Nigeria less perilous and uncertain. An investment (production) growth model, rather than the current consumption model used in Nigeria, maybe one way of achieving job creation.

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