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Federal Republic of Nigeria
Poverty Work Program
Poverty Reduction in Nigeria in the Last Decade

October 13th 2016

GPV01

AFRICA

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Poverty Reduction in Nigeria in the Last Decade

October 13, 2016

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ABBREVIATIONS AND ACRONYMS

DHS	Demographic and Health Surveys
GDP	gross domestic product
GEP	growth elasticity of poverty
GHS	General Household Survey
HOI	human opportunity index
HNLSS	Harmonized Nigeria Living Standards Survey
LGA	local government administration
MPI	multidimensional poverty index
NFE	nonfarm enterprise
NLSS	Nigeria Living Standards Survey
PPP	purchasing power parity
RIF	recentered influence function
TFP	total factor productivity
WDI	World Development Indicators

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Executive Summary

According to new estimates, per capita poverty rates in Nigeria declined by 10 percentage points, from 46.0 percent in 2004 to 35.6 percent in 2011 and 36.1 percent in 2013. The new estimates of poverty rates and trends indicate that Nigeria has been performing above expectations based on previous official poverty figures, which showed stagnation in the national poverty rate at above 60 percent during the period.

The reduction in the poverty rate was not commensurate with the rapid growth in the gross domestic product (GDP) of the country, however. Although it is one of the most rapidly growing economies in the Sub-Saharan African region, Nigeria is struggling to translate the growth into quick poverty reduction. Compared with the rest of the region and other lower-middle-income countries, poverty reduction in Nigeria has been less responsive to economic growth. Estimates of the growth elasticity of poverty (GEP) indicate that, for every 1.0 percent growth in GDP per capita, poverty declined by only 0.6 percent. Nigeria's GEP is half that of the regional average and only a fourth of that of lower-middle-income countries. The GEP was also lower than the GEPs of a number of African countries that enjoyed high growth rates in the last decade.

Three factors determined this lack of responsiveness. First, high growth rates have been accompanied by comparatively high rates of population growth. Population has been expanding at an average pace of 2.7 percent a year, and the fertility rate is among the highest in the developing world. Second, like other resource-rich economies in the developing world, Nigeria has been exhibiting a capacity to absorb labor. The most recent estimates of employment elasticity indicate that, for every 1.0 percentage point growth in GDP, employment increases by only 0.1 percent (Ajakaiye et al. 2015). Third, inequality has been widening quickly and has adversely affected poverty reduction; **o**nly half the consumption per capita growth has translated into poverty reduction. If inequality had not widened, poverty would have dropped 18 points rather than 10.

In a disaggregation of the national poverty rate, the lack of responsiveness of poverty reduction to growth can arguably be attributed to the performance of two of the six geopolitical zones into which the country is often divided: North East and North West. Together, these two zones experienced stagnation in poverty rates, while the other zones showed a reduction in poverty rates. Should the GEP be calculated without the two northern zones, it would double, and the speed of poverty reduction would be above the growth rate.

The large poverty differential between the north and south of the country reflects two different growth paths. The divide is not a feature of the last decade only; rather, it reflects a gap, accumulated over years, in various socioeconomic indicators and in economic opportunities. An examination of only national-level indicators thus provides an incomplete picture. If data are decomposed at the subnational level (zones and states), significant differences in many socioeconomic indicators and the related trends clearly emerge.

This divide is caused by the higher concentration of drivers of poverty reduction in the south. A regression-based decomposition can be used to identify the factors that have contributed to widening the divide in poverty rates between the country's zones, thereby exhibiting the main drivers. The results of such an exercise show that, relative to the northern zones, the southern zones benefited from an initial demographic dividend and managed to foster urbanization and accumulate more productive assets, more human capital, and more job opportunities.

The southern zones are closer than the northern zones to the realization of the demographic dividend. The econometric analysis identified household demographic structure as one of the most important drivers of the north-south divide. Dependency ratios in northern Nigeria were rising consistently during the last decade, reaching an average ratio of 103.6 percent against the southern ratio of 73.4 percent in 2013.

Urban residence has a strong impact in reducing the risk of poverty, and the southern zones tend to be more highly urbanized. Urban areas have an advantage over rural areas in the provision of several basic services such as electricity, water, and sanitation, and urban areas tend to offer more jobs opportunities. Agglomeration economies can emerge only in urban areas. The economies of scale and network effects that help grow business activities are characteristic of urban areas, where communications are speedier and less expensive, inputs are more easily accessible, and the size of markets is relatively larger. For example, while, in the South West, the urban population was 20 million in 2004 and had expanded to 30 million by 2013 (75 percent of the zone population), the population in the North West remained below 10 million (22 percent of the zone population) during both periods.

Human capital is greater in the southern states, where the labor market is more modern and dynamic. Whereas about 40 percent of the labor force in the north has never attended school, the proportion of the labor force without any education is around 20 percent in the south. A breakdown of labor force illiteracy rates by state and age-group reveals a country that is struggling to reduce the gap in literacy between the northern and southern zones. In the labor market, the southern zones show a higher level of diversification outside agriculture and a higher share of waged jobs. In the North East and North West, wage jobs account for less than 10 percent of total employment, while almost two-thirds of the population remain active in farming. By comparison, fewer than one worker in five in the South West is involved in farming, but over half the employed are self-employed, and one worker in four is a wage worker.

From the overall analysis, Nigeria emerges as a country harnessed by tight constraints, but with great potential. The overall picture is further complicated by the absence of a one-size-fits-all solution**.** The performances of northern and southern Nigeria could not be more at odds. The coastal parts of the South West and South South states can be considered middle-income economies that have achieved important results in poverty reduction, but are facing the typical constraints of this group of economies, such as chaotic urbanization, unmet demand for high-quality services, and an unfavorable business climate. Meanwhile, the upper northern states have been experiencing deep poverty, sluggish growth, and limited access to basic services and infrastructure. In policy intervention, this implies that, whereas the focus of the more dynamic states should be on improving the business climate and the quality of services, the poorer states face a rather more complicated set of challenges.

The conditions and growth perspectives of Nigeria have, however, changed since the end of the period analyzed in the report. The current crisis in the country has substantially reduced growth and, as a consequence, limited the trickle of growth down from more well off areas to poorer areas. Furthermore, it is likely that the conflict in the North East and parts of the North West has caused conditions to deteriorate among the local populations, and, as a result, many socioeconomic indicators have worsened. The new situation thus calls for additional analysis to form a clearer picture of the implications of events since 2013 for poverty rates and poverty reduction strategies.

The report concludes with a preliminary policy road map that can help the new government identify a comprehensive set of policies to address some of the structural problems the

country is facing. Two sets of policies are proposed: distribution-blind interventions and poverty-targeted interventions. Among the distribution-blind interventions, priority should be given to those aimed at diversifying the Nigerian economy away from oil. Rapid diversification in growth and more job creation in Nigeria depend on the twin forces of industry and service-driven wages in urban areas and agricultural productivity in rural areas. Policy interventions should thus focus on increasing the number of jobs in the modern private sector, boosting the productivity of traditional economic sectors, and fostering the occupational and geographical mobility of workers.

The poverty-targeted interventions could, on the other hand, directly reduce the gap between the southern and northern zones by tapping the potential of the northern zones. The first set of policy interventions pertains to the demographic dividend. Nigeria, particular the north, needs to implement policies aimed at generating the kind of demographic dividend that has played an important role in the growth of East Asia and other economies. The second set is directed toward the provision of basic services and infrastructure. Reducing the north-south divide requires a renewed effort to expand the supply of basic services, ranging from education to water and sanitation, and basic infrastructures, such as secondary roads and electricity. Finally, great emphasis should be put on constructing a social safety net system at the federal level. If well targeted, social protection can help reduce the inefficiencies in the allocation of resources and boost the productive potential of individuals and communities by breaking the vicious circle that links inequalities in income and opportunity across generations.

Introduction

Whether poverty has declined and by how much: the debate has been lively in Nigeria recently. Data from the last comprehensive Harmonized Nigeria Living Standards Survey (HNLSS) in 2009–10 indicated that the official poverty rate remained stubbornly high, at 62 percent of the population; this represents only a slight drop from the 64 percent that was recorded in the Nigeria Living Standards Survey (NLSS) in 2003–04. These figures betray a Nigerian performance that is at odds with the general international trend of poverty decline, particularly the decline in similarly rapidly growing developing economies. On a list of developing countries ranked by the speed of poverty reduction, Nigeria would be in the lowest 20 percent of the distribution. To meet the World Bank target of a reduction in poverty to 3 percent by 2030, Nigeria would have to generate a poverty decline that would mirror the decline in some of the leading countries in the world in reducing poverty, such as Brazil, China, and Vietnam.

It appears increasingly likely that the household consumption of Nigerians was underestimated in the 2009–10 HNLSS. A World Bank report of 2013 raised the hypothesis that consumption may have been significantly underestimated in the 2009–10 NHLSS (see appendix A) (World Bank 2013). This report notes a strange decline in reported monthly consumption in early 2010 relative to the second half of 2009 that would seem to have little economic rationale. This decline did correlate with some technical difficulties experienced during the implementation of the household survey in 2010.

The current report provides a reassessment of the poverty trends in Nigeria based on recently available data. The report makes use of new data of the National Bureau of Statistics that became available from two smaller (5,000 households) General Household Survey (GHS) panels conducted in 2010–11 and 2012–13. The GHS panel survey is largely representative at the macro-regional level in the same sense as the HNLSS. It is not representative across Nigerian states, however. There are also important differences in methodology—discussed in the data section below and in appendix A—that prevent the direct comparison of results from the GHS with the HNLSS.

Unlike the official figures that indicate a poverty rate stubbornly above 60 percent, the new data show a decline by 10 percentage points from about 46 percent in 2004 to 36 percent in 2013. Also, the new data offer a clearer and more consistent story of growth and poverty reduction in Nigeria relative to previous data. Poverty rates are more in line with the per capita gross domestic product (GDP), both the old level and the rebased level, and it appears that the rapid GDP growth made a dent in poverty, whereas, in the old data, there was no significant impact of growth on poverty.

The new estimates also suggest that the divide between the north and the south of the country in poverty levels and trends in poverty reduction is significant. Based on this evidence, the report attempts to look at Nigeria not as a monolithic country, but, rather, to allow the substantial differences between parts of the country emerge. Nigeria presents some complex development challenges; this complexity is accentuated by the absence of a one-size-fits-all solution. While parts of the South West and South South states illustrate characteristics of a middle-income country and achieved important results in poverty reduction, several northern states are still afflicted by deep poverty and violent conflicts. In terms of policy intervention, this implies that, whereas the more dynamic states are mainly constrained by the lack of infrastructure and an unfavorable business climate, the poorer states face a more complicated set of challenges.

The main caveat of the present report is that it only covers the period from 2004 to 2013; new survey data (the GHS panel, round 3) will start to be available at the end of 2016. It is worth mentioning this since the scenarios that the Nigerian economy is currently facing are different from those of the past decade. Between 2004 and 2013, Nigeria enjoyed high rates of growth. The growth was driven by a few growth poles concentrated in coastal areas and around the capital, Abuja, and a limited trickle down to the rest of the country. In 2015, the economy grew at only 2.7 percent compared to 6.3 percent in 2014. This decline was driven by decelerating growth in the nonoil sector and a larger contraction in the oil sector. As a consequence, fiscal revenues dropped significantly, and this greatly affected Nigerian states. State governments are heavily dependent on federal transfers, which mostly consist of oil revenue distributed from the federation account (on average, almost 85 percent of state revenues come from federation account allocations), and face greater borrowing constraints than the federal government because most states have accumulated arrears, some in excess of six months.

The report does not assess the poverty impact of the recent insurgency in the North East and parts of the North West. The new GHS panel survey will contain a specific module and sampling strategy aimed at evaluating the impact of conflicts on the livelihoods of households in the north. The analysis of the socioeconomic impact of conflicts is thus deferred to 2017.

The report consists of four chapters. Chapter 1 profiles the trends in growth, household consumption, and poverty rates at the national level between 2004 and 2013. Descriptive statistics on consumption and selected poverty indexes are presented, as well as a profile of the characteristics of the poor. The chapter concludes with an analysis of nonmonetary indicators. Chapter 2 unpacks the national level data into subnational results (six zones) and shows the wide and expanding divide in socioeconomic indicators. Chapter 3 uses descriptive and econometric techniques to identify the drivers of this divide. Chapter 4 concludes and provides a road map for effective policy action to address the divide.

Data

A comparison of measures such as indicators of poverty, inequality, and polarization computed on surveys relatively distant in time capture more accurately the effect of structural modifications in income distribution. Excluding cases of sudden shocks, these measures generally tend to shift relatively slowly. Comparisons over time, however, can be made difficult or even impossible by changes in data collection methodologies (Tarozzi 2007). In particular for survey data, there is increasing empirical evidence that questionnaire revisions can affect survey responses in relevant ways (Deaton and Grosh 2000). For example, the choice of recall period (7, 30, or x days before the interview) or the disaggregation of expenditure items can deeply influence reports on expenditure.[1] Other changes, such as the switch from a diary-based collection to a recall-based collection, can dramatically change aggregate food consumption expenditures, on average accounting for about 50–60 percent of household expenditures in Nigeria (World Bank 2013).

[1] For example, in Tanzania (Beegle et al. 2010), recall modules measure lower consumption than a personal diary, with larger gaps among poorer households and among households with more adult members. Ahmed et al. (2014), looking at Bangladesh data, also find that a switch from diary to recall often reduces consumption aggregates simply because households remember their expenses better when entering them regularly in a diary. Therefore, switching the data collection methods from diary to recall likely underestimates household consumption data and thus makes poverty estimates incomparable with those of previous rounds in which consumption data were collected by diary.

In Nigeria, the National Bureau of Statistics uses the NLSS 2003–04 and the HNLSS 2009–10 to monitor progress in poverty reduction in the country. These surveys are representative at the state level. They used a month-long diary to collect consumption data, and enumerators were in the field over a period ranging from October to September. The National Bureau of Statistics also conducts other household surveys, most notably the GHS cross section and the GHS panel.

The GHS cross section is a survey of 22,000 households carried out periodically throughout the country. It is freely downloadable from the website of the National Bureau of Statistics upon request. Available datasets include six rounds from 2004–05 to 2010–11. Enumerators visit households once, generally in March, and ask a standard set of questions. Data on consumption are collected by asking the households about broad categories of consumed items in the previous months: food, health care, school, and so on. In 2004–05 and 2010–11, data on consumption were not collected.

The GHS panel is a randomly selected subsample from the GHS cross section consisting of 5,000 households; the panel covers the period 2010–11 (1st wave) and 2012–13 (2nd wave). It is representative at the national and zonal levels (that is, the six geopolitical divisions, the North West, the South East, and so on). Besides the questions asked in a normal GHS survey, the GHS panel captures data on agricultural activities and other household income activities. Consumption data are collected using a seven-day recall period. In every panel wave, households are interviewed twice, once in the postplanting period ranging from August to November and once in the postharvest period ranging from February to April.

Consumption data—the welfare measure use in the report analysis—from these three sources are not directly comparable. Analysis reveals that results based on poverty and inequality data computed on the GHS panel and corresponding results computed on the HNLSS look substantially different. Deriving comparable data thus requires some type of homogenization of consumption figures.

To enable data comparisons over a longer span (a decade), the analysis relies on survey-to-survey imputation techniques; notably, wave 1 of the panel is used to impute consumption on the NLSS survey 2003–04 (see appendix A). Given the importance of obtaining accurate estimates that are comparable over time, it is important to calibrate models in a year in which both household consumption data and nonconsumption data are available and then use the model to impute household consumption data for the years in which only nonconsumption data are available. In this report, panel wave 2 is used as a benchmark to check the accuracy of the predictions emanating from the analysis, and, in a second stage, the same model is used to impute 2003–04 data.

For most measures, such as poverty, inequality, and polarization indicators, the trend between 2003–04 (with consumption reestimated and henceforth referred to as "2004") and the last two GHS rounds, GHS 2010–11 ("2011") and GHS 2012–13 ("2013"), are compared. Trends are compared at the national and zonal levels because the GHS can yield estimates only at these levels. Poverty estimates at the state level are obtained using a new poverty mapping technique developed at Oxford University (discussed at the end of chapter 2). Other data sources include Demographic and Health Surveys (DHS) from 2003, 2008, and 2013; World Development Indicators (WDI) downloaded from the WDI website; and income data from the Rural Income Generating

Activities project protocol on income information from NLSS 2003–04 data and the two GHS rounds.[2]

Definitions and technical notes

The selected measure of welfare is consumption per capita. Consumption has proven preferable to income as a measure of poverty because it is less volatile (for example, see Deaton and Zaidi 2002; Haughton and Khandker 2009). In agricultural economies in particular, income is more volatile and more highly affected by the growing and harvest seasons; relying on income as an indicator of welfare might therefore under- or overestimate living standards significantly. Consumption is also a better measure of long-term welfare because households can borrow, draw down savings, or receive public and private transfers to smooth short-run fluctuations. The GHS collects sufficiently detailed information to facilitate estimates of the total consumption of each household. The 2003–04 consumption survey data are reestimated using 2010–11 household data.

The terms poverty and poverty incidence refer to the poverty headcount index, unless otherwise specified. The poverty headcount index measures the proportion of the population with per capita consumption below the value of a minimum basket of food and nonfood items, that is, the poverty line.

The report uses the 2004 poverty line of ₦28,830 a year. The line is deflated temporally using the national consumer price index provided by the International Monetary Fund and spatially using zonal-level price data.

The poverty gap index measures the extent to which individuals fall below the poverty line (the poverty gap) as a proportion of the poverty line. The sum of the poverty gaps so calculated yields the minimum cost of eliminating poverty if transfers were perfectly targeted. The squared poverty gap index (or the index of the severity of poverty) averages the squares of the poverty gaps relative to the poverty line.

The growth elasticity of poverty (GEP) is the percentage reduction in the poverty rate that is associated with a percentage change in mean (per capita) income. A numerical example clarifies the concept. In Nigeria between 2004 and 2013, the GEP value was 0.6 (see chapter 1). This value implies that a 1 percent increase in per capita income was associated with a 0.6 percent decrease in the poverty rate.

The growth incidence curve plots the growth rate at each quantile of per capita consumption (or income). Graphs of growth incidence curves allow a comparison of differences in the incidence of growth between poorer and richer segments of the population or a comparison of the former with the rate of growth of mean consumption (or income) (see chapter 1).

[2] See, respectively, Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/; WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators; RIGA (Rural Income Generating Activities) Database, Food and Agriculture Organization of the United Nations, Rome, http://www.fao.org/economic/riga/riga-database/en/.

The cumulative consumption curve shows the level of welfare enjoyed by various percentiles of the population in any particular year. In a graphic presentation, distributions to the right reflect an improvement in the overall welfare of the population, that is, they are statistically dominant and can be considered. The horizontal axis represents consumption measured as a percentage of the poverty line. The vertical axis represents the percentage share of the population, and each point on the distribution function shows the share of the population below a certain percentage level of the poverty line. The point on the vertical axis that corresponds to the vertical line that indicates 100 percent of the poverty line yields the poverty rate. There are several measures of vulnerability to poverty. In this report, we use a simple, unsophisticated measure: 140 percent and 180 percent of the poverty line.

The Oaxaca decomposition explains the gap in the means of an outcome variable (consumption in the case of this report) between two groups (for example, between two survey rounds, 2004 and 2013) (Oaxaca 1973). The gap is decomposed into that part arising because of group differences in the magnitudes of the determinants (endowment effect) of consumption and that part arising because of group differences in the effects of these determinants (coefficient effect).

Polarization is the combination of the divergence from the global mean income and the convergence toward local mean incomes. Polarization differs from inequality because the latter is the overall dispersion of the distribution, that is, the distance of every individual from the median or mean income. In income-polarized societies, people are clustered around the group means and tend to be remote from the mean or median of the overall distribution. Within each group, there is income homogeneity and often narrowing income inequality; thus, one may talk of increasing identification. Between the two groups, one might talk, rather, about increasing alienation (Duclos, Esteban, and Ray 2004). The overall impact of the forces of identification and of alienation between two groups of significant size leads to effective opposition, a situation that may give rise to social tensions and conflict (Esteban and Ray 1999, 2008, 2011). Also, the group at the top of the distribution possesses voice, while the other group, which is made up of those at the bottom, is voiceless in matters that affect the welfare of the group and society at large.

Chapter 1 : Poverty and Inequality in Nigeria

Although it is one of the most rapidly growing economies in Sub-Saharan Africa, Nigeria is struggling to translate its rapid growth into accelerated poverty reduction. Relative to poverty reduction in the rest of Sub-Saharan Africa and other lower-middle-income countries, poverty reduction in Nigeria has been less responsive to economic growth.

Three factors determine this low responsiveness. First, high growth rates have been accompanied by comparatively high rates of population growth. Second, similar to other resource-rich economies in the developing world, growth does not necessarily translate into more jobs or more opportunities for everyone. Third, inequality has been expanding quickly and has adversely affected poverty reduction.

Compared with other Sub-Saharan African countries, Nigeria is also losing ground on a number of key indicators. Nigeria has not done well on indicators such as the rate of accumulation of physical and human capital and in the household access to basic services. Underperforming in these indicators can have a long-term negative impact on growth and can hamper the country's capacity to reduce poverty.

Poverty rates declined, but the number of the poor remained unvaried

Poverty declined by about 10 percentage points between 2004 and 2013. Poverty figures computed from the General Household Survey (GHS) data and from 2004 data re-estimated using survey-to-survey techniques support the hypothesis that poverty rates in Nigeria are significantly lower than official estimates based on the 2003–04 Nigeria Living Standards Surveys (NLSSs) and the 2009–10 Harmonized Nigeria Living Standards Surveys (HNLSSs) (see appendix A). At the national level, per capita poverty rates declined from 46.0 percent in 2004 to 35.6 in 2011 and 36.1 in 2013.[3] The two NLSS surveys showed per capita rates of 64.0 and 62.0 percent.

Data show a stagnation in poverty reduction in 2011–13. A set of contemporaneous factors explain this deceleration. Growth in 2012 slowed somewhat relative to the recent past especially in oil, trade, and agriculture. Slower growth in trade and agriculture reflected a combination of fallout from the national strike in January, higher energy prices (tariffs), severe floods, and the expanding security challenges in some parts of the north.

Urban and rural areas reduced poverty at a different pace. Relative to rural areas, urban areas experienced both a significantly lower poverty rate and relevant progress in poverty reduction (table 1.1). Whereas the poverty rate fell by almost half in urban areas after 2004, it barely declined in rural areas, where 50 percent of the population is living below the poverty line. The interpretation of these results is complicated by the fact that the last classification of urban and rural areas in Nigeria dates from 1991. Nonetheless, the results fit well with the findings of official reports that suggest urbanization and urban growth to be a primary driver of poverty reduction in Nigeria. Moreover, the slow progress in poverty reduction in rural areas is consistent with recent trends in agriculture.

[3] In the "Nigeria Economic Report" (World Bank 2014), preliminary results on the poverty rate in the country are reported at 35 percent in 2011–12 and 33 percent in 2012–13. In the revision in 2015 (World Bank 2015a), new consumption conversion factors were introduced for nonstandard units collected in 2015. The new conversion factors vary across zones and measure more accurately the quantities of goods and services purchased and produced. The results here were obtained by applying the new conversion factors that will also be used for the GHS panel, round 3.

Estimates for 2011–14 (World Bank 2014a) suggest that growth in agriculture averaged only 2.3 percent during this period, significantly lower than previous estimates. This is less than the population growth in many areas and thus consistent with stagnation in poverty reduction.

Table 1.1. The Poverty Rate, Poverty Gap, and Severity of Poverty, Nigeria, 2004, 2011, 2013

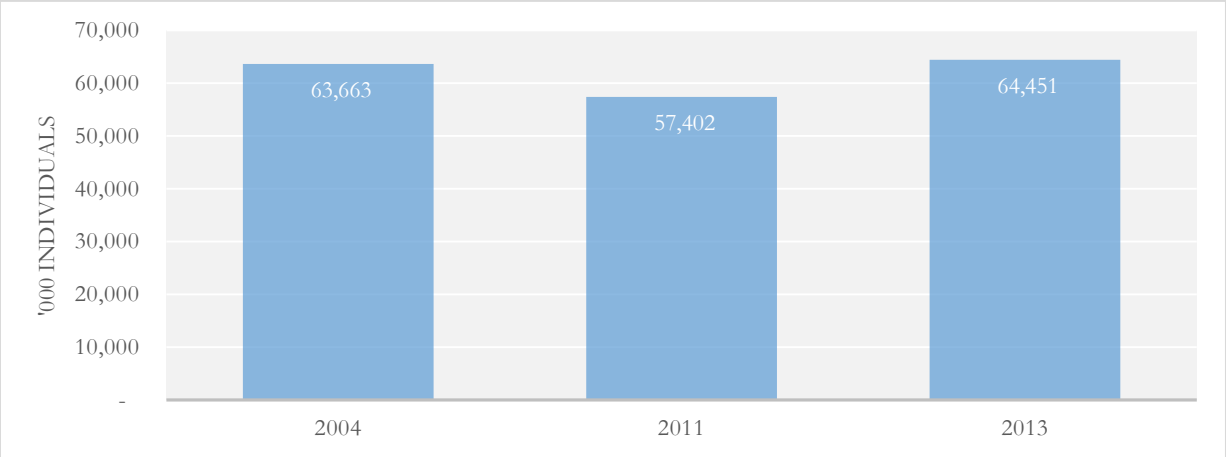
	Poverty rate			Poverty gaps			Severity of poverty		
	2004	2011	2013	2004	2011	2013	2004	2011	2013
Rural	51.61	46.35	48.49	18.97	14.78	14.8	9.45	6.47	6.16
Urban	34.16	16.69	15.92	10.52	3.83	3.85	4.65	1.33	1.45
Nigeria	46.42	35.64	36.19	16.45	10.82	10.66	8.02	4.61	4.38

Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2010–11, 2012–13.

The depth of poverty has declined at the national level. Both the poverty gap and the severity of poverty fell. This suggests that changes also occurred in consumption among people living below the poverty line. The more rapid growth at the bottom of the distribution is also shown in the growth incidence curves (see figure 1.11); the growth rate of per capita consumption was most rapid among households in the bottom 10 percent and less rapid in the part of the distribution between the bottom 10th percentile and the top 10th percentile. Likewise the poverty headcount ratio, the poverty gap, and the severity of poverty dropped much more quickly in urban areas than in rural areas: while both the poverty gap and the severity of poverty fell by more than half in urban areas, the decline was on the order of a few percentage points in rural areas.

The number of Nigerians living in poverty has not changed significantly. Because of rapid population growth of close to 3 percent, Nigeria must experience a steep reduction in the poverty rate to lower the absolute number of the poor. The estimates presented above imply that the number of poor Nigerians rose by 788,000 between 2004 and 2013 (figure 1.1), but the difference is not statistically significant. The trend also indicates that, while there was some reduction between 2004 and 2011, the stagnation in the poverty rate between 2011 and 2013 and the increase in population completely offset these gains.

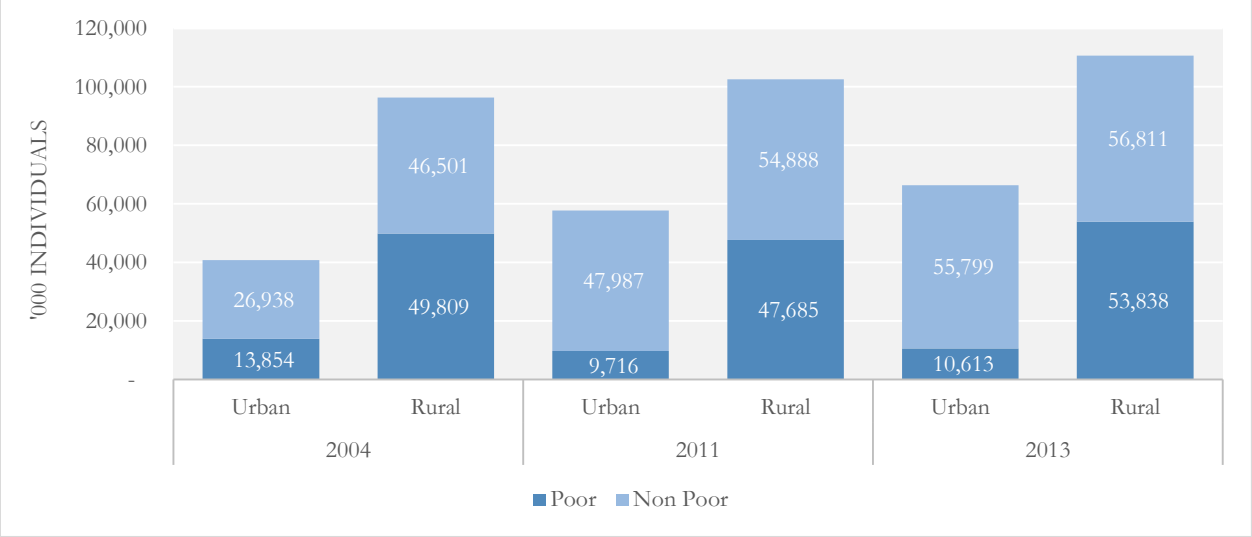
Figure 1.1. Number of the Poor, Nigeria, 2004, 2011, 2013



Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2010–11, 2012–13.

The stagnation in the poverty rate was the outcome of two offsetting trends: a decrease in urban areas and a surge in rural areas. While the population increase in urban areas did not slow the pace of poverty reduction, the increase in rural population mainly meant more poor people. The population rose by 40 million between 2004 and 2013, which was almost evenly split between urban and rural areas. From this perspective, the performance of urban areas appears even more remarkable because the big population inflow did not increase the number of the poor; indeed, the number actually declined by 3 million (figure 1.2). Although, in rural areas, the number of the poor rose more slowly than the number of the nonpoor, the net effect was a rise among the poor by about 4 million people.

Figure 1.2. Number of the Poor, by Area, Nigeria, 2004, 2011, 2013

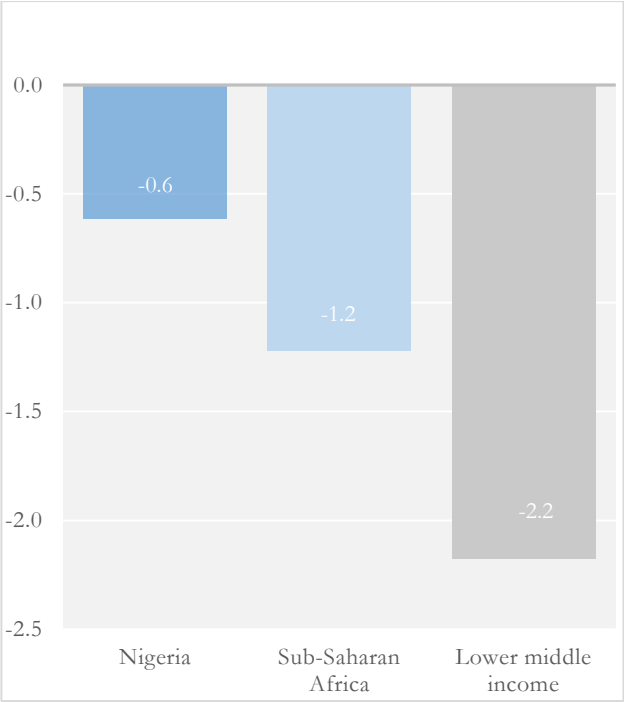


Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

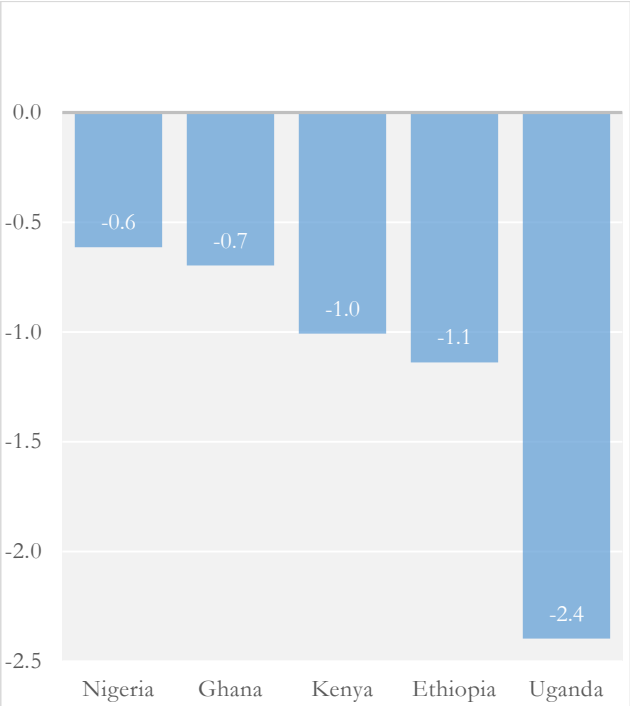
Poverty reduction, however, was not commensurate with the rapid growth in gross domestic product (GDP). For every 1 percent growth in GDP per capita, poverty declined by only 0.6 percent. Nigeria did worse than the rest of Sub-Saharan Africa, where the growth elasticity of poverty (GEP) was even lower than the GEP in other regions of the developing world. Nigeria's GEP is half the Sub-Saharan African average GEP and only a fourth of the average across lower-middle-income countries (figure 1.3). The GEP in Nigeria was also lower than the GEP of a number of African countries that enjoyed high growth rates during the decade. Ghana, for example, saw a decline in poverty similar to that experienced by Nigeria (both around 10 percent) in the same period, but its economy grew less. Poverty elasticity was therefore slightly higher in Ghana than in Nigeria even though this was not a period of rapid poverty reduction in Ghana (Molini and Paci 2015).

Figure 1.3. GEP, 2003–13

a. Nigeria vs. Sub-Saharan Africa and Lower-Middle-Income Countries



b. Nigeria vs. Selected African Countries

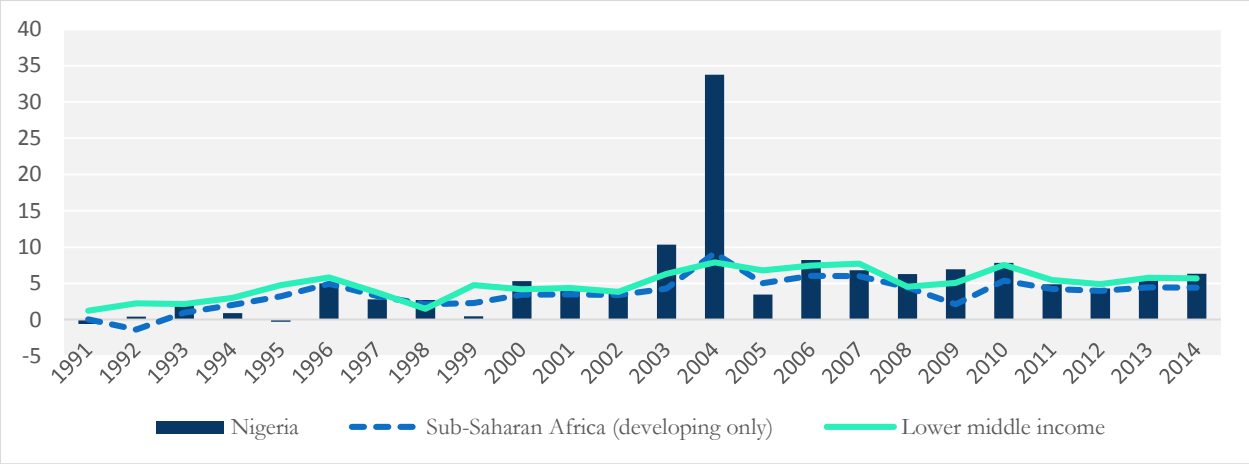


Source: World Bank calculations based on GHS 2010–11; NLSS 2003–04; PovcalNet (online analysis tool), World Bank, Washington, DC, http://iresearch.worldbank.org/PovcalNet/; WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Rapid population increase and persistent high inflation contributed to the limited poverty impact of GDP growth

Poverty reduction was slow compared with the remarkable GDP growth. Nigeria's GDP has grown more quickly than the average in Sub-Saharan Africa; it is similar to the growth in other lower-middle-income countries (figure 1.4). On average, since 2004, Nigeria grew at 8 percent annually. If the outlier, 2004, is excluded, the performance is still remarkable given that the country grew at an average of 6 percent. This performance was achieved in a context of economic and political reforms characterized by prudent macroeconomic management and a return to political pluralism. A few areas of the country, particularly Lagos State, achieved visible and impressive progress in development and in the delivery of services.

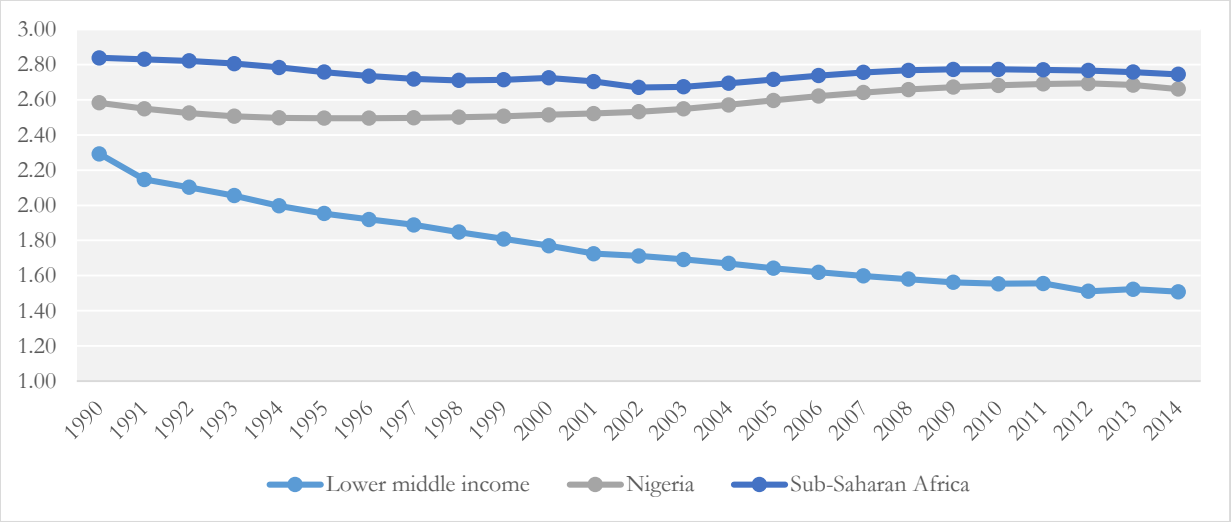
Figure 1.4. Real GDP Growth Rate, 1991–2014



Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

The rapid population increase substantially reduced GDP per capita growth. Figure 1.5 displays the population growth rates in Nigeria compared with Sub-Saharan African and lower-middle-income countries. In the last decade, the Nigerian population has increased at about 2.7 percent per year, close to the Sub-Saharan African average.[4] Meanwhile, in 1990–2014, the average rate of population growth among other lower-middle-income economies was lower and declining more quickly, from 2.3 percent to 1.5 percent.

Figure 1.5. Population Growth, 1991–2014



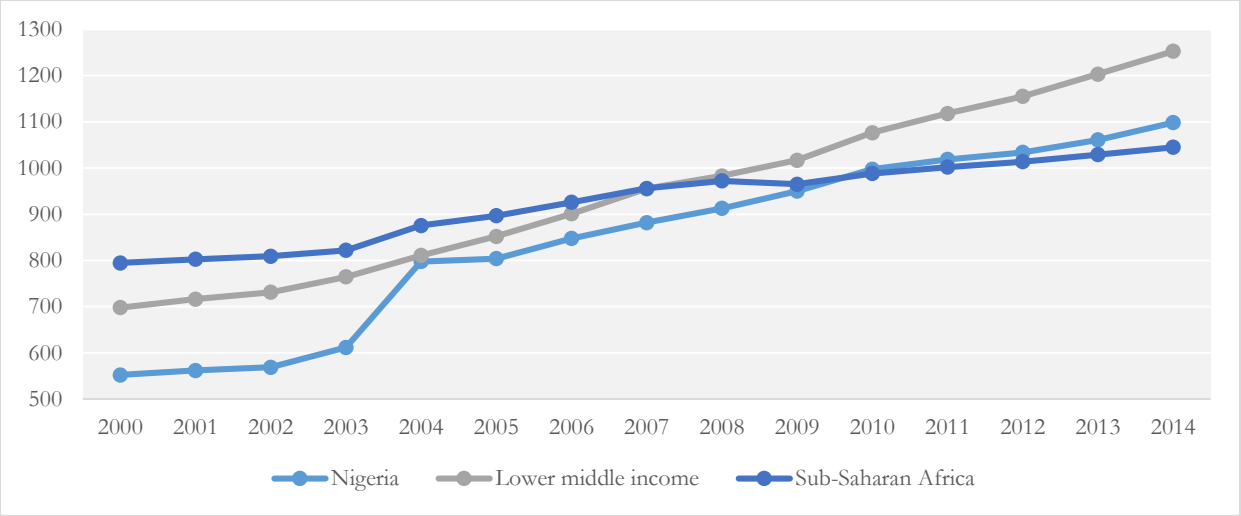
Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Similar GDP growth but diverging population trajectories are widening Nigeria's gap with other lower-middle-income countries. Although GDP per capita doubled between 2000 and 2014, Nigeria has been lagging other lower-middle-income countries since the outbreak of the financial crisis

[4] The population growth registered by comparing the GHS surveys is even larger, almost 4 percent annually in 2011–13.

in 2008 and growing more or less at the same pace as the rest of Sub-Saharan Africa (figure 1.6). Population growth rates make a substantial difference. To narrow the gap with other lower-middle-income countries, Nigeria's GDP should grow at least 1.3 percentage points more every year.

Figure 1.6. Real GDP per Capita Growth, 2000–14



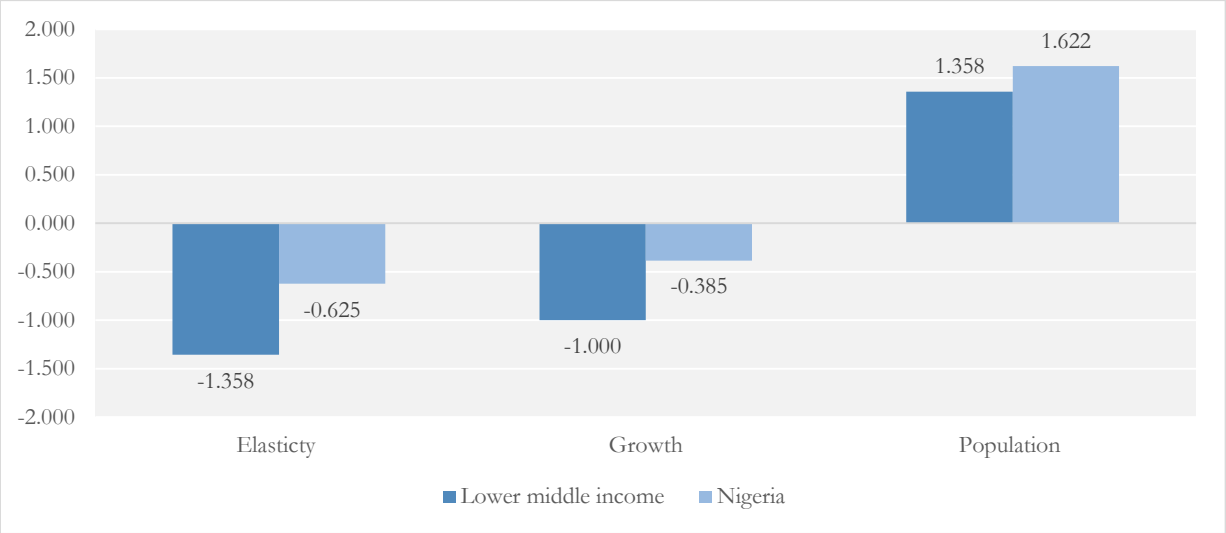
Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Population growth had a direct impact on slowing the pace of poverty reduction. A simple decomposition of GEP shows how population increase reduced the impact of growth on poverty. as follows:

$$\varepsilon_{POV} = -\left(\frac{\Delta POV}{\Delta GDP_{pc}}\right) = -\left(\frac{\Delta POV}{\Delta GDP}\right) * \left(\frac{\Delta GDP}{\Delta GDP_{PC}}\right). \qquad (1.1)$$

Figure 1.7 presents the GEP decomposed into the growth effect, that is, the elasticity of poverty to GDP $\left(\frac{\Delta POV}{\Delta GDP}\right)$, and the population effect, that is, the variation in GDP over the variation in GDP per capita $\left(\frac{\Delta GDP}{\Delta GDP_{PC}}\right)$. The low elasticity in Nigeria relative to lower-middle-income countries is a consequence of a lower growth effect and a comparatively larger population effect. Whereas the population effect in lower-middle-income countries is around 1.3, meaning that the gap between GDP growth and GDP per capita growth is an average 0.358 percent; in Nigeria, the gap is almost double, 0.622 percent. In contrast, the growth effect or the impact of growth alone on poverty is more than two times higher in lower-middle-income countries (−1) than in Nigeria (−.385), suggesting much more inclusive growth even without discounting for population growth.

Figure 1.7. The Growth and Population Effects, 2004–13



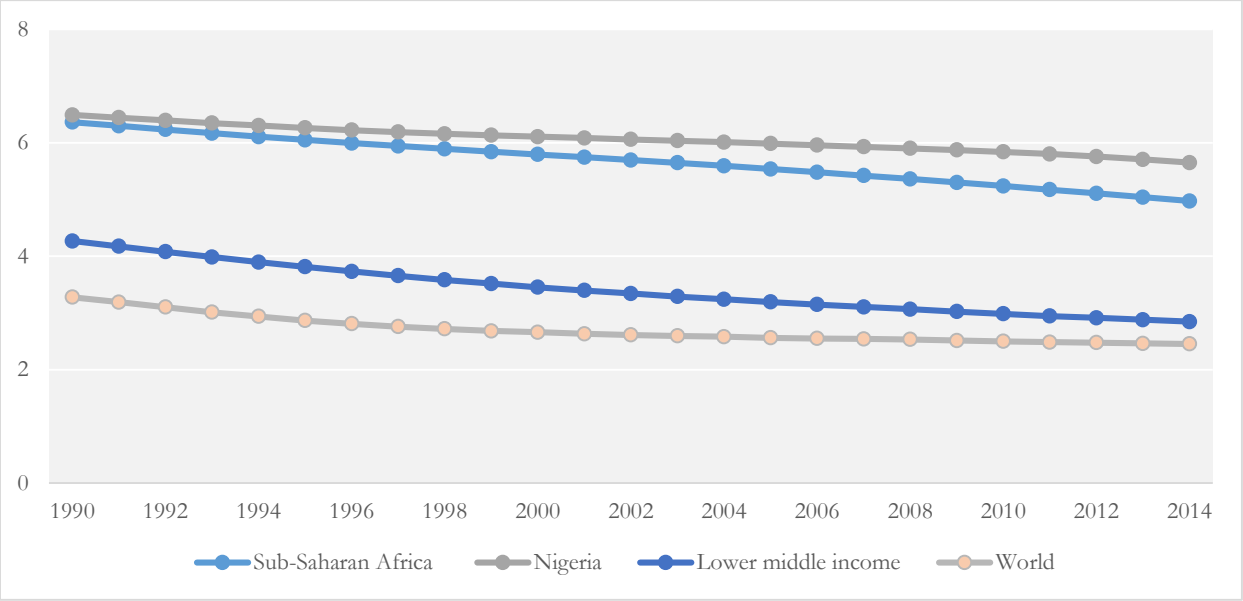
Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

The rapid population growth is driven by a high fertility rate.[5] Nigeria's fertility rate is significantly higher than the average rate in lower-middle-income countries and above the Sub-Saharan African average (figure 1.8); as a consequence, population is increasing at a much more rapid pace. Fertility rates in Sub-Saharan Africa are still high (5 children per woman in 2014) and have decreased little in the past quarter of a century. With an annual average of 5.5 children per woman, Nigeria has the 10th-highest fertility rate in the world and double the average of lower-middle-income countries.[6] Nigeria's fertility rate is substantially higher than that of Sudan (4.3) and Ghana (4.1), but similar to the fertility rates in other Sub-Saharan African countries with much lower GDP per capita such as Rwanda and Tanzania.

[5] High fertility rates are associated with high under-5 mortality rates. Demographic theories hold that a large number of children in a household may reflect a rational decision in places where under-5 mortality is still a concrete risk, as in the case of Sub-Saharan Africa. In such contexts, the decision to have a large number of children will anticipate the risk of under-5 mortality, leading to high fertility (Palloni and Rafalimanana 1999). Nigeria has the seventh-highest under-5 mortality rate in the world (108.8 per 1,000 births in 2015), 50 percent higher than the average rate among lower-middle-income countries and 30 percent higher than the rate in other Sub-Saharan African countries.

[6] WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Figure 1.8. Fertility Rate, 1990–2014 (Births per Woman)



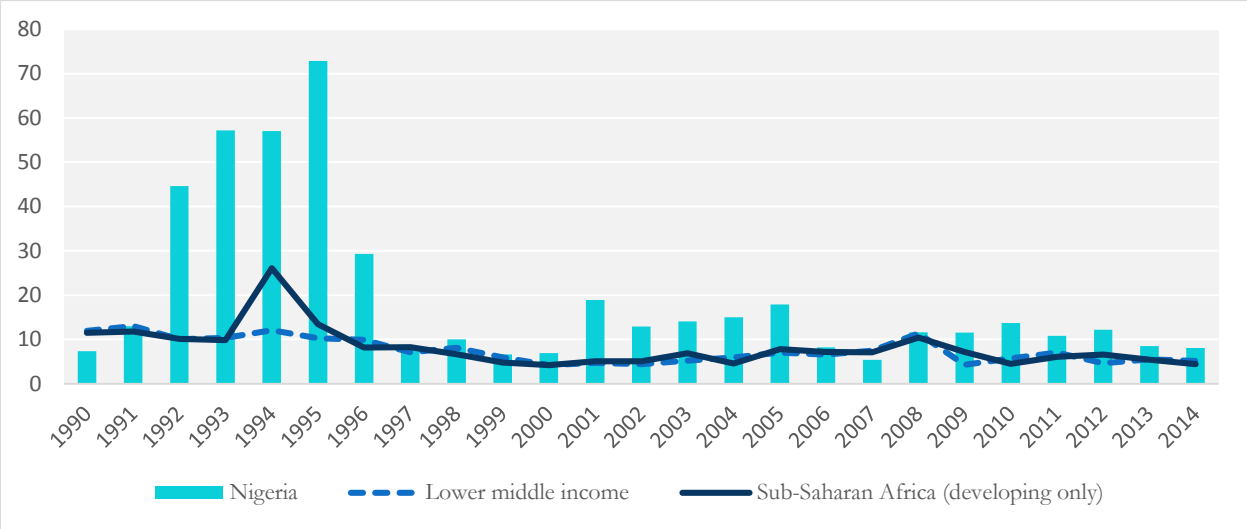
Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Recent estimates suggest there is some reason for optimism, however. Nigeria, or at least its southern states, is on the verge of a demographic transition whereby the ratio of youth to other age-groups is increasing, and population is beginning to grow at a slower pace. This youth bulge is expected to stimulate growth and development, otherwise known as the demographic dividend. This has played an important role in the growth of East Asian and other economies. Furthermore, total fertility, which is estimated at 5.7 in 2015, is projected to decline to 5.1 by 2030. The current demographic structure of the country exhibits a growing youth population with an estimated median age of 17.9 years. Of the population, 42 percent is less than 14 years of age; 29 percent is in the 15–19 year age-group; and 24 percent is the 30–59 year age-group (NPC and ICF International 2014). The population expansion would mean that the working-age population will grow from the current 97 million in 2015 to 151 million in 2030, representing almost 16 percent of Africa's labor force.

The pace of poverty reduction was also negatively affected by the persistent high level of inflation. Nigerian consumers are highly vulnerable to inflation, particularly those living in urban areas. Because population is highly concentrated around the poverty line, rapid and unexpected price increases that are not offset by commensurate increases in nominal incomes or consumption can quickly push large shares of the population into poverty. Nigeria has a history of high inflation since the 1980s. Persistent shortages of consumer goods resulting from a scarcity of foreign exchange, high levels of monetary expansion, and periodic sharp increases in the price of electricity and gasoline all contributed to extremely high rates of inflation. From 2000, following the tightening of fiscal and monetary policy and the improvement in the logistics of food supply, inflation started to decline.

Despite the improvements, inflation remained almost always at two digits, much higher than in comparable countries (figure 1.9). The persistently high levels of inflation were partly a consequence of substantial government spending and partly caused by periodic rises in food and domestic fuel prices. Even in comparison with other oil-exporting developing countries, which are typically affected by high inflation rates, the Nigerian performance was worse: the second highest inflation rate in the group after Angola (IMF 2011).

Figure 1.9. Inflation Rate, 1990–2014



Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

GDP per capita did not entirely trickle down to household consumption and job creation

Per capita growth did not translate into an increase in real per capita consumption of the same proportion. Converting the data reported in figure 1.6 into 2011 naira-equivalent prices shows that GDP per capita increased by about 46.0 percent between 2004 and 2013, while the variation in mean consumption per capita estimated on household surveys was around 33.0 percent (table 1.2).[7] Thus, on an annual basis, GDP per capita grew at about 4.3 percent, while average consumption grew at 3.2 percent. Therefore, for each 1 percent increase in per capita GDP, mean per capita consumption rose by only 0.74 percent. If we look at the median to reduce the contribution of the tails of the distribution, the per capita GDP growth elasticity of mean per capita consumption was even lower, at around 0.4.

Table 1.2. Mean and Median per Capita Expenditure in Nigerian Naira, by Location, 2004, 2011, 2013

	2004	2011	2013
Nigeria			
Mean	66,921	82,800	88,544
Median	54,565	64,148	63,215
Urban			
Mean	81,638	110,491	113,871
Median	66,773	92,253	86,956
Rural			
Mean	60,688	67,161	73,159
Median	50,232	54,458	52,571

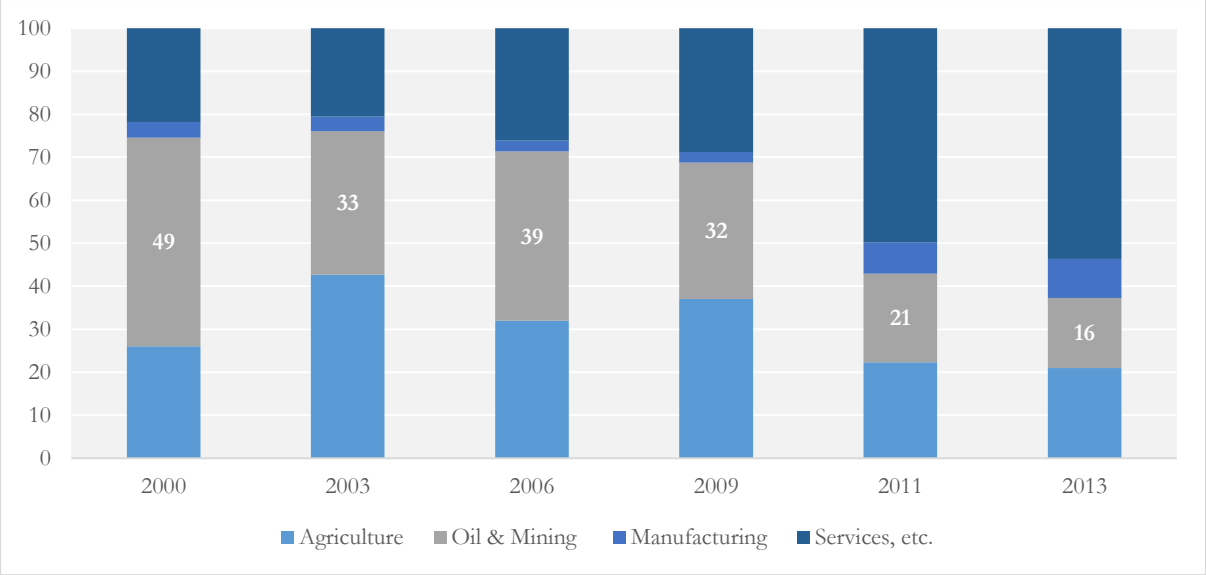
[7] The two surveys cover 2003–04 and 2012–13. To reproduce the GDP per capita variations in the same periods, we averaged the values of 2003 and 2004 and of 2012 and 2013.

Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2010–11, 2012–13.

The increase in consumption was mainly driven by urban areas. Between 2004 and 2013, mean consumption rose in urban areas at an average annual rate of 3.8 percent, which is about 40.0 percent overall, while growth was at half that level in rural areas. At the median, rural areas have not significantly improved, whereas average consumption in urban areas rose by 21 percent. Particularly worrying is the situation at the end of the period: the median worsened in both urban and rural areas.

The discrepancy between per capita consumption growth and GDP per capita growth is partially explained by the structure of the Nigerian economy, which is unable to trickle down growth to the entire population through more job creation. The oil and mining sector accounted for more than 30 percent of GDP during most of the period, and the oil sector accounts for about 70 percent of government revenues and 85 percent of exports (Ajakaiye et al. 2015) (figure 1.10). Traditionally, this is a sector that does not generate many jobs and often resorts to a foreign labor force. The performance of more labor-intensive sectors up to 2010 was not encouraging; the contribution of manufacturing has been negligible, while agriculture, although it accounted for about 30 percent of the value added, did not see relevant productivity improvement and continued to grow largely because of greater land use (Treichel 2010).

Figure 1.10. GDP, by Industry, Nigeria, 2004–13 (%)



Source: WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Since 2009, the nonoil sectors have driven the economy forward, but it is premature to conclude that growth became more pro-poor. The change in the composition of the economy suggests that potentially more labor-intensive sectors such as services are taking the lead.[8] The service sector boom is driven, however, by modern and highly productive sectors such as finance and insurance, real estate, and information and communication technology that generate substantial returns, but are highly concentrated geographically and have a limited impact on employment.

[8] Since 2006, the oil sector in the Delta experienced vast disruptions as consequence of the ongoing insurgency. This caused a large drop in oil production and, consequently, a decline in the share of the oil sector in the overall economy.

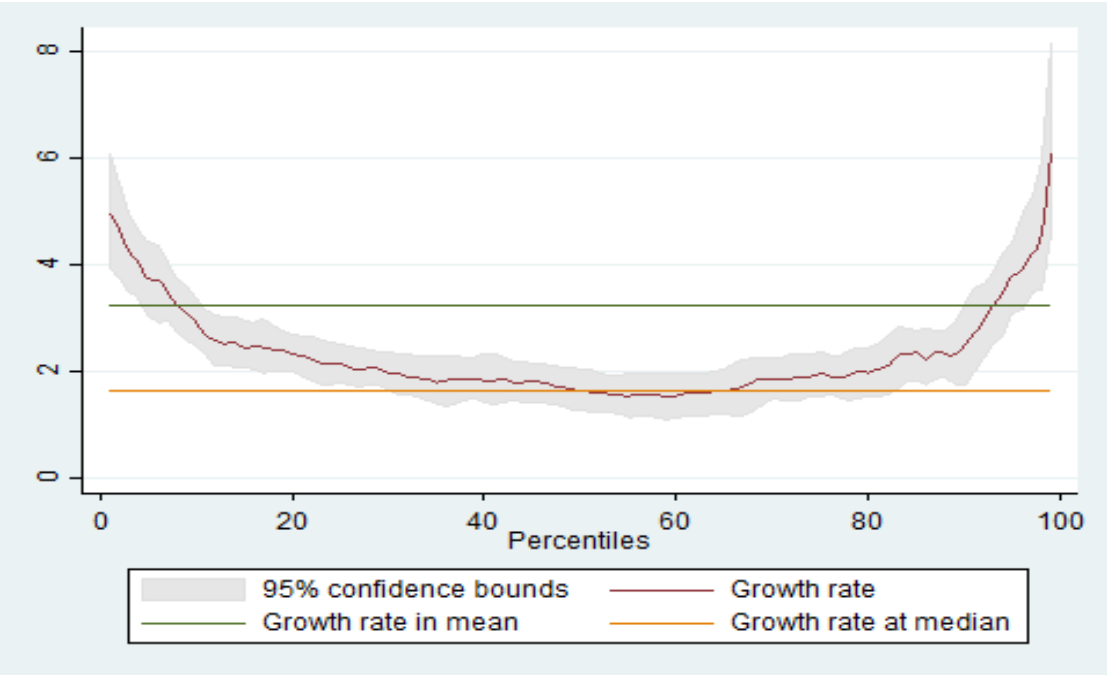
Construction and trade were doing well until 2013, but agriculture, for instance, continued to grow slowly, and, in employment rates, manufacturing lost ground (World Bank 2015b).

Empirical analysis over the last decade indicates the Nigerian economy both at aggregate and sectoral levels is characterized by low labor absorptive capacity. The most recent estimate of employment elasticity is 0.11, which implies that, with every 1 percentage point in GDP growth, employment increases by only 0.11 percent (Ajakaiye et al. 2015). The implication is that the relatively high growth has not led to an appreciable increase in employment. The results of the sectoral analysis indicates that agriculture has an elasticity of 0.48, while services have generally been employment-intensive at 0.85. The employment elasticity of manufacturing, at 0.30, is insignificant. Comparative studies looking at the 1980s and 1990s confirm that Nigeria had one of the lowest levels of employment elasticity in Sub-Saharan Africa (ILO 2005).

Widening inequality cut the gains from consumption growth in half

Growth was not inclusive, and not every Nigerian benefited from it. The growth incidence curve in figure 1.11 shows the variation in consumption between 2004 and 2013 across percentiles of the distribution. Based on their performance, three subgroups stand out: the top 10 percent of the distribution, the bottom 10 percent, and the percentiles in between. The top percentiles grew consistently more rapidly than the national average, and this contributed to a widening in inequality. The bottom 10 percentile performed relatively better than the rest over the whole period, but its performance worsened, in relative terms, during the last two years: it continued to grow at about 3 percent a year, which, in the last two years, was slightly below the mean. The middle percentiles grew at rates consistently below the mean (between 2.1 and 1.9), but still at sufficiently high rates to improve their situation over 2004.

Figure 1.11. Growth Incidence Curve, Nigeria, 2004–13



Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

Inequality in household consumption widened substantially in 2004–13. The picture that emerges is consistent across different indicators of inequality (table 1.3). Inequality in household consumption widened in 2004–13 by about 15 percent based on the Gini coefficient and by 82 percent based on the Theil index. The consumption share of the top decile of the population (the top 10) increased from 26.6 percent to 33.7 percent at the expense of all other deciles. The only exception was the bottom 10 percent, which increased its share, but not substantially.

Table 1.3. The Gini, the Theil, and Decile Distribution, Nigeria, 2004, 2013

	2004	2013
Gini	0.356	0.41
Theil	0.217	0.395
Consumption shares		
Decile_01	2.56%	2.71%
Decile_02	4.10%	3.93%
Decile_03	5.25%	4.79%
Decile_04	6.36%	5.70%
Decile_05	7.53%	6.69%
Decile_06	8.85%	7.65%
Decile_07	10.43%	9.10%
Decile_08	12.52%	11.14%
Decile_09	15.81%	14.56%
Decile_10	26.59%	33.72%

Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

The rapid widening in inequality slowed poverty reduction appreciably. To identify the changes in poverty that may be attributed to income growth and to inequality, the analysis relies on a Shapley value decomposition (Kolenikov and Shorrocks 2003). This is a nonparametric procedure that decomposes poverty reduction into growth and inequality components without any unexplained residual. It is first assumed that all the change is derived from consumption growth, while inequality remains unchanged. Alternatively, it is assumed that all the change is derived from changes in consumption redistribution, while there is no growth in consumption. Table 1.4 shows the results of this exercise in Nigeria.

Table 1.4. Shapley Decomposition, Poverty Rate Variation, by Location, Nigeria, 2004, 2013

	Nigeria	Rural	Urban
2004	0.464	0.515	0.347
2013	0.361	0.485	0.159
Difference	-0.103	-0.03	-0.188
Growth	-0.183	-0.131	-0.195
Redistribution	0.079	0.101	0.007

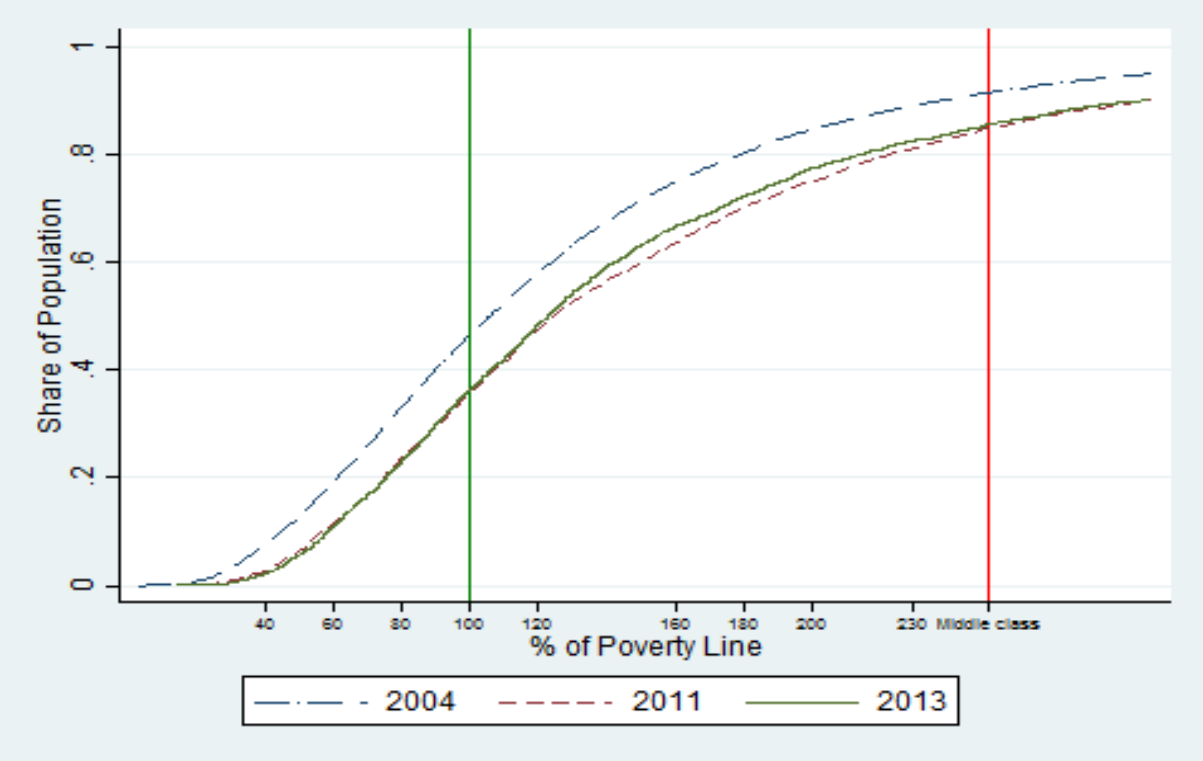
Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

Only half the per capita consumption growth translated into poverty reduction. Should inequality not have widened, poverty would have dropped 18 points rather than 10 (see table 1.4, second row). The increase in inequality was particularly detrimental to poverty reduction in rural areas. Without the inequality increase, poverty could have gone down 13 points rather than only 3. Meanwhile, growth translated almost entirely into poverty reduction in urban areas: inequality chipped off only a small 1 percent.

Lower poverty rates and a growing middle class, but also more vulnerable households

An analysis of the entire consumption distribution sidesteps the potential disadvantages of considering only one measure of welfare, the poverty line, to the exclusion of the rest of the consumption distribution. In this section, we introduce an additional cutoff, the middle-class line, and gauge trends in consumption between 2004 and 2013 by looking at shifts in the cumulative distribution. Figure 1.12 presents the full distribution of consumption in real terms in 2004, 2011, and 2013. The horizontal axis represents consumption measured as a percentage of the poverty line. The vertical axis represents the share of the population. Each point on the distribution function thus shows consumption relative to population share and the poverty line. The poverty levels in each of the three survey years can be read from the distribution functions at the point where the function crosses the vertical line that indicates 100 percent of the poverty line. The distribution can also be compared in welfare terms: any distribution appearing to the right of another is statistically dominant and can be considered a welfare improvement.

Figure 1.12. Per Capita Consumption, Cumulative Curves, Nigeria, 2004, 2011, 2013



Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2010–11, 2012–13.

A significant number of nonpoor Nigerians live close to the poverty line and are vulnerable to falling back into poverty (Corral, Molini, and Oseni 2015). Households are defined as vulnerable if they are above the poverty line, but exhibit a probability of greater than 10 percent of falling back into poverty; this is therefore the group between the poverty line and the middle-class cutoff. Households are defined as middle class if the likelihood they will fall into poverty is less than 10 percent. A vulnerability of 10 percent is thus the middle-class cutoff; in 2010 prices, this represents about ₦130,000 per capita per year or ₦356 per capita per day (box 1.1).

Box 1.1. The Middle Class in Nigeria

In the measurement of the size and importance of the middle class, the economic context matters. In developed countries, relative welfare measures can be used to define the middle class (Blackburn and Bloom 1985; Partridge 1997). Knowing that the middle class generally occupies the center of the income distribution does not really matter if we take central quintiles or some distance from the median. However, in developing countries, the middle class does not often coincide with some function of the income median. Scholars have thus opted for absolute measures; in the spirit of poverty line construction, they defined an income (or consumption) interval within which households may be considered middle class (Ferreira, Gignoux, and Aran 2010).

A complication one might encounter in low- and lower-middle-income countries is the definition of an upper bound. In general, household surveys do not contain good estimates of upper percentile welfare (Alvaredo and Piketty 2010). In the use of consumption to rank welfare, as is normally done in low- and lower-middle-income countries, the situation is aggravated. Consumption is accurate in capturing the well-being of poorer people; yet, it is rather imprecise in capturing the well-being of people living in the upper percentiles. It follows that, in defining the middle class in these countries, it seems reasonable to opt for a lower-bound threshold (middle class and above) rather than an interval and leave the border between the middle class and the upper class somehow undefined.

The vulnerability approach to the middle class is the method employ in this report to identify an income threshold above which a household may be classified as middle class (López-Calva and Ortiz-Juárez 2011). In developing countries, according to this method, the middle class may be defined residually from the vulnerability analysis: households with a probability of falling into poverty below a certain threshold (10 percent) may be considered part of the middle class. The threshold in this report is about ₦356 per day, or around US$5.00 purchasing power parity (PPP) U.S. dollars.

In 2004–13, welfare improved throughout the distribution. The period may be divided, however, into two periods: 2004–11 and 2011–13. In 2004–11, the two cumulative curves never overlap, testifying to a generalized and significant increase in welfare in the period. By contrast, in 2011–13, no welfare improvement is visible: the two curves practically overlap; in addition, one may detect some marginal worsening between the median and the top 20 percent of the distribution. The share of people living below the poverty line by a certain amount (80 percent or 60 percent) may be used to measure the depth of poverty; 60 percent of the poverty line is close to the value of the food poverty line. The reduction in the incidence of poverty was accompanied by a similar drop in the depth of poverty. The share of people living below 60 percent dropped by about 10 percentage points in 2004–

12, and approximately the same variation is registered among households below 80 percent of the poverty line.

Although the welfare improvement since 2004 is significant, 86 percent of the population is still vulnerable to poverty or poor. The share of the vulnerable population is estimated at around 50 percent, about 4 percent more than in 2004; the shift in the cumulative distribution from 2004 and 2013 thus translated into a 10 percentage points decrease in poverty, a 4 percent increase in the share of the vulnerable, and a 6 percent increase in the share of the middle class.

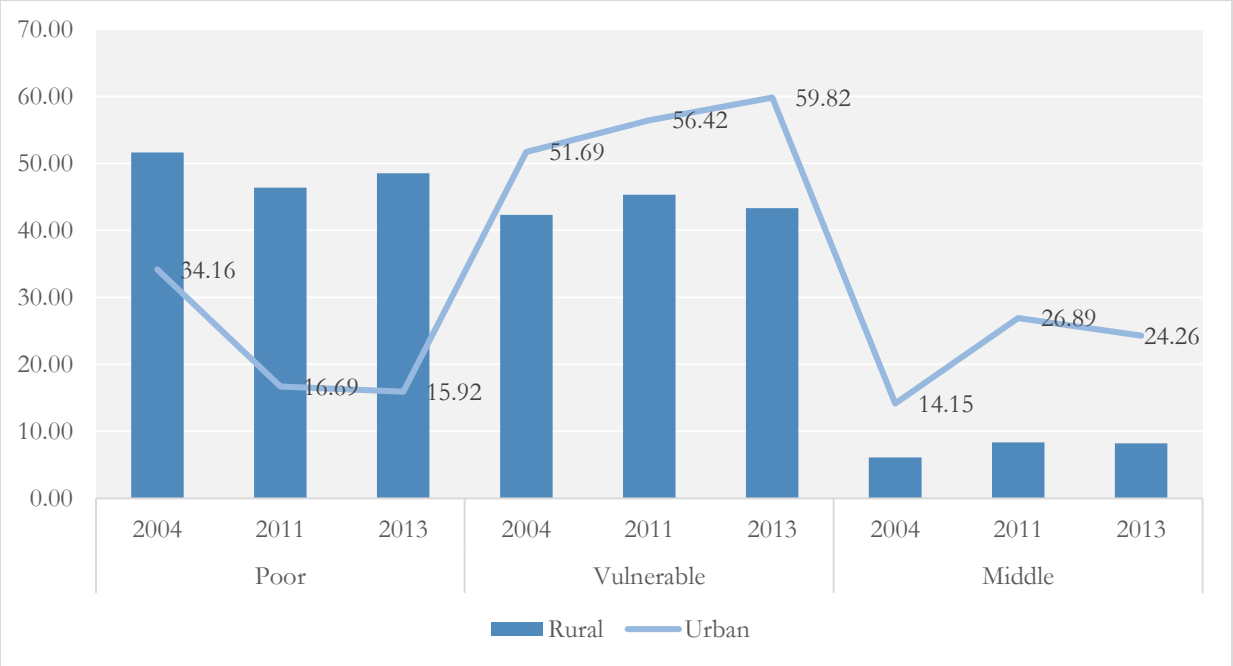
A large share of the population is clustered around the poverty line, suggesting that a small positive or negative shock can substantially change the poverty rate. Households defined as vulnerable are only slightly above the poverty line, earning around ₦145 per capita per day, and below the cutoff for the middle class, ₦356 per capita per day. If converted into internationally comparable PPP terms, ₦145 is slightly below the US$1.90 PPP[9] poverty line, and ₦356 is close to US$5.00 PPP per capita per day. The high concentration around the poverty line implies that the loss of a few dollar–percentages can have a big negative impact. For example, households living on less than 120 percent of the poverty line account for about 12 percent of the total population; a tiny loss of about ₦29 per day (US$0.36 PPP) would push all of them into poverty. Conversely, the same ₦29 per capita per day given to households at 80 percent of the poverty line would reduce the estimated poverty rate by 10 percent.

Nigerians who are at a low probability of falling into poverty and who qualify for middle-class status or better account for approximately 14 percent of the population. Despite the economic growth and the expansion in white-collar jobs over the last decade (World Bank 2015b), the consolidation of the Nigerian middle class has been relatively slow. From 2004 to 2013, this middle class grew by only 6 percent, and the performance differed across zones.

The increase in the share of middle-class households has been driven predominantly by urban areas. Relative to 2004, there was a decline in the poverty rate of 18 percent (figure 1.13); the share of the vulnerable rose by 8 percent; and the middle class expanded by 10 percent. The performance in rural areas mirrors the geographical characteristics of poverty reduction. The increase in the share of the vulnerable was insignificant, while there was a small improvement in the size of the middle class. The gap in the size of the middle class in urban areas and in rural areas widened: the share of the rural middle class was half the share of the urban middle class in 2004 and only one-third in 2013.

[9] In 2010 the PPP for Nigeria is 79.5

Figure 1.13. The Poor, Vulnerable, and Middle Class, by Location, Nigeria, 2004, 2011, 2013



Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

A profile of the poor, the vulnerable, and middle-class households

Predominantly rural already in 2004, poverty became more highly concentrated in rural areas thereafter; for every poor person in urban areas in 2013, there were nearly five poor people in rural areas (table 1.5). The different rates of growth in urban and rural areas contributed to this concentration (see table 1.2). Average consumption per capita was 35 percent greater in urban areas than in rural areas in 2004 and was 54 percent greater in urban areas in 2013. The share of the poor among rural residents did not change much between 2004 and 2013, but the share of the poor among rural residents decreased. Whereas 71 percent of the total population was living in rural areas in 2004, the share had dropped to 63 percent by 2013. The incidence of poverty is especially high among people living in rural North West. These people accounted for more than 35 percent of the overall poverty rate.

Table 1.5. Profiles of Poor, Vulnerable, and Middle-Class Households, Nigeria, 2004, 2013

	2004			2013		
	Poor	Vulnerable	Middle	Poor	Vulnerable	Middle
Household composition						
Mean number of hh members	7.74	5.50	4.22	8.57	6.99	5.51
Mean n. of members aged 0-4	1.10	0.66	0.42	1.28	0.83	0.51
Mean n. of members aged 5-14	2.59	1.58	0.98	2.93	2.00	1.23
Mean n. of members aged 15-64	3.83	3.07	2.63	3.94	3.56	3.29
Mean n. of members aged 65+	0.22	0.19	0.19	0.28	0.26	0.26
Household literacy rate	29.11	40.34	53.85	53.48	70.80	83.35
Household head characteristics						
Female	7.02	12.60	17.22	6.67	12.37	12.30
Male	92.98	87.40	82.78	93.33	87.63	87.70
Mean age of household head	49.78	48.46	47.89	51.24	51.67	51.44
Mean years of education of hh head	7.73	8.33	9.66	4.10	6.81	10.34
Household head is engaged in agriculture	34.67	24.31	14.37	57.98	33.37	16.02
Highest Educational level of hh head						
None/Pre-school	49.74	40.78	27.75	60.64	36.79	20.64
Primary, not complete	4.44	3.88	3.02	5.59	6.23	4.05
Completed primary	19.62	20.71	17.59	17.25	20.22	13.70
Secondary, incomplete	3.72	4.84	5.98	3.34	5.20	3.98
Completed secondary	8.68	14.40	23.81	9.01	18.97	23.42
Post secondary technical+	13.80	15.38	21.85	4.16	12.59	34.20
Employment status of hh head						
Public	8.46	10.43	17.18	5.50	12.60	24.57
Private	2.26	3.73	4.74	4.09	7.67	12.08
Self-employed	63.25	62.94	54.93	74.98	68.76	51.35
Own account worker	1.25	2.43	3.67	-	-	-
Other	22.48	16.82	13.39	0.21	0.16	0.05
Unemployed	2.29	3.64	6.10	15.22	10.81	11.96
Region of residence						
North Central	16.84	12.14	7.74	14.70	14.52	8.35
North East	12.07	12.89	9.94	18.00	12.62	6.52
North West	33.50	18.75	10.67	38.98	17.07	9.20
South East	9.12	13.67	15.70	9.01	11.54	14.57
South South	13.76	18.79	24.61	10.63	16.14	25.83
South West	14.70	23.76	31.33	8.69	28.12	35.53
Area of residence						
Rural	78.24	65.69	50.82	83.37	54.37	35.77
Urban	21.76	34.31	49.18	16.63	45.63	64.23

Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

Poverty is increasingly a northern phenomenon. In 2013, 57 percent of the poor lived either in the North East or the North West. If we add the poor living in the North Central, 72 percent of poor Nigerians were living in northern zones in 2013 compared with 62 percent in 2004. This is caused by a combination of less favorable climate, distance from the sea, and lack of infrastructure. However, these disadvantages appear to have grown over the last decade to the extent that, whereas both the poverty rate and the absolute numbers of the poor have declined in the populous coastal and central regions, the number of the poor has risen in the North West and the North East since 2004. As a result of these divergent trends, nearly 62 percent of the poor were living in the north in 2004, though the north accounted for only 51 percent of the population. Residence in the north and residence in rural areas, together, accounted for 53 percent of the poor in 2004, but 63 percent of the poor in 2013.

Middle-class households are typically urban and living in the southern zones. This trend has increased in the last decade. In 2004, the share of middle-class households was almost equally

distributed among urban and rural areas: 51 percent rural versus 49 percent urban. In 2013, 64 percent of middle-class households resided in urban areas.

Poor households tend to be larger and include higher numbers of dependents than vulnerable and middle-class households. In 2013, poor households had an average 8.6 members, nearly 25 percent more than vulnerable households and almost twice the number in middle-class households. Poor households tend to have more children; half the members are below 14 years of age, and 15 percent are under 5 years of age, while the shares of under-14-year-olds are, respectively, 40 percent and 32 percent among vulnerable and middle-class households.

The heads of poor households are likely to be older men who are self-employed in agriculture. The average head of a poor household in 2004 was 50 years of age, 2 years older than the average head of a vulnerable or middle-class household. There was no such difference in 2013. Households were generally more likely to be headed by a man in both years. The likelihood of being a woman and a household head was the lowest among poor households. There was an increase in self-employed heads among poor households during the period. In 2013, 75 percent of heads of poor households were self-employed (69 percent and 51 percent among vulnerable and middle-class households, respectively) against 63 percent in 2004. The main economic activity of the self-employed was agriculture. In 2013, 75 percent of the heads of poor households working in agriculture were self-employed against 40 percent in 2004.

Households that have no education are more likely to be poor. Among poor household heads, 54 percent had no education or less than completed primary education in 2004. Despite a general improvement in the literacy rate of household heads during the period, the mean years of education of heads of poor households had fallen by half by 2013, raising the share of uneducated poor household heads to 67 percent. Meanwhile, the number of uneducated heads in vulnerable and middle-class households declined during the period, and, by 2013, 34 percent of middle-class household heads had postsecondary educational attainment or more.

In 2013, the majority of the poor still had little access to basic infrastructure, though they did have some connectivity. Poor households reported ownership of durables, such as televisions, refrigerators, stoves, and generators, considerably less often than vulnerable and middle-class households. This may be related to the scarce availability of electricity in poor dwelling units (34 percent) compared with vulnerable (67 percent) and middle-class households (84 percent). As a means of transport, the poor were mainly relying on bicycles (28 percent) and motorcycles (36 percent); only 4 percent owned a car. A majority of poor households used firewood for cooking (92 percent) and candles and batteries as the main source of lighting (49 percent). Improved sanitation was still a challenge among poor households: 53 percent of poor households used uncovered pit latrines as a main toilet facility, and 42 percent reported they relied on unimproved water sources as the main source of water. This is in contrast to the availability of services among middle-class households: 73 percent used electricity or gas as the main lighting fuel; 65 percent relied on fuels other than firewood for cooking; 56 percent on flush toilets; and 63 percent on improved sources of water.

Vulnerable and middle-class households perform differently on a series of nonmonetary indicators. In educational attainment, vulnerable household heads were about as close to poor household heads as to middle-class household heads: 43 percent of the heads of vulnerable households had less than primary education, compared with 25 percent among heads of middle-class households and 67 percent among heads of poor households. Sector of employment also differ. Heads of

vulnerable households were more likely to be employed in agriculture (33 percent) than middle-class household heads (16 percent), and, while 25 percent of the heads of middle-class households are employed in the public sector, only 13 percent of vulnerable household heads are so employed. There were also geographical differences. Among vulnerable households, 44 percent are located in the northern zones, against 24 percent among middle-class households. While 54 percent of vulnerable households live in rural areas, only 36 percent of middle-class households do so. Among the former, 67 percent have electricity in the dwelling, against 84 percent of the latter. Among vulnerable households, 47 percent still use uncovered pit latrines as a main toilet facility, and 33 percent use unimproved water sources, against 27 percent and 24 percent, respectively, among middle-class households.

In poverty reduction, progress in nonmonetary indicators is slower in Nigeria than in other Sub-Saharan African countries

The concept of welfare is much broader than reductions in poverty and greater consumption among the less well off. The analysis has so far been concerned with the progress registered in monetary indicators of welfare. Monetary indicators alone do not provide a complete picture. The nonmonetary dimensions of deprivation are also important. Empirical evidence from across all regions of the world highlights that the disadvantages in the accumulation of human capital and in access to services—inequality of opportunity—are pervasive, exacerbate income inequality by limiting the potential of individuals from birth, and may have long-term negative impacts on the potential for economic growth and poverty reduction within countries. Across these dimensions, this section presents evidence on the welfare benefits of early childhood development, mother and child health, comprehensive education, and access to basic services, and it compares Nigeria with other African countries in these dimensions.

Most early childhood development and maternal health indicators have improved in Nigeria, but other African countries have done significantly better. The under-5 mortality rate in Nigeria, for instance, was still 128.6 per 1,000 live births in 2013 (table 1.6). This was more than double the rate in Kenya, Rwanda, Senegal, and Tanzania and far from Nigeria's 2015 target rate of 63.7 deaths per 1,000 live births (OSSAP-MDGs 2013). Likewise, the maternal mortality ratio decreased from 1,040 per 100,000 live births in 2003 to 821 in 2013, but was still the highest ratio among the selected countries and higher than the Sub-Saharan African average of 573. Stunting and malnutrition rates have not significantly improved for more than a decade, and almost one-third of Nigerian children are trapped in development deficiencies.

Table 1.6. Anthropometric Indicators, Nigeria and Selected Countries, 2003, 2013

Countries	*Under-5 mortality rate (per 1,000)*		*Maternal mortality ratio (per 100,000 live births)*		*Stunting (height-for-age below 2 SDs)*		*Malnutrition (weight-for-age below 2 SDs)*		*Vaccination*		*Prevalence of HIV, total (% of population ages 15–49)*		*Health expenditure, total (% of GDP)*	
	2003	*2013*	*2003*	*2013*	*2003*	*2013*	*2003*	*2013*	*2003*	*2013*	*2003*	*2013*	*2003*	*2013*
Nigeria	201.0	128.0	1,040	821	38.3	36.8	28.7	28.7	12.9	25.3	3.7	3.3	4.0	3.7
Kenya	95.4	53.4	768	540	35.7	35.3	15.8	16.1	51.8	68.3	7.9	5.4	4.4	5.6
Ethiopia	124.8	64.6	814	410	50.8	44.4	41.2	28.7	20.4	24.3	2.6	1.2	4.6	5.2
Ghana	91.3	66.5	420	321	—	28.0	—	13.9	69.4	79.0	2.2	1.5	3.1	4.6
Rwanda	139.4	47.8	770	318	51.1	44.2	19.5	11.4	75.2	90.1	4.3	2.9	6.3	7.7
Senegal	112.5	52.5	462	335	19.6	18.7	14.2	15.7	58.7	70.2	0.9	0.6	5.4	4.5
Tanzania	106.9	53.3	747	438	44.3	42	16.4	15.8	71.1	75.2	7.4	5.5	4.1	5.6
Uganda	124.2	60.3	558	372	44.8	33.4	15.9	13.8	46.2	51.6	6.4	7.2	7.5	7.5
South Africa	78.1	43.4	102	145	—	—	—	—	—	—	17.5	18.8	8.3	8.8
Sub-Saharan Africa,	138.3	89.2	774	573	—	—	—	—	—	—	5.6	4.6	—	—

developing only

Sources: Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/; WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Note: The years indicated refer to Nigeria. For other countries, data for the same years are shown if available; otherwise, the oldest and newest available data between 2000 and 2013 are indicated. SD = standard deviation. — = not available.

Improvements in the education sector were also sluggish. The gross enrollment ratio in primary schools in Nigeria in 2010 was 84.7 percent, which is the second lowest ratio among the countries in table 1.7 after Senegal. Nigeria performs 13.7 percent below the 98.4 percent average gross enrollment ratio in primary schools in developing countries in Sub-Saharan Africa. Moreover, the ratio declined by more than 10 percent in Nigeria between 2002 and 2010, while it improved in most of the other countries. The gross enrollment ratio in secondary school rose in Nigeria from 29.4 percent in 2002 to 43.8 percent in 2010, but it is still below the corresponding ratio in Ghana, Kenya, and South Africa. Education expenditure is the lowest (0.9 percent of gross national income) among the selected countries. This was only a third of the average education expenditure in Sub-Saharan Africa, which was 3.3 percent of gross national income in 2013, and the rate in Nigeria did not change during the decade. The poor input is associated with poor output. The literacy rate among women in Nigeria was only 53.1 percent, while in Kenya and Rwanda, the rate exceeded 80.0 percent. Many challenges in both input and output in education are persistent in the country.

Table 1.7. Education Indicators, Nigeria and Selected Countries in Africa, 2002–13

Countries	*Gross enrollment ratio, primary (%)*		*Gross enrollment ratio, secondary (%)*		*Adjusted net enrollment rate, primary (%)*		*Pupil–teacher ratio in primary education (headcount basis)*		*Education expenditure (% of GNI)*		*Women who are literate (%)*	
	2002	*2010*	*2002*	*2010*	*2004*	*2010*	*2002*	*2010*	*2003*	*2013*	*2003*	*2013*
Nigeria	97.6	84.7	29.4	43.8	67.6	65.7	40.3	37.6	0.9	0.9	48.2	53.1
Kenya	91.9	116.1	41.0	67.6	74.3	86.2	34.4	56.6	6.1	4.9	78.5	84.9
Ethiopia	63.6	92.0	18.6	34.8	50.3	74.4	62.3	54.1	2.6	2.9	24.4	38.4
Ghana	83.7	108.5	41.0	61.1	59.6	86.8	32.1	31.7	6.4	5.8	54.9	62.9
Rwanda	114.2	142.3	11.6	32.8	82.0	96.1	59.0	64.6	3.7	4.3	66.1	80.2
Senegal	70.9	81.9	17.4	35.6	62.7	70.2	48.9	33.7	3.2	5.2	34.6	39.0
Tanzania	88.5	99.0	—	31.1	85.1	89.1	53.0	50.8	3.2	3.7	67.3	72.2
Uganda	138.0	120.3	19.5	27.1	93.6	93.8	52.7	48.6	3.5	2.0	57.8	64.2
South Africa	103.2	96.3	87.2	90.3	89.8	88.1	35.3	32.7	4.9	5.9	—	—
Sub-Saharan Africa (developing only)	87.0	98.4	28.9	40.6	68.6	76.8	43.9	43.4	3.7	3.3	—	—

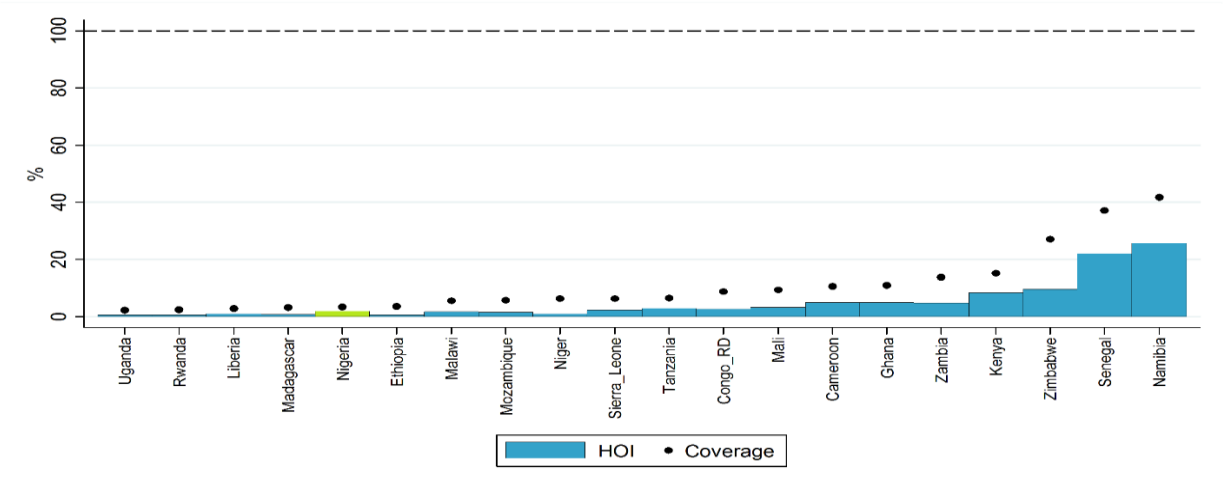
Sources: Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/; WDI (World Development Indicators) (database), World Bank, Washington, DC (accessed January–April 2016), http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

Note: The years indicated refer to Nigeria. For other countries, data for the same years are shown if available; otherwise, the oldest and newest available data between 2000 and 2013 are indicated. GNI = gross national income. — = not available.

Access to water and sanitation is low and highly unequal in Nigeria. Access to basic services such as water, sanitation, and electricity is essential for children. Water and sanitation are primary drivers of public health. Improvements in the access to these services can reduce the incidence of diarrhea among children and its serious long-term consequences, such as malnutrition, pneumonia, and physical or mental stunting. Figures 1.14 and 1.15 show the human opportunity index (HOI) of

access to water and sanitation among children ages 0–16 in 20 African countries (circa 2006).[10] Countries were selected depending on the availability of data from the Demographic and Health Surveys (DHS).

Figure 1.14. HOI: Access to Water among Children Ages 0–16, Selected Countries

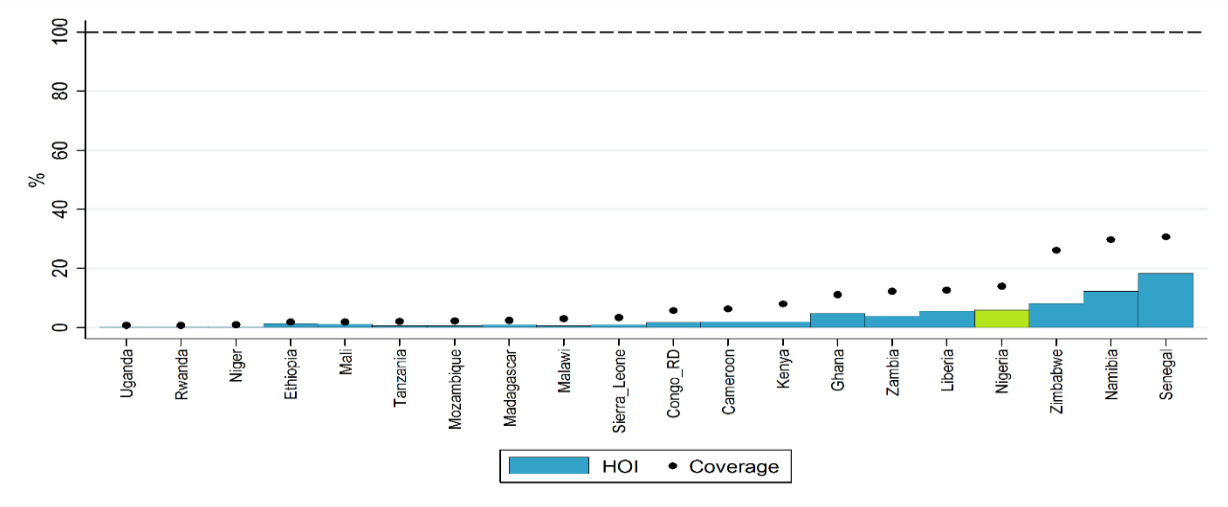


Source: World Bank calculations based on Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/.

Access to sanitation among children is extremely low in Nigeria as in many other African countries. Both the HOI and coverage are close to 0 not only in Nigeria, but also in countries such as Liberia, Madagascar Rwanda, and Uganda (figure 1.14). On access to sanitation, Nigeria performs relatively well among the 20 countries, but still shows a low coverage of 15 percent. In addition, there is more than a 5 percent gap between the coverage and the HOI. This means children's access to flush toilets, for example, is not only low, but also highly unequal in Nigeria by the wealth, location, age, educational attainment, and sex of the head of household (figure 1.15).

[10] The HOI was created by the World Bank with external researchers in 2008. It measures the inequality in opportunity. In particular, the HOI considers (a) how far a country is from the goal of providing universal access to a set of goods and services and (b) the degree to which there is equality of opportunity to access these goods and services. Intuitively, the HOI is an inequality of opportunity discounted coverage rate. The higher the correlation between access and circumstances, the larger the discount or penalty to the coverage rate in computing the HOI (Dabalen et al. 2015). Access to water and sanitation is extremely low because the definitions used in figures 1.14 and 1.15 are conservative; the definition of access to water in the figures is the availability of piped water, and access to sanitation refers to the availability of flush toilets. See "Improved and Unimproved Water Sources and Sanitation Facilities," WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, World Health Organization, Geneva, and United Nations Children's Fund, New York (accessed June 2016) http://www.wssinfo.org/definitions-methods/watsan-categories/ for alternative, more liberal definitions. For example, the definition of improved water includes piped water, protected dug well, rainwater, and others, while the definition of improved sanitation includes flush toilet, flush or pour flush to pit latrine, and others.

Figure 1.15 HOI: Access to Sanitation among Children Ages 0–16, Selected Countries



Source: World Bank calculation based on Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/.

Chapter 2 : Mind the Gap

Over the last decade, a key feature of the Nigerian growth pattern has been limited inclusiveness. Whereas GDP increased in the range of 6–8 percent annually; poverty declined slowly; the size of the population increased rapidly; and inequality continued to expand. The low GEP reflects growing disparities between urban and rural areas and the zones; moreover, the divide has a clear north-south dimension.

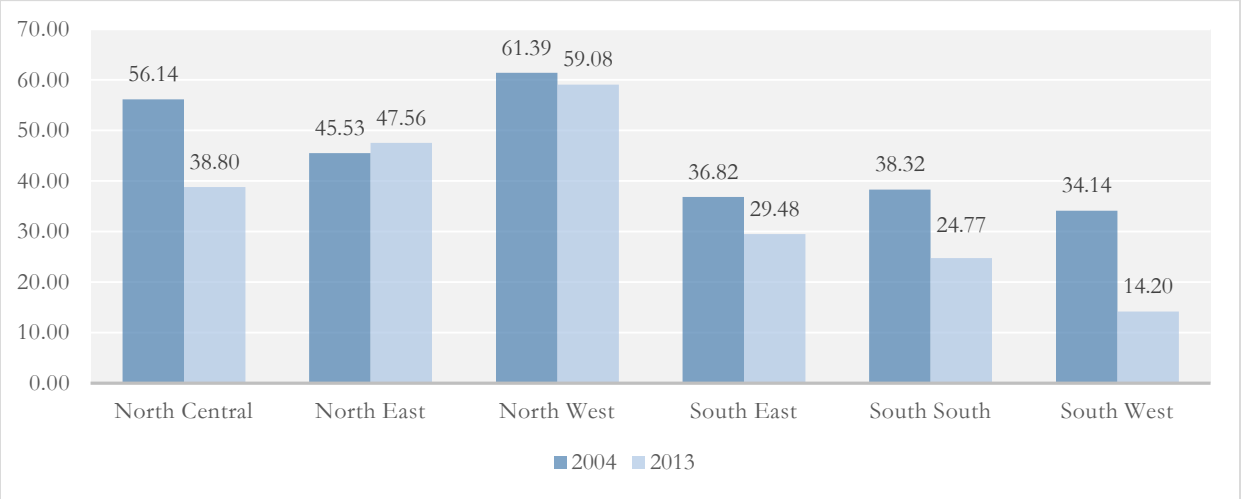
Mind the gap echoes the concerns about the degree to which the northern and southern parts of the country have been following different growth paths. The widening divide is not a feature of the last decade only; it has been expanding for years, which is evident in various socioeconomic indicators and the varying depth of economic opportunities. An examination of only national-level indicators thus provides an incomplete picture. Decomposing data to the zones and states clearly reveals significant differences in many socioeconomic indicators and trends.

The recent insurgency in the North East that has also affected parts of the North West has likely contributed to widening the divide. An evaluation of the direct impact of conflict in aggravating poverty in the northern states is beyond the scope of this report. A new GHS (round 3) comparable with the two previous rounds will soon be available and will contain a specific module and sampling strategy aimed at evaluating the impact of conflict on the livelihoods of northern households. Future analytical work will undoubtedly offer a rigorous assessment of the impact of the conflict on poverty in the north and in accentuating the divide between north and south.

Poverty rates in the north are higher and decreasing much more slowly

Poverty in 2004 was higher in northern Nigeria, and the gap between north and south has widened in the last decade. Starting from levels below 40 percent, all the southern zones saw a decline in poverty (figure 2.1). The South West performed particularly well and managed to cut the poverty rate by more than half in the last decade. Among the northern zones, North Central was the only zone that performed well, reducing poverty by almost 18 points, well above the national average. In both the North West and the North East, poverty reduction stagnated, while poverty levels remained particularly high: 47.6 percent in the North East and 59.0 percent in the North West.

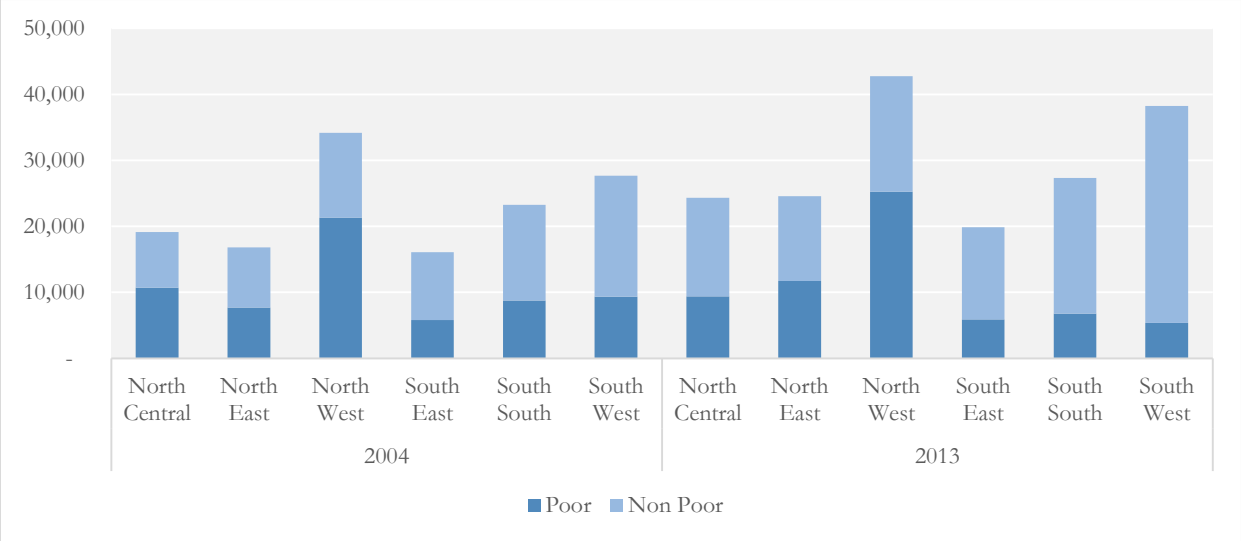
Figure 2.1. Poverty Headcount Ratio, by Zone, Nigeria, 2004, 2013



Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

While the total number of the poor in the south declined by almost 6 million, it increased by almost 7 million in the north. The number of the poor nationwide is thus the outcome of two completely opposite trends: substantial poverty reduction in the southern zones (except for the South East) and a substantial increase in poverty in two of the three northern zones; in North Central, the number of the poor decreased by about a million. The number of the poor residing in the North East and North West was 29 million in 2004, and it had risen to 37 million by 2013 (figure 2.2). These additional 8 million poor people were equally split between the North East, the area most affected by recent conflict, and the North West. Among the southern zones, the South West benefited from the lion's share of poverty reduction, 4 million fewer poor.

Figure 2.2. Number of the Poor, by Zone, Nigeria, 2004, 2013

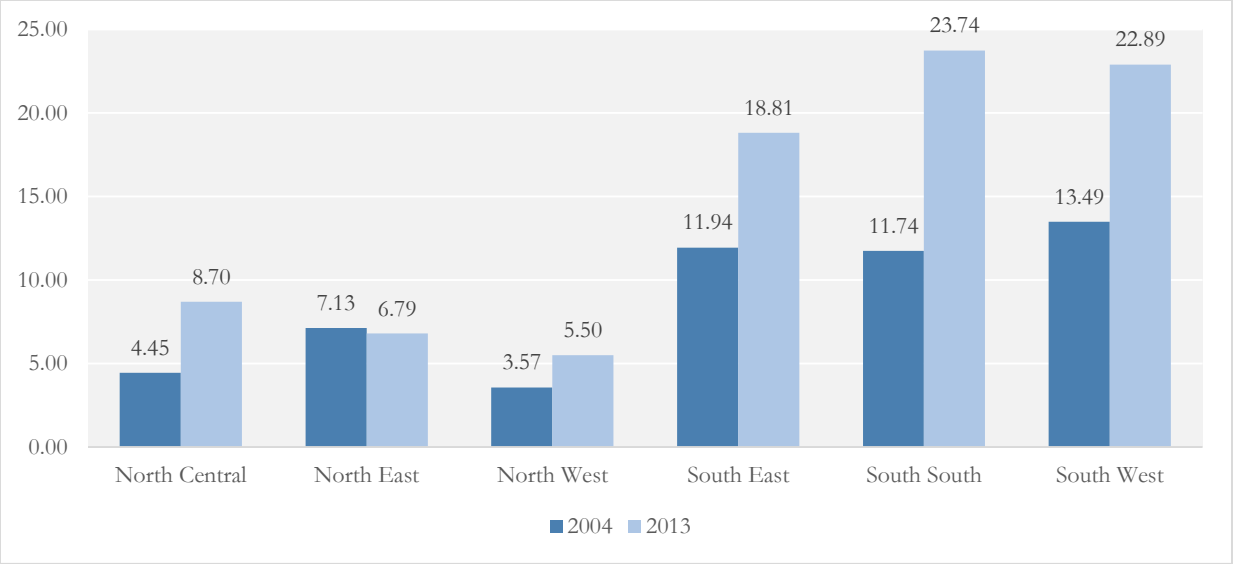


Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

Northern Nigeria does not fare well in the size of the middle class, suggesting that little change is taking place in the structure of the economy. While the share of the middle class ranges from 19 percent to 23 percent in the southern zones, it remained at one digit in the north, ranging

from 6 percent to 9 percent (figure 2.3). Most middle-class households are thus concentrated in the south, particularly in the South West and South South zones. Over time, the gap has increased. A data disaggregation by zones shows two diverging trends mirroring the diverging trends in poverty. The southern zones and the North Central zone experienced a marked increase in the share of middle-class households, while the middle class in the North East and North West stagnated. It follows that, if the size of the middle class is a proxy for structural transformations in a country, most of the changes in Nigeria are occurring in the south, and little is happening in the north.

Figure 2.3. Middle-Class Households, by Zone, Nigeria, 2004, 2013



Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

Poverty is more chronic in the north

Analysis of the poverty transitions taking place among the population can help distinguish between the short-term transitory poor and the long-term chronic poor (Hodonou et al. 2010). One reason motivating this distinction is that chronic poverty can be expected to have a much larger effect on well-being. For instance, prolonged poverty spells will negatively affect child outcomes such as health, cognitive development, and educational outcome (Brooks-Gunn and Duncan 1997). There is thus an increasing focus on poverty analyzed from a dynamic perspective and on the constraints hindering poor people from improving their conditions. Similar analysis has not been done in Nigeria because of various data limitations. The availability of a new panel dataset now enables this gap to be filled and test whether, from this dynamic point of view, the southern and northern zones are different, that, is, whether the higher levels of poverty in the north are associated with chronic poverty and whether poverty in the south is more transient.

The stability in the poverty rates between 2011 and 2013 hides, in fact, a much more nuanced situation. The analysis benefits from the panel nature of the GHS to take a close-up of the 4,632 households interviewed in both 2011 and 2013. This helps capture more effectively the dynamics of poverty during the period (table 2.1). Of the 4,632 households, 16 percent were poor in both years (chronic poor); 61 percent were nonpoor in both years (permanent nonpoor); and 23 percent were poor in 2011 and nonpoor in 2013 or vice versa (transient). This last group, considering the short time

span, is rather numerous; if faced with a shock, about 23 percent of the panel sample can change status between poor and nonpoor.

Table 2.1. Dynamic Poverty Profile, Households, Nigeria, Panel 2011–13

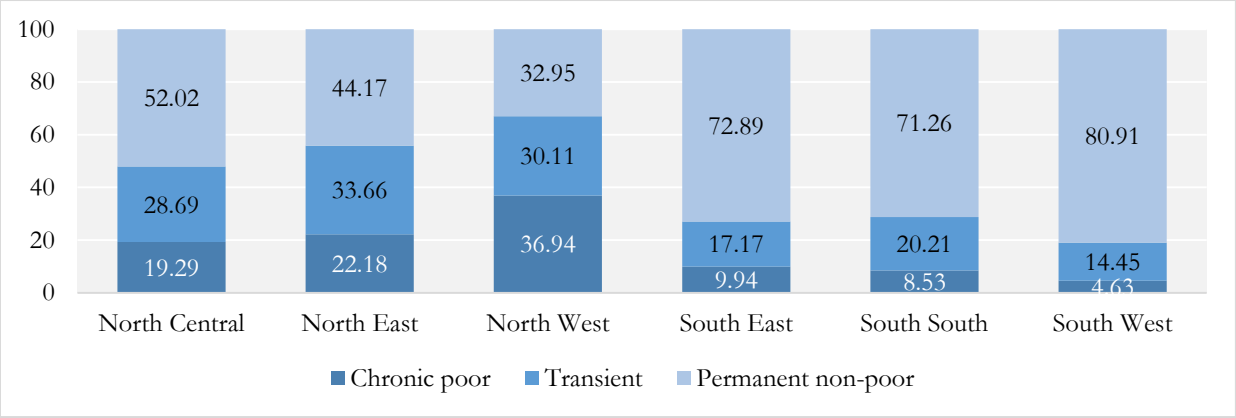
Profile	Freq.	Percent
Chronic poor	744	16.07
Transient	1,051	22.68
Permanent non-poor	2,837	61.25
Total	4,632	100

Source: World Bank calculations based on household panels in GHS 2010–11, 2012–13.

Chronic poverty is still a predominantly northern phenomenon. By breaking down this dynamic categorization at the zonal level, we observe that 75 percent of chronic poor households reside in the north, while only 25 percent are located in the south. Moreover, about 60 percent of the transient poor are located in the north, confirming that households in the north are relatively more prone to shocks.

The North West accounts for about 45 percent of the chronic poor in the country. Households in the North West zone face particularly dire conditions and have limited chances to escape poverty. The chronic poor account for 37 percent of the zonal population, and this share exceeds the share of the transient; this is the only zone where the share of the chronic poor exceeds the share of the transient poor (figure 2.4). In the North East, the share of the chronic poor is the second highest in the country 22.2 followed by North Central (19.3). All Southern regions show instead much lower chronic poor rates, all below 10 percent.

Figure 2.4. Zonal Differences, Dynamic Poverty Profile, Households, Nigeria, Panel 2011–13



Source: World Bank calculations based on household panels in GHS 2010–11, 2012–13.

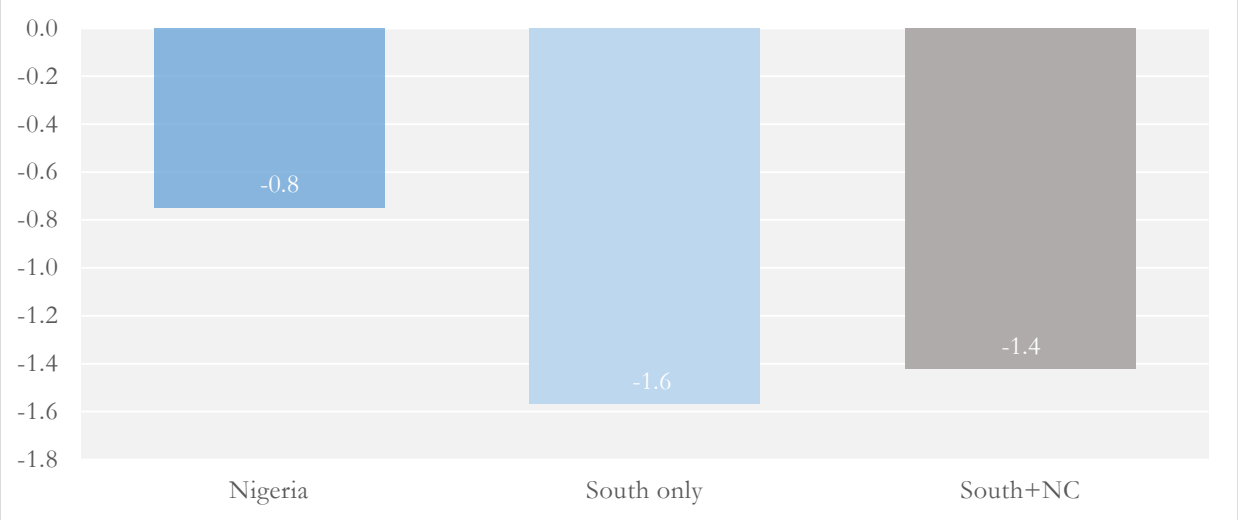
The southern zones show low shares among the chronic poor. The share of the chronic poor in the southern zones tends to be below 10 percent; the South West has the lowest rate in the country, 4.6 percent. Whereas the shares of transient and chronic poverty tend to be similar in the northern zones, there are half as many chronic poor as transient poor or even fewer in the southern zones.

Poverty trends at the national level average two (or more) heterogeneous dynamics

The low responsiveness of poverty reduction to growth can arguably be attributed to the performance of the North East and the North West. Together, these two zones experienced a stagnation in poverty rates, while the rest of the zones experienced a reduction of more than 14 percent if the South East is excluded. In 2004, the population of the North East and North West represented 37 percent of the population and 46 percent of the poor. By 2013, their share of the total population remained unchanged, but their share of the poor had risen to 57 percent.

Should the value of the GEP be calculated without the two northern zones, it would double, and poverty reduction would outpace growth. A simple simulation using data on per capita consumption shows how the performance of the north affected the performance of the entire country.[11] Excluding the North West and the North East only, the elasticity would double, reaching a value above 1 so that every 1 percent of the growth in per capita consumption would translate into a 1.6 percent reduction in poverty (figure 2.5). If the North Central zone is added, the elasticity declines to −1.4, a bit lower, but still above −1[12]. Thus, factoring out two or more zones can completely change the narrative of poverty reduction in Nigeria. This confirms that looking only at national averages does not offer the full picture.

Figure 2.5. Counterfactual Elasticities, Nigeria



Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

The various patterns of poverty reduction are related to both the different rates of growth in per capita consumption and the variation in inequality. Between 2004 and 2013, the average real consumption of the North West grew by 15 percent, an average of 1.6 percent a year or half the national rate of growth. Average consumption in the North East grew more quickly, at a few points below the national average, but inequality grew even more quickly (chapter 3). The stagnation in the median of both zones already suggests that most of the growth benefited only the upper percentiles

[11] GDP data by zone or state are not available on Nigeria. The GEP is proxied using per capita consumption, which has an elasticity of −0.8 against −0.6 measured on the GDP per capita.

[12] Although we are using per capita consumption, it is not implausible to suppose a counterfactual based on GDP per capita could yield similar results. Doubling the value of the GEP would lead to a value close to −1.2, which is about the average speed of poverty reduction in Sub-Saharan Africa.

and had minimal impact on poverty (table 2.2). The most rapidly growing zones were the South South, which grew almost two times more quickly than the national average, and the South West, which grew by 37 percent.

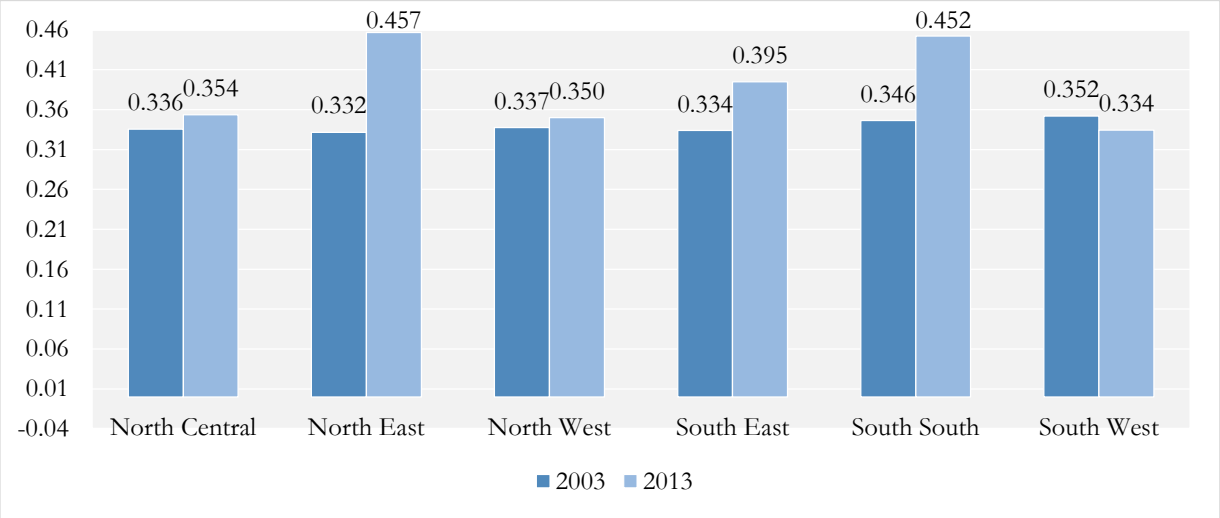
Table 2.2. Mean and Median Consumption per Capita, by Zone, Nigeria, 2004, 2013

	2004		2013	
	Mean	Median	Mean	Median
North Central	56,479	47,290	75,126	59,414
North East	64,590	54,794	81,233	52,664
North West	51,105	42,769	59,439	45,750
South East	76,056	63,666	97,126	72,752
South South	76,133	62,295	120,000	73,375
South West	80,309	65,777	110,000	89,643
Nigeria	66,577	54,591	88,544	63,215

Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

The second important element to take into account is the effect of inequality on poverty reduction. The Gini coefficient increased in all zones except the South West, where it declined by almost 2 points (figure 2.6). In the remaining five zones, the variation was highly heterogeneous, starting from more or less the same value. Whereas the Gini rose by almost 0.13 points in the South South and the North East from levels at around 0.33, it increased by 0.06 points in the South East and by 0.02 points in the North West and North Central. The biggest contributors to the rapid widening in inequality nationwide were therefore the South South and the North East; their performance in poverty reduction, nonetheless, could not have been more different.

Figure 2.6. The Gini Coefficient, by Zone, Nigeria, 2004, 2013

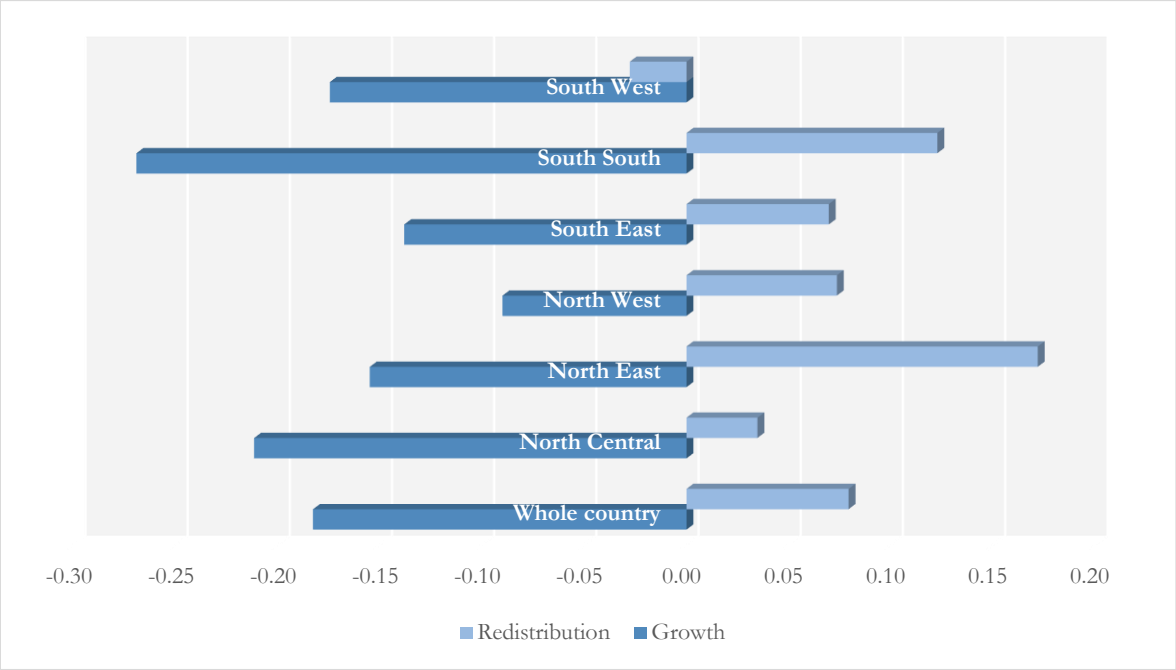


Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

Owing to the rapid growth, the South South saw a substantial reduction in poverty; in the North East, meanwhile, growth was completely offset by inequality. Figure 2.7 presents the zonal results of the Shapley value decomposition. Had inequality not widened in the South South, poverty reduction might have been as rapid there as in the South West, and the poverty rate would have been around 14 percent rather than 24 percent. By comparison, the poverty reduction in the

North East that is attributable to income growth was close to the national average, but the zone witnessed a an expansion in inequality that was greater than the federation average. As a result, there was hardly any poverty reduction. In the North West, even the modest increase in inequality completely eroded the gains from growth. Had the Gini not increased, the sluggish growth registered in the zone might have helped reduce poverty by 9 percent, but, eventually, the reduction was only by a few points.

Figure 2.7. Shapley Value Decomposition, by Zone, Nigeria



Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

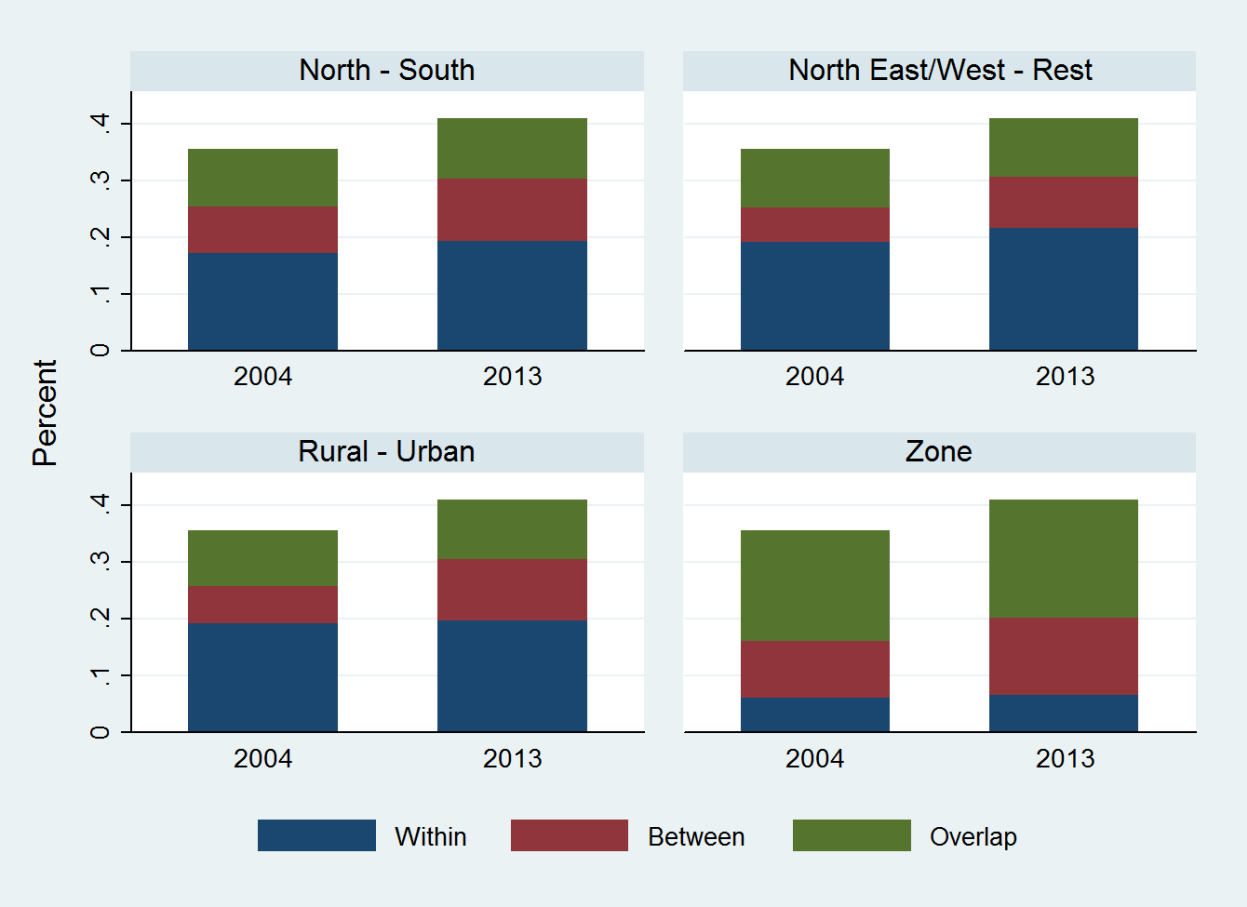
There is heterogeneity within the southern zones. For example, the South West and South South paths toward poverty reduction look different. The South West was able to translate almost all consumption growth into poverty reduction, whereas the South South benefited from more rapid growth, but was far less inclusive. The reason lay in the two different growth models characterizing the two zones. The South West accounts for much of the nonoil economy in the country, which, since 2009, has been driving Nigerian growth and generating wage employment (World Bank 2015b). In contrast, the South South economy relies to a large extent on oil extraction, which is characterized by lower labor absorptive capacity and is generally far less inclusive.

The variations in performance contributed to widening inequality and polarization

The growing zonal disparities contributed substantially to the expansion in inequality. To quantify the relative importance of the contributing factors to overall inequality, the Gini coefficient is divided into three components for each household characteristic: one reflecting cross-household variations in the characteristics (the between component, represented in figure 2.8 by the red bars); one measuring differences in consumption across groups of households with the same characteristics (the within component, represented in figure 2.8 by the blue bars); and an interaction or overlap term (represented in figure 2.8 by the green bars). In the first panel in figure 2.8, for example, the red

component of the bars (the between component) represents the share of inequality that is accounted for by differences in the north and in the south.

Figure 2.8. Gini Decomposition, by Location, Nigeria, 2004, 2013



Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13.

The relatively large and increasing size of the red (between) bars in figure 2.8 indicates that household differences in the zone of residency are important determinants of consumption inequality. However, the fact that the blue (within) component is also large suggests that a large degree of inequality persisted across households. Inequalities across zones played a particularly important role, accounting for an average of 25 percent of the total Gini that increased between 2003 and 2013. Within-zone inequalities were responsible for about 50 percent of total inequality. The expansion in inequality nationwide was driven by both components. Figure 2.8 also shows the substantial heterogeneity within the north and the south. A comparison of the two top panels with the last panel in which the zones are isolated reveals that the between (red) component is increasing, while the within (blue) component is decreasing. This is because the average consumption per capita is different within the north and the south (see table 2.2), and zones exhibited different growth and inequality patterns.

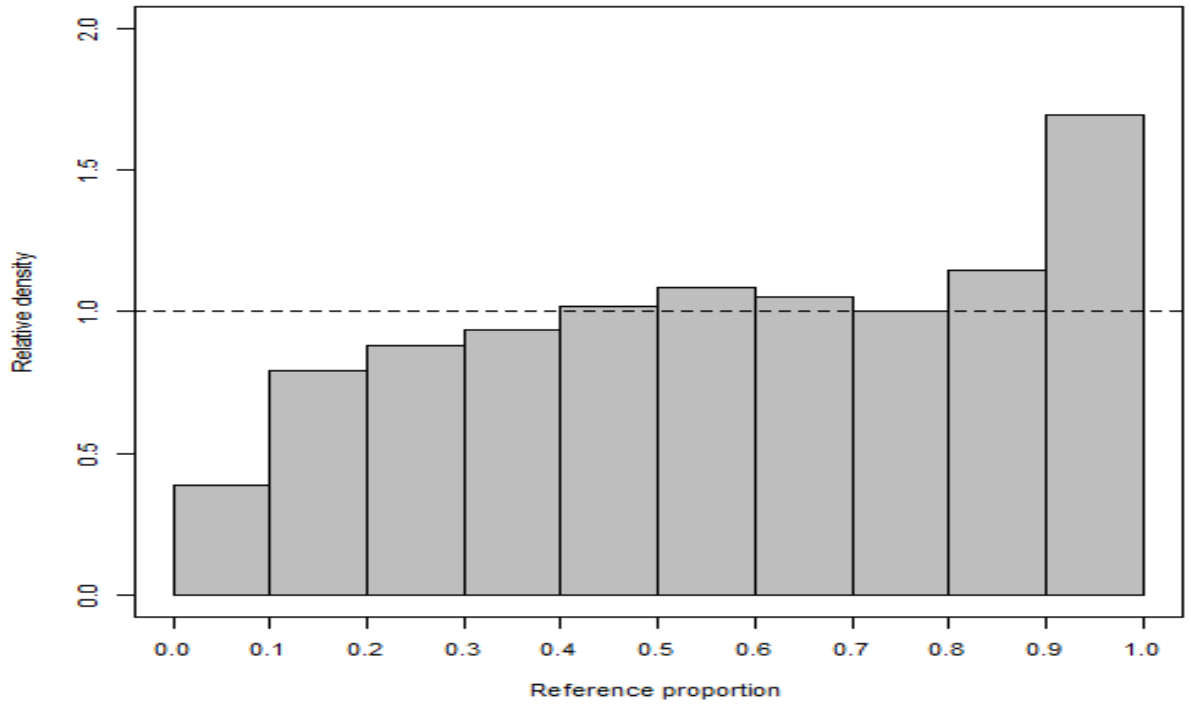
Together with widening inequality, the country is experiencing rapid polarization. While inequality is equivalent to the overall dispersion in the distribution, polarization is equivalent to the combination of divergence from global mean incomes and convergence on local mean incomes. Thus,

if societies experience income polarization, households are clustered around group means, but tend to be distant from the mean or median of the overall distribution.

The degree of polarization in Nigeria is measured using the relative distribution method.[13] This method involves the creation of a distribution that captures the share of households in the comparison year (2013) that fall within each income decile of the reference year (2004). This distribution is then decomposed into a location effect, which tells us if there is a change in the median (or mean) of the income distribution, and a shape effect, which, representing the relative distribution, net of the location change, is useful in isolating movements (redistribution) between the reference population and the comparison population.

The generalized increase in consumption means that, in 2013, households were crowded around the top deciles of the 2004 consumption distribution. Figure 2.9 shows the share of households in 2013 that fall into each decile of the 2004 distribution. It is obvious from the figure that the share of households with consumption levels equivalent to the consumption levels of the upper deciles in 2004 rose dramatically throughout the decade, while the share with consumption levels equivalent to the consumption levels of the bottom and around the middle in 2004 declined.

Figure 2.9. Relative Consumption Distribution, Nigeria, 2004–13

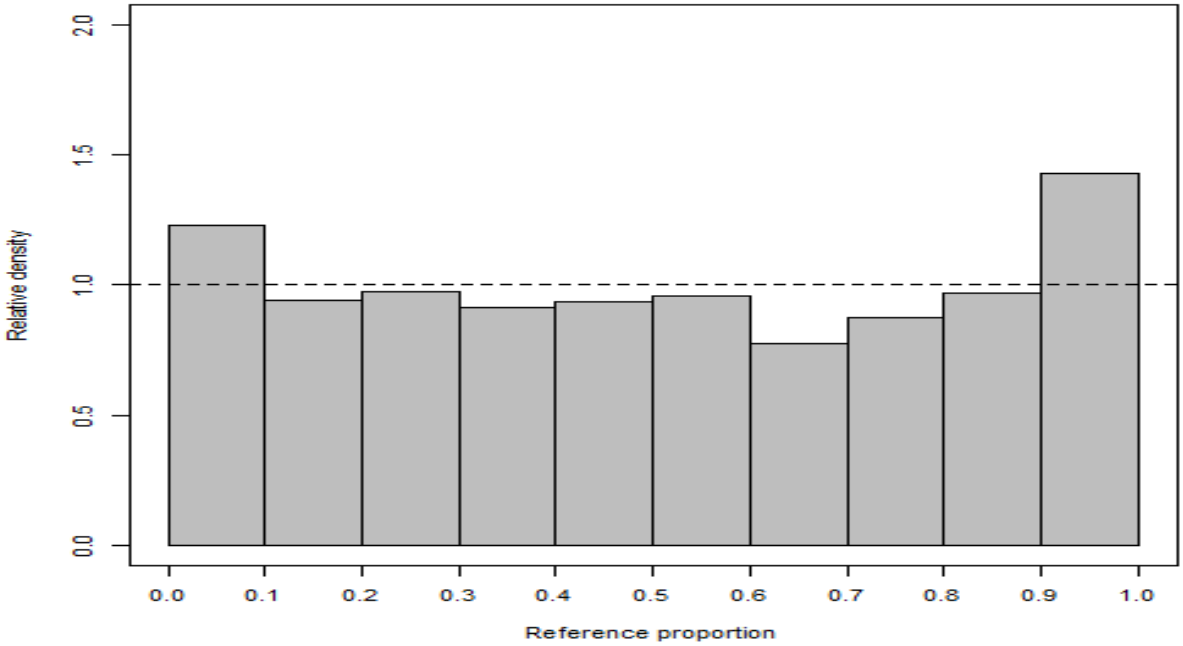


[13] Techniques based on the relative distribution method developed by Handcock and Morris (1998, 1999) enable the counterfactual comparison of compositionally adjusted distributions. Relative distribution methods can be applied whenever the distribution of some quantity across two populations is compared either in cross-section or over time. For the purposes of this report, the relative distribution is defined as the ratio of the density in the comparison year to the density in the reference year, evaluated at each decile of the consumption distribution; it can be interpreted as the share of households in the population of the comparison year that fall into each decile of the distribution of the reference year. This allows the identification and location of changes that have occurred along the entire Nigerian household consumption distribution.

Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

The crowding of the population in 2013 in the top 2004 deciles implies growing polarization. To confirm this, the changes in the relative density owing to the changes arising because of the increase in median income (the location effects) and the changes arising because of changes in the distribution (the shape effect) are estimated. The latter are the changes produced by the changes in distribution, net of the impact of the increase in median consumption (figure 2.10). The polarization of households around the bottom 10 and the top 10 is quite clear. Without the rise in median income, the greater dispersion of consumption expenditures would have led to relatively more low-consumption households in 2013, and this effect was mainly concentrated among the bottom 10. By contrast, at the top of the distribution, the effect of higher median income reinforced the polarization in the distribution, which, by itself, would have boosted the share of households in the top 10 by nearly 140 percent. In sum, once we factor out changes in real median expenditure, we observe a U-shaped relative density, indicating that polarization was hollowing out the middle of the household consumption distribution.

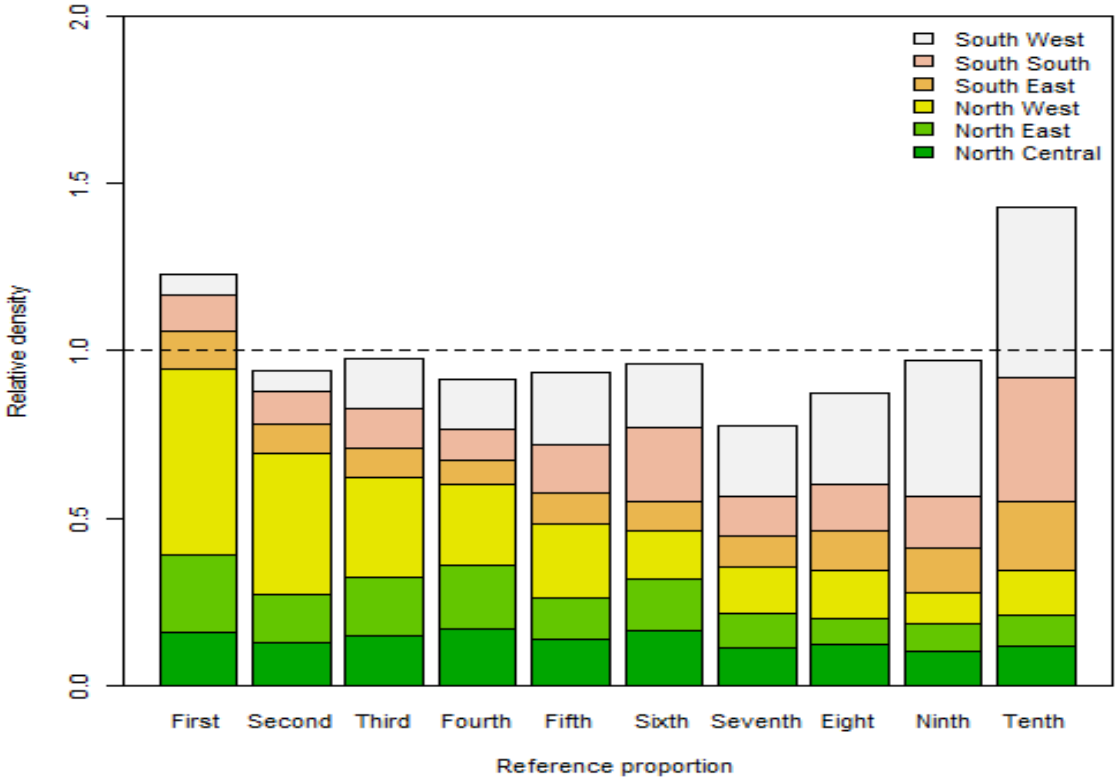
Figure 2.10. The Median-Adjusted Relative Consumption Distribution, by Decile, Nigeria, 2004–13



Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

This pattern of distributional change is clearly driven by the widening of the north-south divide. In the southern zones (South West and South South), the lower deciles tend to be emptied relative to the rest of the country, confirming the tendency for households in these zones to occupy deciles higher up in the consumption distribution (figure 2.11). Conversely, in the North West and in the conflict-stricken North East, we see the exact opposite. The overall impact was a generalized hollowing out of the center and a further accentuation of the north-south divide that already characterized the country.

Figure **2.11.** The Median-Adjusted Consumption Distribution, by Zone, Nigeria, 2004–13



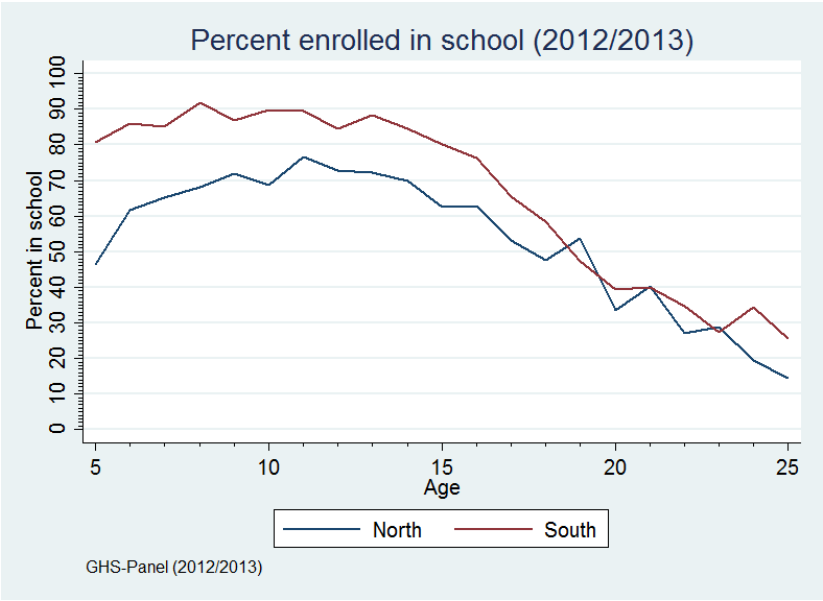
Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2012–13.

Several nonmonetary outcomes confirm the breadth of the north-south divide

The nonmonetary indicators analyzed in chapter 1 are now decomposed by north, south, and zonal location. The heterogeneity is substantial in many of these indicators, such as enrollment rates, test scores among students, and a broad set of health and nutritional outcomes, including mortality rates, vaccination coverage, and the share of stunted and malnourished children. Compared with consumption and poverty, these indicators tend to vary much more slowly and capture a longer-term dimension of welfare. Differences in these indicators are typically structural, and only persistent, effective interventions can narrow the gaps.

The enrollment rate across all age-groups is lower in the northern states than in the southern states. The gap between the two is the widest among children between 5 and 10 years of age who are of primary-school age when they obtain basic numeracy and literacy skills. The difference in enrollment rates between the north and the south narrows among older students and disappears among students approaching 20 years of age (figure 2.12).

Figure 2.12. Enrollment Rates across Age-Groups, South versus North



Source: World Bank calculations based on GHS 2010–11, 2012–13.

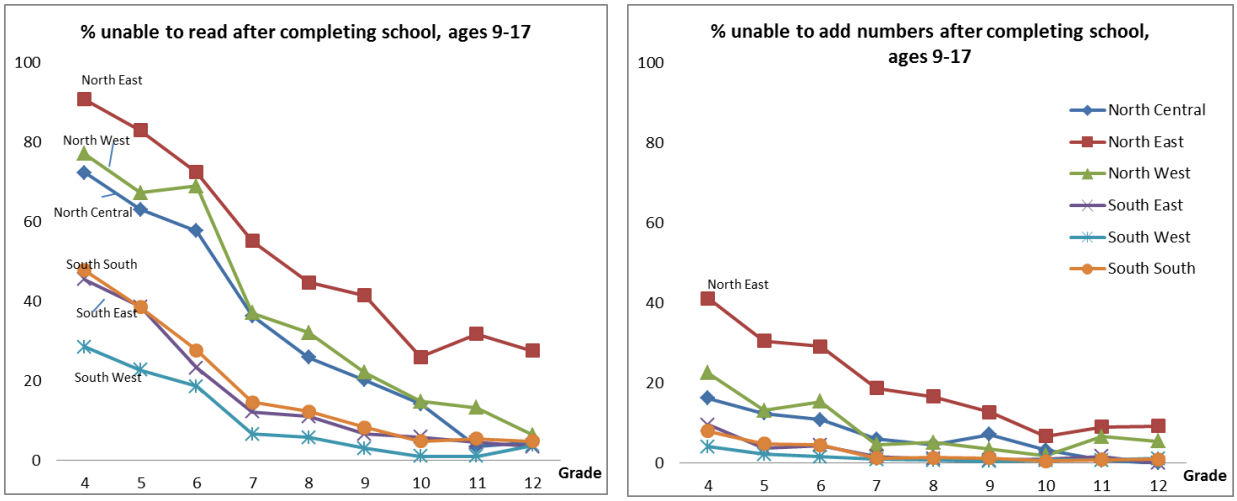
Many children are unable to read and add numbers after completing school. In Nigeria, the completion of primary school does not necessarily mean that students are able to read and do simple arithmetic.[14] Many students take 10 or more years of schooling to master such basic competencies (figure 2.13, panel a). Poor learning outcomes are most severe in the north. More than two-thirds of students in the north remain illiterate even after completing primary school (grade 6), compared with only about 18–28 percent of students in the south (figure 2.13, panel b).[15] Students in the North East have the lowest literacy outcomes in schooling: 91 percent and 72 percent of students are unable to read after completing grade 4 and grade 6, respectively. Even by grade 12, about 28 percent of these students have not learned to read.

[14] Favara, Appasamy, and Garcia (2015).

[15] The literacy rate is measured through a simple test. Cards are shown in the language of instruction taught in the child's school (including English, Hausa, and Yoruba) to test if the child (a) cannot read, (b) is able to read parts of a sentence, or (c) is able to read a whole sentence. The literacy outcomes that are calculated in this report capture the percentage of students who can read whole sentences. The observations are excluded if the child is taught in a language other than the above or is visually impaired.

Figure 2.13. Basic Competencies after School Completion, Ages 9–17, Nigeria

a. Unable to read **b. Unable to add numbers**



Sources: Favara, Appasamy, and Garcia 2015; original data of the Nigeria 2010 Education Data Survey (weighted estimates): Eddata II (database), United States Agency for International Development, Washington, DC, https://www.eddataglobal.org/household/index.cfm?fuseaction=showDatasetDir&A2=NG.

Health care and nutritional status are significantly better in the south. The under-5 mortality rate is an indicator of child health. Overall, the south outperforms the north. In the South West and South South zones, the rate had declined to 90.0 and 91.0 per 1,000 live births, respectively, by 2013, compared with 176.0 in the South South in 2003, a decline of 85.0 over the 10 years, which is a significant improvement. In the north, by comparison, the rate is still high, 185.0 in the North West and 160.0 in the North East in 2013, though this represented an improvement over the decade. Stunting rates (height-for-age below −2 standard deviations) and malnutrition rates (weight-for-age below −2 standard deviations) also reflect a north-south divide. Stunting and malnutrition rates are consistently highest in the North West, 54.8 and 47.4, respectively, in 2013. In the South East zone, the stunting rate was 16.0, and malnutrition rate was 11.4 in 2013. The difference between the north and the south is sufficiently convincing to claim that the south has a better human capital base than the north (table 2.3).

Table 2.3. Health Care Indicators, by Zone, Nigeria, 2003–13

Zone	Under-5 mortality[a]	All vaccinations	No vaccinations	Stunting[b]	Malnutrition[c]
2003					
North Central	165.0	12.4	20.7	31.4	19.6
North East	260.0	6.0	30.5	43.0	33.1
North West	269.0	3.7	40.5	55.3	42.9
South East	103.0	44.6	15.3	19.7	8.5
South South	176.0	20.8	6.5	20.9	18.0
South West	113.0	32.5	5.1	24.6	19.1
Total	201.0	12.9	26.5	38.3	28.7
2008					
North Central	135.0	25.9	23.4	43.8	19.5
North East	222.0	7.6	33.3	48.6	34.5
North West	217.0	6.0	48.5	52.6	35.1
South East	153.0	42.9	17.2	21.7	10.0
South South	138.0	36.0	10.2	31.1	12.8

South West	89.0	42.8	12.9	31.2	13.3
Total	171.0	22.7	28.7	40.6	23.1
2013					
North Central	100.0	26.9	17.3	29.3	18.5
North East	160.0	14.2	45.3	42.3	30.8
North West	185.0	9.6	20.8	54.8	47.4
South East	131.0	51.7	7.2	16.0	11.4
South South	91.0	52.0	9.4	18.3	12.8
South West	90.0	40.9	10.3	22.2	14.9
Total	128.0	25.4	20.7	36.8	28.7

Sources: NPC, Federal Republic of Nigeria and ICF International 2008, 2014; NPC, Federal Republic of Nigeria and ORC Macro 2004.

a. Per 1,000 live births.

b. Height-for-age below −2 standard deviations.

c. Weight-for-age below −2 standard deviations.

Poverty maps show the big divide, but also suggest high heterogeneity within zones

Inequality is wide and increasing within zones, and there appears to be high heterogeneity within zones. Poverty maps allow a better understanding of the spatial distribution of poverty at the local level. A method recently developed at the Oxford Poverty and Human Development Initiative, at Oxford University, that makes use of GHS data has made possible the construction of the first Nigerian poverty maps (Gething and Molini 2015) (box 2.1). Unlike standard methodologies that require both census and household survey microdata (Elbers, Lanjouw, and Lanjouw 2003), this new method uses spatial statistical modeling that combines household survey information and easily accessible geo-referenced information such as infrastructure, night lights, and climatic and soil conditions. The GHS data could provide representative poverty figures only at the zonal level with limited scope for any targeting; in comparison, the map is able to show poverty estimates at a geographical scale and is suitable for policy targeting.

Box 2.1. Poverty Mapping in Nigeria

Building on the techniques originally conceived for detailed mapping of malaria prevalence, model-based geostatistics forms the basis of the present approach to poverty mapping. This program is particularly interesting in the case of Nigeria where the standard methodology for poverty mapping developed by Elbers, Lanjouw, and Lanjouw (2003) cannot be applied because census data are not publicly available.

In a model-based geostatistics framework, the observed variation in cluster-level headcount ratios is explained by one of four components, as follows:

a. Sampling error, which can often be large given the small sample sizes at individual clusters, is represented using a standard sampling model (for example, a binomial model whereby cluster-level data consist of a number of poor households from a total number sampled).

b. Some nonsampling variation can often be explained using fixed effects, whereby a multivariate regression relationship is defined that links the dependent poverty variable with a suite of geospatial covariates.

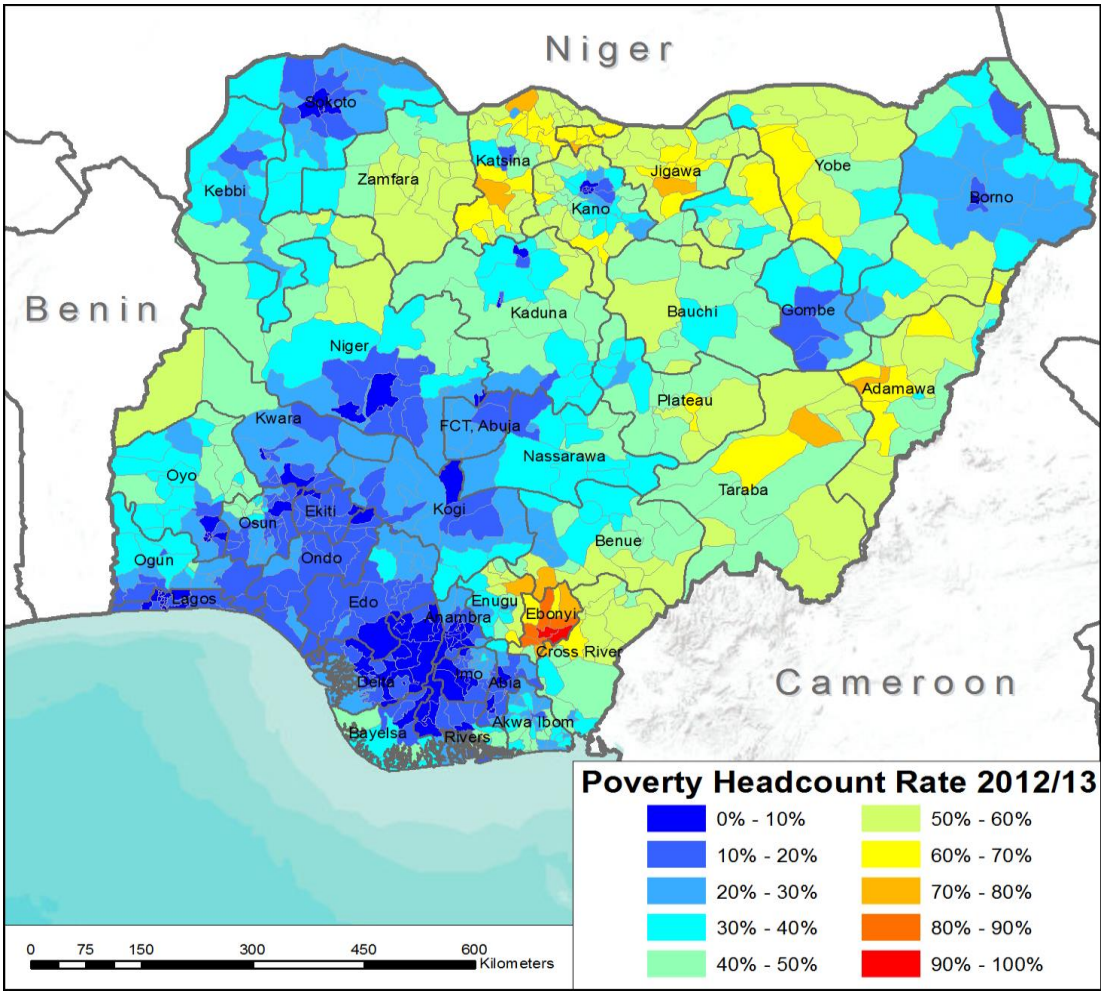
c. Additional nonsampling error not explained by the fixed effects is usually spatially autocorrelated, and this is represented using a random effects component. A spatial multivariate normal distribution known as a Gaussian Process is employed, parameterized by a spatial covariance function.

d. Finally, any remaining variation not captured by these components is represented using a simple Gaussian noise term equivalent to that employed in a standard spatial linear model.

The full model output is, for every pixel on the mapped surface, a posterior distribution for the predicted headcount ratio, representing a complete model of the uncertainty around the estimated value. These can be summarized using a point estimate (such as the posterior mean) to generate a mapped surface of the headcount ratio.

Poverty is clearly concentrated along a belt that covers the north and moves along to the eastern part of the country. Map 2.1 shows the poverty rates aggregated at the local government administration (LGA) unit. The map visualizes rather clearly the big divide in poverty outcomes characterizing the country. Poverty is concentrated along a belt stretching from Zamfara State and covering most of the North West and North East. High poverty concentration is particularly visible in a number of LGA clusters in Kastina and Kano states; these are also densely populated areas. Poverty pockets are also present along the eastern part of Nigeria bordering Cameroon; these are mainly North East states, with a few states belonging to the South East zone, notably Enugu and Ebonyi. In the whole expanse to the east of Sokoto State and to the north of Niger and Nassarawa states, poverty rates tend consistently to be above 30 percent.

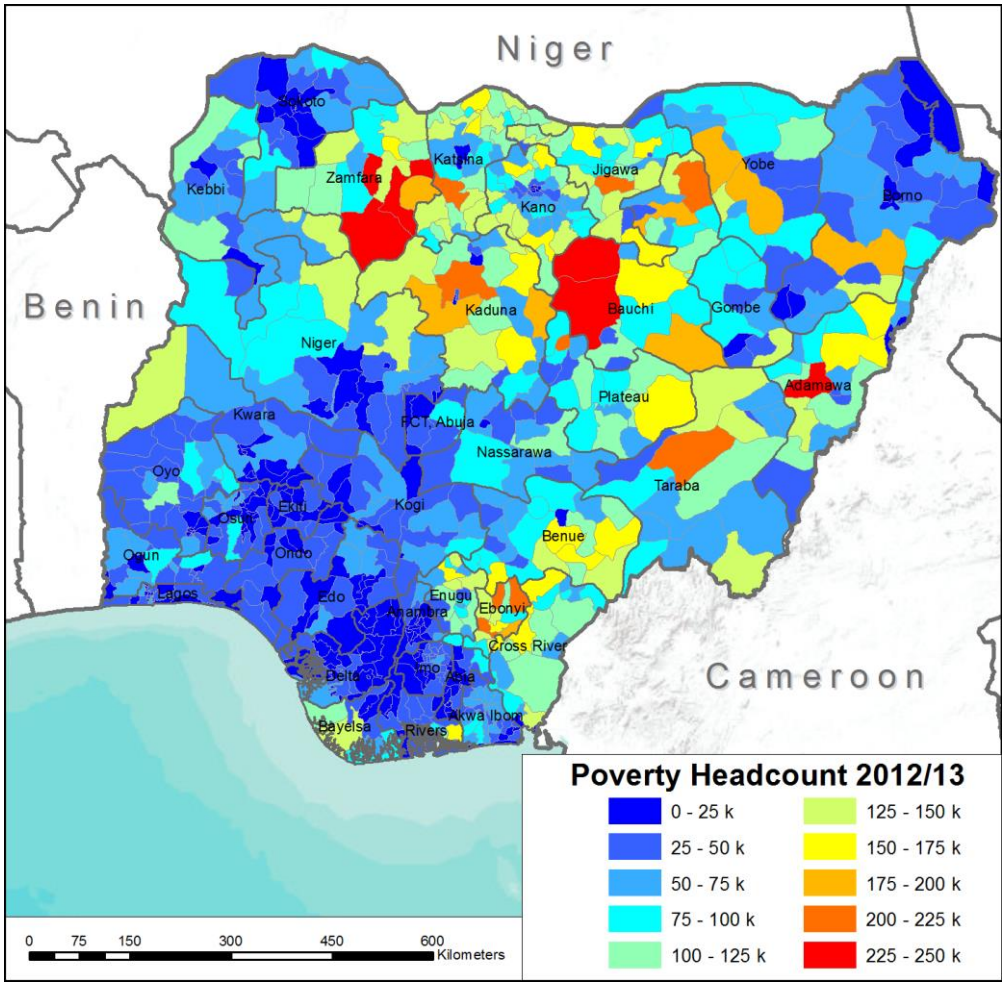
Map 2.1. Predicted Poverty Rates, Local Government Administration Units, Nigeria, 2012–13



Source: Gething and Molini 2015.

The North West shows relative heterogeneity. In this zone, poverty is highly concentrated around Kano and Katina, where the poverty rates tend consistently to be above 60 percent. (Maps 2.2 and 2.3 show the number of the poor in, respectively, LGA units and the states.) However, there appears to be a couple of LGAs in Katsina and Kano with low poverty rates. In the North East, the states of Adamawa and Gombe are the most affected by poverty; poverty rates in this zone are above 30 percent. The poorest parts of Nigeria are found in a long stretch of territory along the Cameroonian belt, down to Cross River State. The North Central zone also shows socioeconomic variation. Areas adjacent to the federal capital, Abuja, and toward the south show low levels of poverty. These low poverty levels extend from Abuja toward the east into Jos and toward the west into certain LGAs along the Benin border in Niger State. Conversely, the North Central maintains a share of the poverty; LGAs in the upper parts of Kaduna toward Katsina and Jos show poverty rates at 60 percent to 85 percent.

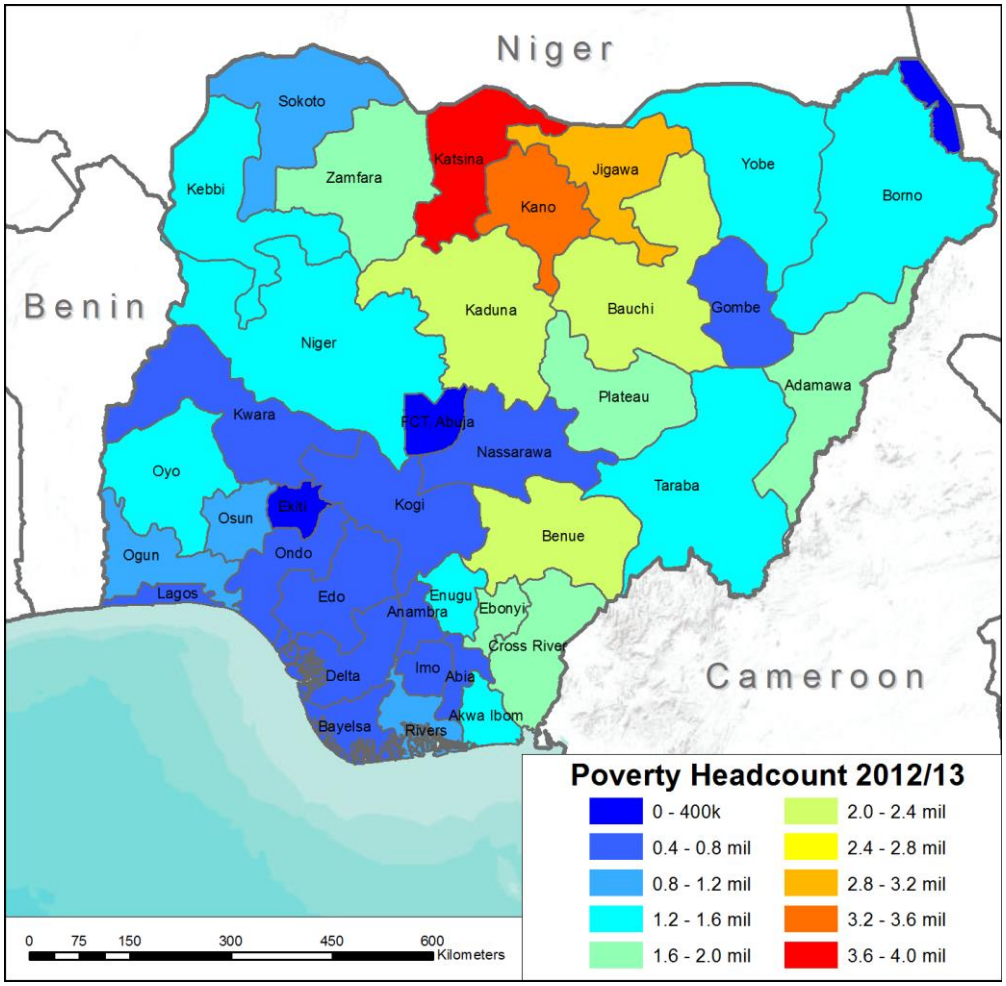
Map 2.2. Predicted Number of the Poor, Local Government Administration Units, Nigeria, 2012–13



Source: Gething and Molini 2015.

The South West is by far the zone least affected by poverty. There are clear positive effects of Lagos State on bordering states. Poverty rates in this zone look to be lower than 12 percent. In the South Central zone, the positive effects of Lagos are still evident. Poverty rates in this zone seem to be below 13 percent; however, there are a few exceptions. Areas along the Bight of Benin toward the South East zone show poverty rates above 30 percent. In the south, the South East is the zone most affected by poverty; LGAs and states in this region show poverty rates that are consistently over 40 percent. In LGAs in the state of Enugu, poverty rates of 85 percent and above may be observed. Finally, in the South South zone, along the Delta, there are some obvious pockets of poverty. Nonetheless, the rest of the region is homogenously less poor than the rest of the country.

Map 2.3. Predicted Number of the Poor, States, Nigeria, 2012–13



Source: Gething and Molini 2015.

A map illustrating the multidimensional poverty index (MPI) and a consumption-based map show many similarities. Poverty headcount ratios among the states have been compared to results from a different poverty index, the MPI, which uses 10 indicators to measure poverty in three dimensions: education, health, and living standards (OPHI 2015). People are identified as multidimensionally poor if they are deprived in at least one-third of the weighted indicators. Furthermore, the intensity of poverty denotes the proportion of weighted indicators in which they are deprived. A person who is deprived in 90 percent of the weighted indicators has a greater intensity of deprivation than someone deprived in 40 percent of the weighted indicators. The proportion of the population that is multidimensionally poor is the MPI headcount ratio, the incidence of poverty.

The MPI for Nigeria was calculated using 2013 DHS data. A number of caveats need to be taken into account. Sampling weights used for the DHS and GHS panel are quite different. For the DHS, weights calculated from the census were not used to weigh the results, while, for the GHS, results were weighted using information from the census. The two indicators define the same phenomenon using two different methods: the poor according to the MPI do not always correspond to the poor measured according to consumption poverty.

Notwithstanding these differences, in ranking states by the two indicators, one expects limited heterogeneity. There may be differences in the relative ranking, but the overall picture should be similar. Table 2.4 ranks Nigerian states by consumption poverty and by MPI poverty. The rank correlation of the two indicators is high and significant, at 0.75. Overall, the picture described by the two indicators is similar. The states in the North East and the North West are the poorest states, while the states in the South West and the South South show the lowest poverty rates. Five states display an exception to this general rule: Ebonyi, Enugu, Cross River, Gombe, and Sokoto.

Table 2.4. Consumption Poverty and the MPI: Headcount and Ranking, by State, Nigeria

State	Cons Pov. Headcount	Pov. Rate Ranking	MPI Headcount	MPI Ranking	State	Cons Pov. Headcount	Pov. Rate Ranking	MPI Headcount	MPI Ranking
Abia	17.8	30	8.8	30	Kano	45.1	12	43.4	10
Adamawa	55.9	4	29.5	14	Katsina	56.5	3	52	7
Akwa Ibom	33	21	9.9	28	Kebbi	36.2	15	55.3	4
Anambra	16	32	5	35	Kogi	22.4	26	11.3	24
Bauchi	46.9	9	58.3	3	Kwara	34.4	17	9.9	29
Bayelsa	31.5	22	12	23	Lagos	13.3	37	3.5	37
Benue	44	13	28	15	Nassarawa	33.6	20	25.1	18
Borno	34.9	16	40.1	11	Niger	33.7	19	32.4	12
Cross River	51	7	14.6	20	Ogun	26.5	24	11.2	25
Delta	13.6	36	10.7	27	Ondo	15.6	33	12.7	21
Ebonyi	76.9	1	26.5	17	Osun	21.4	27	4.3	36
Edo	17.4	31	8	33	Oyo	34.3	18	15.5	19
Ekiti	15.4	34	5.1	34	Plateau	45.8	11	27.3	16
Enugu	45.8	10	12.3	22	Rivers	18.7	29	8.8	31
Federal Capit	21.2	28	10.8	26	Sokoto	25.9	25	54.8	6
Gombe	29.2	23	47.1	8	Taraba	51.8	6	44.8	9
Imo	13.7	35	8.3	32	Yobe	52.9	5	63.5	1
Jigawa	56.9	2	55.2	5	Zamfara	49.2	8	60.5	2
Kaduna	41	14	31.1	13	Tot.	34.8		0.26	

Sources: Gething and Molini 2015; Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/.

Chapter 3 : The North-South Divide: An Econometric Analysis

What are the drivers of the big divide between the north and the south of Nigeria? The divide in consumption and poverty outcomes is mirrored by a similar divide in monetary indicators generally considered outcomes. The divide was not created during the last decade, but has been the result of an accumulation of factors that, if not corrected whenever possible, will, by inertia, increase the gap.

A regression-based decomposition has been used to quantify the extent to which each of these factors has contributed to expanding the divide in poverty rates across the zones of Nigeria and thereby identify the main drivers. The drivers are further decomposed into endowments and coefficients. Endowments are the stock of human and physical capital retained by each household, and coefficients may be interpreted as returns. Households in the north may be unable to benefit from growth because they are short in human capital, productive assets, and basic infrastructure, which limit their access to economic opportunities, or because their assets generate low returns. How much of the gap between the north and south can be explained by differences in the stock of household assets versus differences in the returns to these assets are also measured though this decomposition.

Decomposing the north-south poverty differential

The analysis proceeds in two stages. First, the determinants of poverty in two southern zones (South West and South South) and two northern zones (North East and North West) are analyzed; these are the two most dynamic zones and the two least dynamic zones, respectively. (See appendix B for a brief overview of the key socioeconomic indicators by zone.) To estimate the determinants of the poverty rates in the two sets of zones, a recentered influence function (RIF) was estimated that uses the mean poverty rate of each set of zones as dependent variable: 19 percent for South South and South West and 55 percent for North West and North East (Fortin, Lemieux, and Firpo 2011).[16] A number of standard correlates of household consumption grouped in six broad categories are used as explanatory variables: household characteristics, educational attainment and type of job of the household head, infrastructure, productive assets, and location.

Second, through a standard Oaxaca-Blinder decomposition, the divide in poverty rates (36 percent) is decomposed into the coefficient effect (differences in returns on variables), the endowment effect (changes in mean characteristics), and a residual. Endowment differences explain the divide with regard to stocks of variables (more well educated people, fewer farmers, and so on) that have potentially determined the gap, while differences in returns capture the differences in the prices of these variables. Ideally, higher returns should coincide with the higher scarcity of that endowment.

The exercise is replicated for households belonging to the middle class in the two sets of zones. The idea is to produce an analysis not only on the drivers of the poverty differential, but also on the determinants of the large divide in the shares of the middle class (25 percent) (see chapter 2).

A smaller household with fewer household dependents and with a more well educated household head who is not working in agriculture represents all characteristics associated

[16] The dependent variable is a transformation—the recentered influence function—of the outcome variable. The regression allows the direct impact of a small location shift in the distribution of a variable of interest to be estimated directly on the poverty rate without using a limited dependent variable estimation (probit or logit) the economic interpretation of which requires the estimation of marginal effects.

with a lower probability of living in poverty in both the north and the south. Table 3.1 presents the results of the RIF model used to estimate the determinants of poverty. The likelihood of living in poverty declines with the increase in the educational attainment of the household head above illiteracy (the baseline) or primary school.[17] In the north, for example, households with heads who had attained tertiary (secondary) education were 24.0 (14.0) percent less likely to be poor than identical households with a head who had no education; in the south, the values were 6.2 percent and 5.9 percent, respectively. Likewise, having a job outside agriculture in both sets of zones is associated with a lower risk of poverty than otherwise identical households. Access to basic infrastructure, such as water, sanitation, and electricity, and owning productive assets, such as smart phones or means of transport, is a particularly strong insurance against poverty: it decreases substantially the likelihood of poverty. Urban households are also considerably less likely to be poor than their rural counterparts.

Table 3.1. RIF Regression Results on Poverty, Nigeria, 2013

	Dependent variable	Poverty	
		North	**South**
Household composition	Household size	0.0128***	0.0131***
		(0.00489)	(0.00401)
	Dependants	0.0362***	0.0420***
		(0.00691)	(0.00604)
Educational attainment	HH head has primary education	-0.126***	0.00154
		(0.0324)	(0.0253)
	HH head has secondary education	-0.146***	-0.0589**
		(0.0398)	(0.0286)
	HH head has above secondary education	-0.239***	-0.0617**
		(0.0435)	(0.0306)
Labor market structure	HH head is employed in agriculture	0.122***	0.0610***
		(0.0270)	(0.0201)
Basic Infrastructure	HH has safe water/electricity in dwelling/improved toilet	-0.0621***	-0.0547***
		(0.0175)	(0.0108)
Productive assets	Asset Index	-0.0669***	-0.0621***
		(0.0156)	(0.00837)
Location	Urban	-0.132***	-0.0810***
		(0.0329)	(0.0208)
	Constant	0.227***	0.0911***
		(0.0396)	(0.0338)
	Observations	1,625	1,559
	R-squared	0.197	0.207

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on GHS 2012–13.

The big divide in poverty rates between the north and the south is caused by the higher concentration of drivers of poverty reduction in the south. Endowment differences explain about 75 percent of the divide, while differences in returns explain only 1 percent, and the residual explains 24 percent (table 3.2). Differences in endowments are all significant except primary educational attainment. Relative to the zones in the north, the zones in the south have managed to accumulate more productive assets, more human capital, and more job opportunities and have benefited from an initial demographic dividend over the years. Meanwhile, the differential in the returns to covariates is higher in the north because these resources tend to be scarcer there.

[17] Negative coefficients indicate less poverty.

Table 3.2. Oaxaca-Blinder Poverty Decomposition between North and South, Nigeria, 2013

	Dependent variable	Poverty		
	Difference	0.363***		
		(0.016)		
		Endowments	Coefficients	Interaction
Household composition	Household size	0.0326***	-0.00228	-0.000902
		(3.236)	(-0.0574)	(-0.0573)
	Dependants	0.0908***	-0.0142	-0.0125
		(6.753)	(-0.631)	(-0.631)
Educational attainment	HH head has primary education	-0.000317	-0.0451***	0.0262***
		(-0.0607)	(-3.078)	(3.014)
	HH head has secondary education	0.00889**	-0.0212*	0.0131*
		(2.018)	(-1.760)	(1.740)
	HH head has above secondary education	0.00587*	-0.0348***	0.0169***
		(1.934)	(-3.289)	(3.035)
Labor market structure	HH head is employed in agriculture	0.0154***	0.0247*	0.0154*
		(2.962)	(1.810)	(1.796)
Basic Infrstructure	HH has safe water/electricity in dwelling/improved toilet	0.0535***	-0.00362	0.00725
		(4.982)	(-0.360)	(0.360)
Productive assets	Asset Index	0.0249***	-0.000963	0.00193
		(6.221)	(-0.268)	(0.270)
Location	Urban	0.0352***	-0.0319	0.0222
		(3.851)	(-1.310)	(1.309)
	Constant		0.136***	
			(2.616)	
	Total	0.267***	0.00691	0.0895***
		(14.96)	(0.271)	(3.293)
	Observations	3,184	3,184	3,184

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on GHS 2012–13.

Big differences in the profile of households account for about 40 percent of the divide caused by endowments.[18] Differentials in dependency ratios alone account for 33 percent. Households in the zones in the north are larger and exhibit higher dependency ratios. The zones in the south are driving the demographic change that is taking place in the country, which will eventually result in lower fertility rates and more balanced household profiles, and the number of household members of working age will be greater than the number of dependents.

Access to basic infrastructure is the second biggest driver of the divide. Of the divide generated by endowments (15 percent of the total divide), 20 percent is explained by access to water, electricity, and sanitation.[19] This result testifies, first, to the crucial importance of these basic infrastructures in reducing poverty, but also to their disproportionate presence in the south and the limited concentration in the north. Although the related challenges are relevant in the south and overall quality in infrastructure is probably also declining because of population pressure, this result suggests that a policy priority in the effort to reduce poverty is increasing access to basic services in the north.

The role of urbanization as a driver of poverty reduction is confirmed by the impact of urbanization on the divide. Urbanization is the third biggest driver of the divide and accounts for 13 percent of the impact of endowment and about 10 of the total impact. More highly urbanized and more densely populated, the southern zones have clearly developed strong agglomeration economies.

[18] About 30 percent of the poverty differential is explained by demographic variables.

[19] An index measuring this access was obtained by aggregating the three variables—water, electricity, and sanitation—using principal component analysis.

Large towns are both supplying and demanding goods, thereby helping to exploit economies of scale. The proximity of urban areas and more well developed infrastructure reduces transport costs, thereby encouraging the exchange of goods and services.

Human capital also plays an important role. The divide between the north and the south in household heads who have primary, secondary, or tertiary educational attainment accounts for 6 percent of the impact of endowments and 5 percent of the total. The overall educational level of household heads is much lower in the north than in the south: only 34 percent of household heads have some education in the north against 78 percent in the south. The divide narrows the more educational attainment increases, but also simply because, in the south, the shares become smaller: in the south, only 24 percent and 19 percent of household heads have secondary or tertiary educational attainment, against about 10 percent and 9 percent, respectively, in the north.

Differences in the structure of the labor market contributes to about 5 percent of the overall divide. The bulk of the population in the north is employed in subsistence agriculture and has fewer job opportunities outside agriculture: household heads employed in agricultural activities represent around 70 percent of households in the north, against 47 percent in the south. Migration to richer areas might be an alternative strategy among some of these farmers, but their low levels of education limits their employment options and increases the opportunity costs of migration.

If the returns to schooling, infrastructure, and productive assets become significant, this tends to reduce the gap between the north and the south. The high input prices in the north is a sign of the scarcity of inputs, but also suggest there is scope for investment because demand is high and the market is big. More investment in the north targeted on education, maternal health, basic infrastructure, and better urban-rural connectivity can help raise the human capital among a big share of the population and reduce the dramatic gap between the north and the south. Finally, variations in rainfall patterns, temperatures, and soil suitability for the cultivation of certain food and cash crops have contributed to the divide, and their effect seems to be persistent.

The drivers behind the divide in the shares of the middle class in the north and the south mirror those identified in the case of the poverty rates. The signs are clearly inverted, however. For example, higher educational attainment increases the likelihood of participation in the middle class. The outcomes are nonetheless similar. Fewer household dependents, the household head employed in another area besides agriculture, greater household access to basic services, and the availability of more productive assets are all associated with a greater likelihood of participating in the middle class both in the north and in the south (see table C.2 in appendix C).

In the case of poverty, the big divide in the shares of the middle class between the north and the south derives from the higher concentration of drivers of poverty reduction in the south. Endowments and the residual offset each other, but, unlike from poverty, returns play a bigger role, accounting for 34 percent of the divide (table 3.3). Differences in endowments are all significant except primary education and urban residence. The higher concentration of the middle class in the southern zones is driven by the larger amount of productive assets and human capital, the more extensive job opportunities, and the more rapid decline in household size.

Table 3.3. Oaxaca-Blinder Middle-Class Decomposition between the North and South, Nigeria, 2013

	Dependent variable	Middle class		
	Difference	-0.250***		
		(0.014)		
		Endowments	**Coefficients**	**Interaction**
Household composition	Household size	-0.0701***	0.0963***	0.0381***
		(-5.666)	(2.712)	(2.691)
	Dependants	-0.110***	0.113***	0.0995***
		(-6.790)	(5.469)	(5.396)
Educational attainment	HH head has primary education	0.00246	0.0279**	-0.0162**
		(0.394)	(2.177)	(-2.151)
	HH head has secondary education	-0.0147***	-0.0155	0.00957
		(-2.738)	(-1.507)	(1.494)
	HH head has above secondary education	-0.0272***	-0.0313***	0.0151***
		(-5.408)	(-3.466)	(3.175)
Labor market structure	HH head is employed in agriculture	-0.0127**	0.00656	0.00410
		(-2.054)	(0.555)	(0.554)
Basic Infrstructure	HH has safe water/electricity in dwelling/improved toilet	-0.0422***	-0.00549	0.0110
		(-3.295)	(-0.669)	(0.670)
Productive assets	Asset Index	-0.0212***	0.00210	-0.00421
		(-4.772)	(0.749)	(-0.756)
Location	Urban	-0.0113	0.0206	-0.0143
		(-1.040)	(1.031)	(-1.030)
	Constant		-0.300***	
			(-6.368)	
	Total	-0.306***	-0.0861***	0.143***
		(-14.11)	(-4.705)	(5.832)
	Observations	3,184	3,184	3,184

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on GHS 2012–13.

The returns to covariates tend to be higher in the north, but the difference is significant only in the case of household size, the dependency ratio, and primary educational attainment. Differences in the returns to secondary education (not significant) and tertiary education act in the opposite direction. Although these returns are more scarce in the north, they widen the divide in the size of the middle class rather than narrow it. This suggests that higher education is more well rewarded in the southern states, where the private sector accounts for a greater demand for skilled labor. The northern zones are trapped in a sort of low equilibrium. On the supply side, there is limited availability of skills, while, on the demand side, job opportunities among the relatively smaller number of highly educated people are also limited.

The chronic and transient poor: an econometric analysis

Analysis of the GHS panel in 2011 and 2013 reveals a dynamic poverty profile in Nigeria: 16 percent of households were poor in both years (the chronic poor); 61 percent were nonpoor in both years (permanent nonpoor); and 23 percent were poor in 2011 and nonpoor in 2013 or vice versa (transient). Why are certain households chronically poor, while others have found their way out of poverty? Are these differential outcomes purely driven by assets and human capital accumulation or does the location effect play a role?

The northern zones have been more severely affected by chronic poverty, while nonpoor households are concentrated in the south, especially in the South West. The composition of the populations in the north and in the south is consistently different in terms of a breakdown by the three dynamic categories, chronic poverty, transient poverty, and the permanent nonpoor (chapter 2). More than two-thirds of the chronic poor in Nigeria reside in the north. The highest concentration is in the North West. Among households that are highly prone to shocks, 60 percent are also concentrated in the north. Only 30 percent of the permanent nonpoor live there.

Chronically poor households tend to be larger and include more dependents than transient poor and permanent nonpoor households (see table C.1 in appendix C). Nonpoor household heads are most frequently not married. In 2011, chronically poor households had an average of 7.7 members, nearly 21 percent more than transient poor households and almost twice the number of members among permanent nonpoor households. Among chronically poor households, 65 percent of the members are below 14 years of age, and 20 percent are under 5 years of age. Among transient and permanent nonpoor households, the shares of members below age 14 are, respectively, 49 percent and 46 percent. Chronically poor households have the highest average number of economically active members. All household categories share the same average number of members ages 65 and older. Permanent nonpoor households have the highest share of unmarried heads. The average size of households with unmarried heads is two members; this probably represents unmarried couples with no dependents.

The heads of chronically poor households are likely to be men ages around 50 who are self-employed in agriculture. The average household head is 50 years of age, and the household is more likely to be headed by a man across all dynamic household categories. The likelihood that a household is headed by a woman is the lowest among chronically poor households. Household heads are generally more likely to be self-employed, especially among chronically poor and transient poor households (75 percent). Agriculture is the main economic activity of the heads of 62 percent of chronically poor households, against 55 percent among transient poor households and 27 percent among nonpoor households.

Households heads who have no education are more likely to be living in chronically poor households. Among chronically poor household heads in 2011, 63 percent had no education; the measure was less alarming among transient poor household heads (47 percent) and permanent nonpoor household heads (25 percent). The literacy rate among chronically poor household heads is almost half the literacy rate of nonpoor household heads.

The performance of transient and nonpoor households differs on a series of nonmonetary indicators. The educational attainment of transient poor household heads and chronically poor households heads is closer to each other than to nonpoor household heads: 47 percent of transient household heads have less than primary education, compared with 26 percent of nonpoor household heads and 63 percent of chronically poor household heads. Employment categories also differ. Transient household heads are more likely to be employed in agriculture (55 percent) than nonpoor ones (27 percent), and, while 15 percent of nonpoor household heads are employed in the public sector, only 10 percent of transient household heads are active in this sector. Geographical differences are likewise at play. Among transient poor households, 59 percent are located in northern zones, against 30 percent of nonpoor households. Moreover, while 74 percent of transient poor households are in rural areas, only 46 percent of nonpoor households are found there. In terms of the ownership of durables, 41 percent of transient households have electricity in the dwelling, against 72 percent of

nonpoor households. Among transient poor household, 51 percent rely on uncovered pit latrines as a main toilet facility, and 45 percent use unimproved water sources, against, respectively, 41 percent and 35 percent of nonpoor households.

Econometric analysis reveals that, all else being equal, residence in zones other than the North West and in urban instead of rural areas increases the log odds of living in a higher dynamic profile than chronic poverty (table 3.4). An ordered logit model has been used, in which the dependent variable is categorical and assumes a value of 1 for households that were poor in both 2011 and 2013, 2 for households that have transitioned between poor and nonpoor status between the two years (the transient poor), and 3 for households that are nonpoor in both periods. In this model, a natural ordering is assumed and defined by the number of periods the household is considered poor. The interpretation of the coefficients is as follows: a one-unit increase in one of the independent variables increases or decreases the log odds of living in a higher profile category by the amount of the coefficient, holding other variables constant. Positive and significant coefficients associated with zone dummies, in which the North West is the omitted zone, suggest that living in a zone other than the North West results in higher log odds of being in higher dynamic profile categories than living in the North West. The same is confirmed for residence in urban versus rural areas.

Table 3.4. Ordered Logit on Household Dynamic Poverty Profile, Nigeria, GHS Panel 2011–13

Dependent variable	Profile (1 Chronic Poor; 2 Transient; 3 Permanent Non-Poor)
	Panel 2011-2013
Location	
North West	*(omitted)*
North Central	0.633***
	(0.171)
North East	0.670***
	(0.148)
South East	1.031***
	(0.208)
South South	1.034***
	(0.221)
South West	1.105***
	(0.183)
Urban	0.610***
	(0.132)
Head and HH characteristics	
HH head has no education	*(omitted)*
HH head has primary education	0.295***
	(0.0850)
HH head has secondary education	0.631***
	(0.129)
HH head has above secondary education	1.239***
	(0.155)
Age of Household head	-0.0762***
	(0.0158)
Age of household head squared	0.000816***
	(0.000147)

	Panel 2011-2013
Head and HH characteristics (cont'd)	
Household head is employed	0.528***
	(0.115)
Household head is employed in agriculture	-0.466***
	(0.0930)
Household head is single	*(omitted)*
Household head is married monogamous	-2.296***
	(0.413)
Household head is married polygamous	-2.858***
	(0.410)
Household head is divorced/separated/widowed	-1.600***
	(0.432)
Basic Infrastructure	
HH floor is high quality	0.411***
	(0.0842)
HH has improved toilets	0.674***
	(0.137)
Climatic variation	
Standard deviation of mean yearly rainfall	-0.00829*
	(0.00464)
Cut-off (chronic poor vs. transient and non-poor)	-4.653***
	(0.654)
Cut-off (transient vs. chronic poor and non-poor)	-3.074***
	(0.653)
Observations	4,632
Pseudo R-squared	0.159

Robust standard errors in parentheses, clustered at the ea-level
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on household panels of GHS 2010–11, 2012–13.

Households with heads who have higher educational attainment are associated with higher order odds of being in a higher dynamic category. Older household heads seem to reduce the log odds of being in a higher category, but only up to a certain age. On average, education plays a role in a household's climb up the ladder of poverty status if the household head has completed primary education, secondary education, or postsecondary education, all else being equal. As expected, the ordered odds of having a higher income status is highest among heads with postsecondary educational attainment compared with heads who have completed primary or secondary education.

Households in which the head is involved in agriculture have significantly lower log odds of being in higher categories than households with heads involved in nonagricultural work. The same holds for households in which the head is unemployed. A household with a head who has never married has greater log odds of being in a higher category. In contrast, a household with a head who

is married reduces the odds the household will be in a higher classification. A household with a head in polygamous relationships has lower odds compared with a monogamous household.

Access to basic infrastructure and lower climatic variation both increase the log odds of moving out of chronic poverty. The proxy for climatic variation in the model is the standard deviation of mean yearly precipitation among states. This variable is expected to capture the impact of differential agroclimatic conditions between the north and the south of the country. The model suggests that, all else being equal, higher variation in rainfall reduces the log odds of a household being in higher dynamic categories. Agroclimatic imbalances are one of the elements constraining more equal socioeconomic development between the north and the south of Nigeria.

Chapter 4 : The Drivers of the Divide

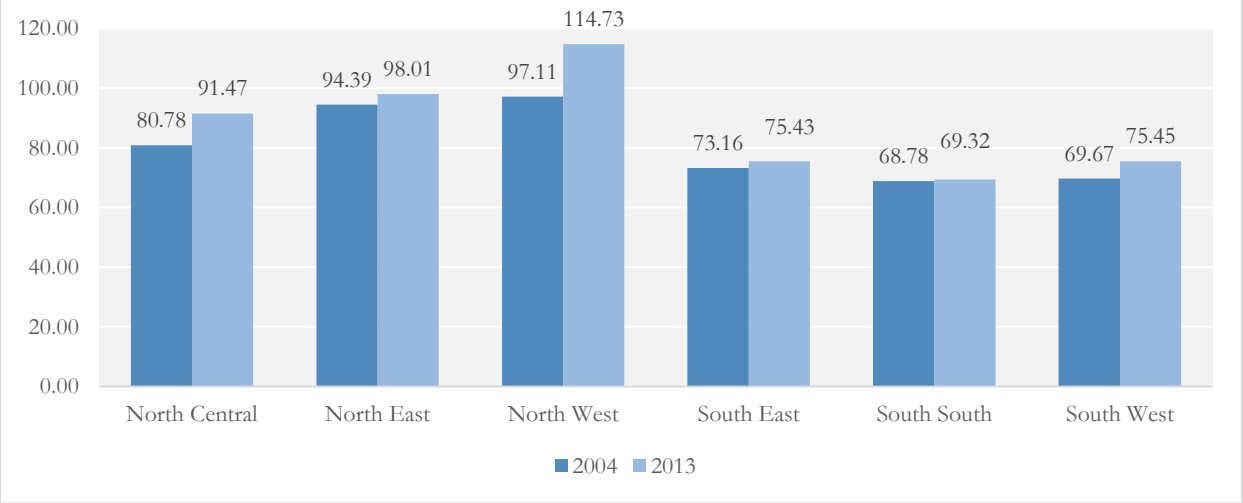
Demographic change, access to basic infrastructure and productive assets, location of residence, educational attainment, and employment have all been identified in the econometric analysis as factors driving the divide in poverty rates between the north and the south. In this chapter, the details of each driver, how they affect poverty, and how they contribute to increasing the divide between north and south are examined more closely.

Background factors and drivers that have not been modeled in the statistical analysis because of a lack of accurate data and difficulty in finding appropriate proxies are also analyzed. Agroclimatic differences, climatic change, and the recent escalation of conflict have been playing an important role in expanding the divide. Additional data collection and further analytical work is needed to measure the impact of these factors.

The south is ready to benefit from the demographic dividend; the north is not

Given their lower dependency ratios, households in the south are closer to the realization of the demographic dividend than households in the north. The econometric analysis identified household demographic structure is one of the most effective drivers of the north-south divide. With only 11 percent of the total population above 65 years of age, Nigeria is certainly a young country. This feature is mainly driven by the demographic performance of the north. Dependency ratios in northern Nigeria have been increasing steadily in the last decade, reaching an average rate of 103.6 percent in 2013, against the southern ratio of 73.4 percent (figure 4.1).

Figure 4.1. Trends in the Dependency Ratio, by Zone, Nigeria, 2004, 2013

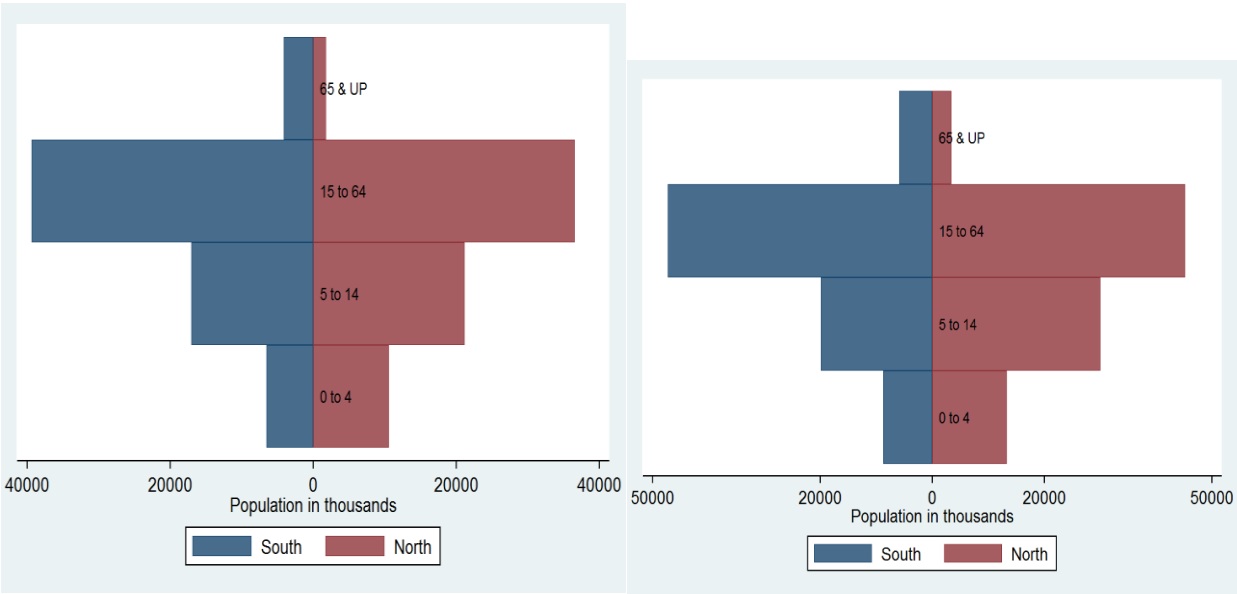


Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

A closer look at the dynamics of the Nigerian population in the last decade reveals rising demographic pressure caused by the 0–14 age-group in the north. The share of the 0–14 age-group in the total population increased from 45 percent to 47 percent in the north, while it remained steady at 35 percent in the south (figure 4.2). This highly unbalanced age structure between the north and the south is the outcome of persistently different regional fertility rates.

Figure 4.2. Trends in Population Structure, North and South, Nigeria, 2004, 2013

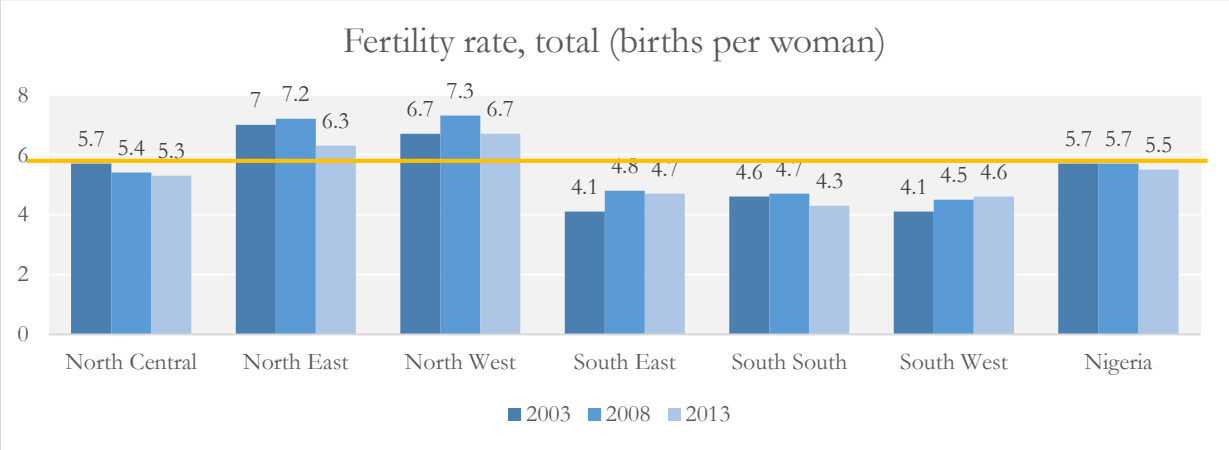
a. 2004 **b. 2013**



Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

In the last decade, the northern zones have shown significantly higher fertility rates than the southern zones, contributing to the high rate nationwide. The North West led the zonal fertility ranking with around 7.0 children per woman in 2013, against the national average of 5.5 and the average of 4.5 among zones in the south (figure 4.3). The scholarly investigation of the determinants of high fertility in low-income settings has been extensive. The determinants that have been identified range from higher demand for children (mainly driven by lower levels of income, urbanization, and formal schooling), deterioration in under-5 mortality rates, cultural obstacles to contraception, the underprovision of family planning services, and the declining age at first union. Although specifically addressing these issues in the context of Nigeria is beyond the scope of this report, the rest of this chapter will extensively deal with the major drivers of the north-south divide that revolve around human capital accumulation.

Figure 4.3. Trends in the Fertility Rate, by Zone, Nigeria, 2004, 2008, 2013



Sources: NPC and ICF International 2009, 2014; NPC and ORC Macro 2004.

The high fertility rates in the northern zones pose serious challenges to the country's capacity to provide maternal and child health, adequate education, and basic services. The risk of mortality in infancy and early childhood is greater in higher-order births (births to women who have already given birth) and closely spaced births. Maternal mortality is also more likely in higher-order pregnancies. High fertility has consequences for human capital investment through the effect of high fertility on child health and schooling. Children in larger families typically attain less schooling and schooling of lower quality, an outcome usually attributed to resource dilution, that is, less financial and time investment per child. The association between population growth (higher fertility) and economic growth has become more negative since the 1980s (Barro 1991, 1997; World Bank 2010).

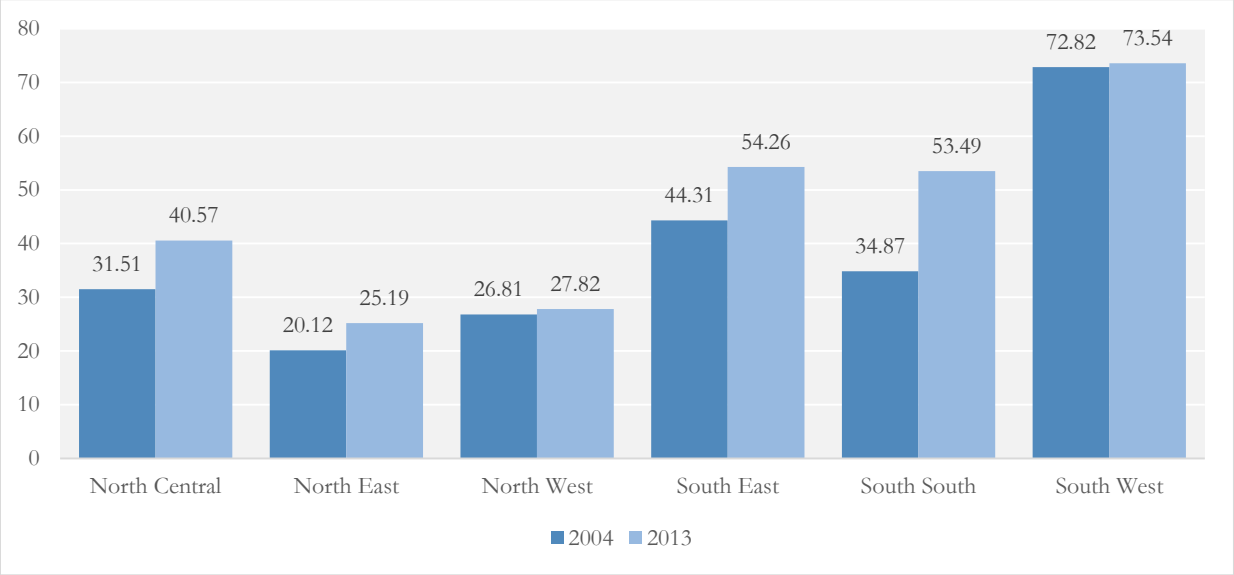
Through lower dependency ratios, a fertility rate decline can lead to greater per capita productivity (the first demographic dividend). The age structure of northern Nigeria is not encouraging in this sense. Among the conditions that improve the prospects of realizing a demographic dividend are human capital investment—a healthy, well educated labor force—and government policy that creates a favorable environment for financial investment and encourages household savings (Bloom, Canning, and Sevilla 2003). The effects of high fertility and the resulting population growth on the natural environment may be profound even though they are difficult to estimate with precision (for example, shortages of fresh water; global warming; and so on).

Access to electricity, water and sanitation, and roads is better in the south

Access to basic services such as electricity, water, and sanitation significantly reduces the likelihood of living in poverty in both the north and south. Without access to these basic services, women and children must spend several hours each day gathering fuelwood and water, which deprives women of opportunities to undertake other economic activities and deprives children of school. Access to electricity is fundamental because of its direct use in lighting and clean cooking and the numerous positive externalities. These externalities include the better application of productive assets, such as generators and smart phones, and other resources that allow households, for instance, to run small home-based businesses. This is especially true of women: in Nigeria in 2013, 58 percent of nonfarm enterprise (NFE) owners were women, and over 40 percent of these businesses were based in homes (Bertoni et al. 2015).

Although lack of electricity is a challenge nationwide, access to electricity is significantly lower in the north than in the south. In 2015, Nigeria ranked 187th of 189 countries in access to electricity (World Bank 2014b). Lack of electricity in Nigeria seemed to be driven by an excess of demand. In 2013, the total available supply was about 3,500 megawatts, far below the total estimated demand of over 6,000 megawatts. The demand for electricity is expected to continue to increase at around 10 percent annually as the country experiences greater economic development. However, there are access disparities between the north and the south. Over 70 percent of households have access to electricity in the South West, followed by the South East and South South, with around 54 percent in 2013 after considerable improvement in the last decade (figure 4.4).

Figure 4.4. Access to Electricity, by Zone, Nigeria, 2004, 2013

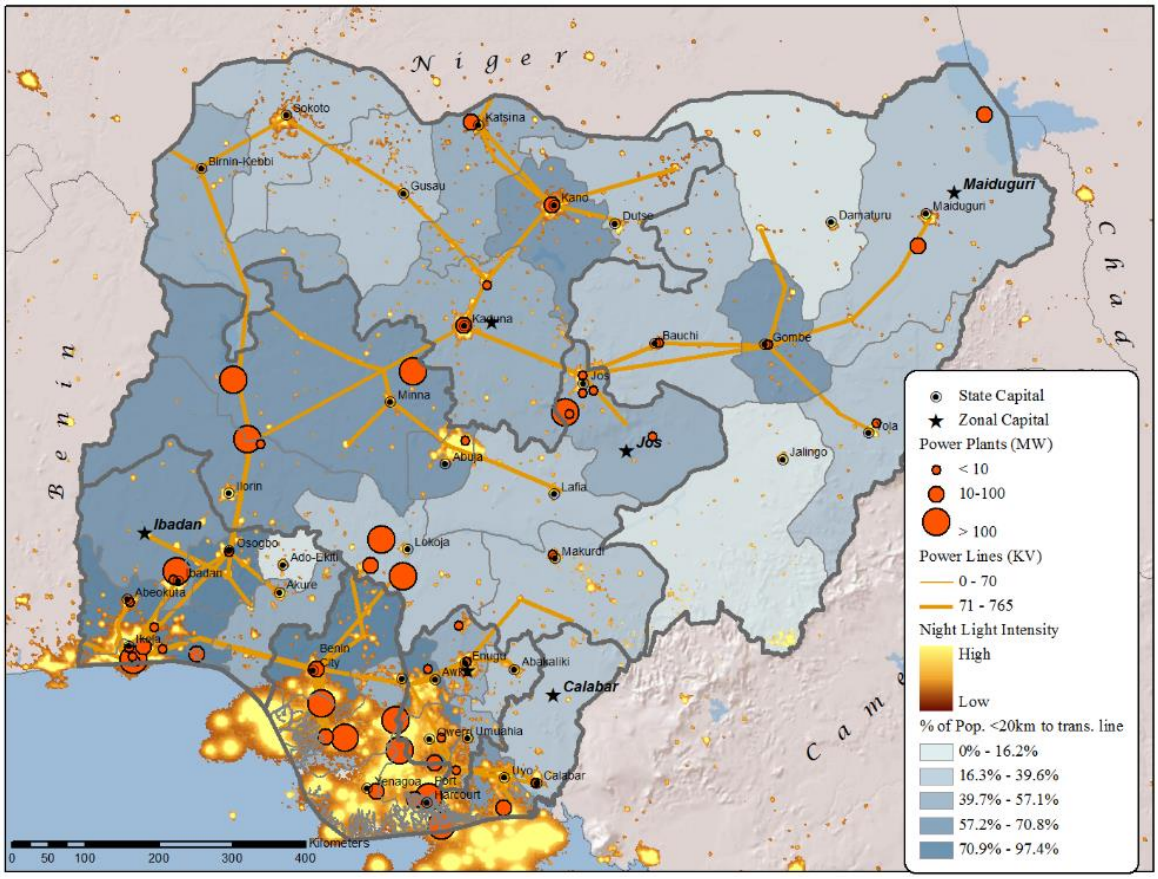


Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

In the north, access to electricity is stagnant, at around 25–28 percent, particularly in the North East and North West. Kano, a North West state and the most industrialized state in the north, is host to 350 large and medium manufacturing firms, but the state experiences the equivalent of 16 days of electricity outages per month: the worst record among all states (World Bank 2016). To meet the majority of their electricity needs, many firms must rely on generators. However, a generator is a substantial cost to a firm: an average 15 percent of operating costs, leading to lower firm productivity in a state.

The lower access to electricity in the north arises because of the concentration of power plants in the south and the lack of powerlines between the south and the north. Map 4.1 shows that both small and large power plants are highly concentrated in the South South and in the South West. Some are also located in North Central states such as Kogi, Kwara, Niger, and Plateau, but with evident lower density than in the southern states. Powerlines connect plant-to-plant as well as deliver the electricity to end users. Lines exist in all zones except the North East. As a result, access to electricity is lowest (0–16.2 percent) in Taraba and Yobe states in the North East. Electricity access is higher in the North West and North Central than in the North East, but still lower than in the southern states. This is because of the serious lack of connectivity between the south and the north of the country; only one powerline connects the north with a power plant in the south. Electricity is generated in the south and consumed in the south, leaving the northern half of the country mostly in the dark.

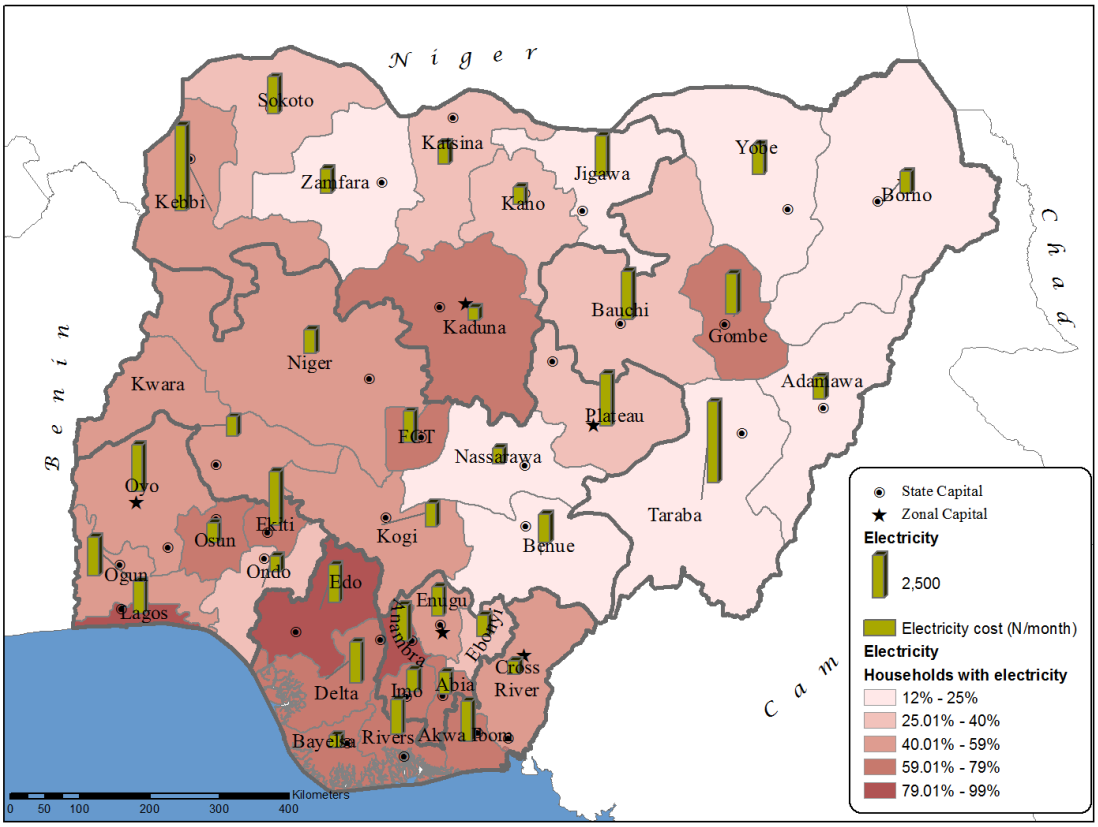
Map 4.1. Power Plants, Powerlines, and Light Intensity at Night, Nigeria



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

In the north, lower electricity access is coupled with higher electricity cost. The cost of electricity tends to be high in the states where power plants or connectivity to the power plants are limited (map 4.2). For instance, the cost of electricity is highest in Taraba in the North East and Kebbi in the North West. These areas have no power plant, and their powerlines have low capacity. The cost of electricity is significantly lower in Abia, Bayelsa, Cross River, Ebonyi, Ondo, and Osun in the south and Kaduna, Kimo, and Nassarawa in the north, that is, where access or connectivity to power plants is high.

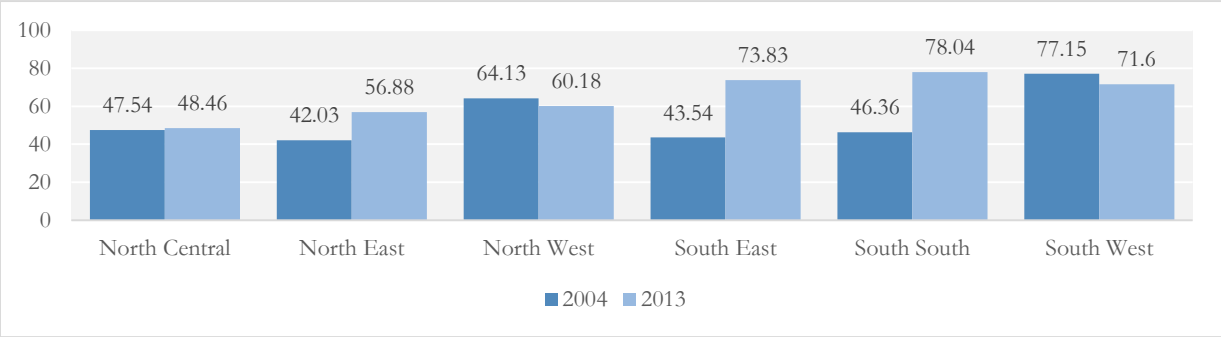
Map 4.2. Household Access to Electricity and Cost of Power, Nigeria



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

Likewise, access rates to improved water are higher in the south than in the north.[20] Improved water sources are indispensable for better health and sanitation. In the south, more than 70 percent of the households had access to improved water in 2013. In particular, access in the South East and South South increased by more than 30 percentage points in 2004–13. The northern zones are still lagging the southern zones. Household access rates to improved water sources are as low as 49 percent in the North Central zone, and rates are declining in the North East (figure 4.5).

Figure 4.5. Access to Improved Water Sources, by Zone, Nigeria, 2004–13

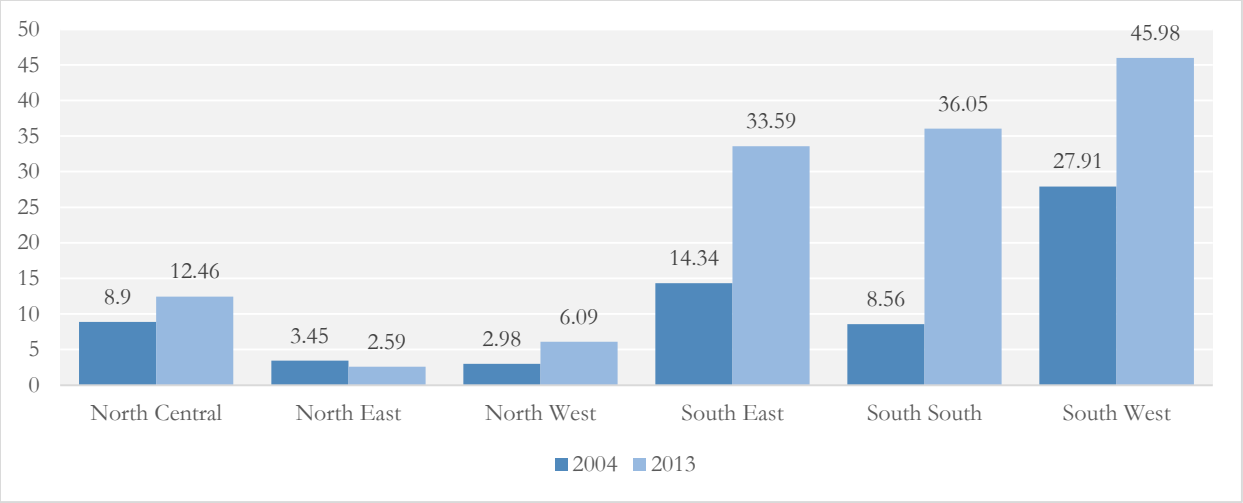


Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

[20] Improved water is piped water and other improved infrastructural water.

Access to sanitation is also greater in the south.[21] In the south, 34–46 percent of households had access to sanitation in 2013. The access rate in the South South, in particular, increased by 27 percentage points over the decade. In contrast, in the North East and North West, more than 90 percent of households did not have access to sanitation in 2013. Households residing in the latter regions use uncovered pit latrines or had no toilet facilities (figure 4.6).

Figure 4.6. Access to Sanitation, by Zone, Nigeria

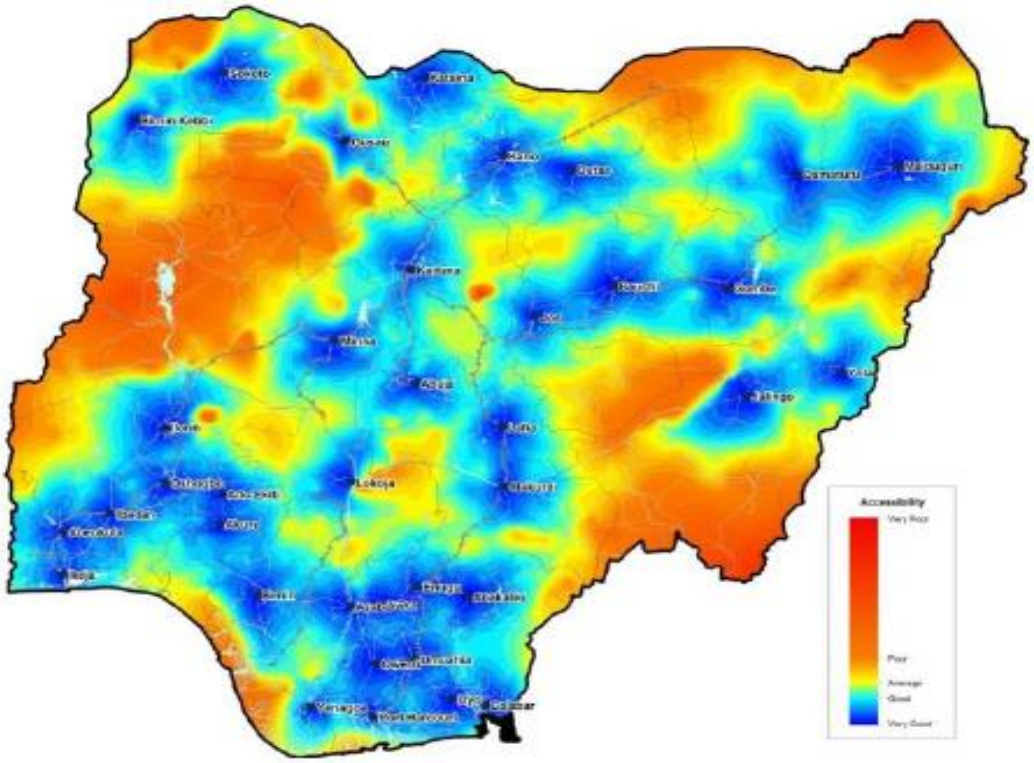


Source: World Bank calculations based on NLSS 2003–04 and GHS 2012–13.

In the north, access to basic infrastructure is further limited by the weak road network to the nearest state capital or to the federal capital. Highway density is lower in the north, This is also the case of the area around Kano, the second largest city in Nigeria after Lagos. Map 4.3 shows that accessibility to the nearest capital is better in the southern zones, especially in Abia and Lagos. The World Bank (2016) finds that 40 percent of federal roads in Nigeria, 65 percent of state roads, and 85 percent of local government roads are in poor or bad condition, that is, they need repair or reconstruction.

[21] Household sanitation refers to flush toilets and improved pit latrines.

Map 4.3. Road Accessibility and the Condition of the Road Network, Nigeria



Source: World Bank 2016 based on the Nigerian Integrated Accessibility Model.

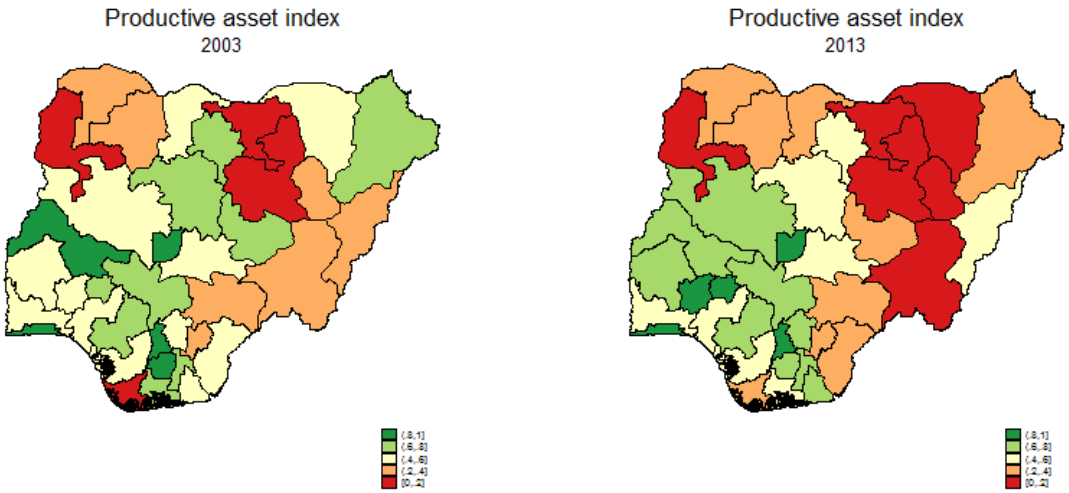
The index of the concentration of productive assets is higher in the south

Productive assets are concentrated in the south, thus improving connectivity and mobility. Productive assets are items that can contribute to the enhancement of household productivity through higher connectivity and improved mobility. The index of the concentration of productive assets, based on assets reported by households in the DHS surveys, covers the following household assets: radios, mobile phones, bicycles, motorcycles, and cars.[22] As is evident in map 4.4, these assets have been progressively concentrated in the southern zones. The maximum value of the index is 1; in certain southern states and in the federal capital, Abuja, the average value was as high as 0.8 in 2013. On the other hand, in the north, the index was as low as 0.2 in 2013 and had been decreasing in many states since 2003.

[22] The regressions rely on the same assets, but use NLSS and GHS data. The GHS data are not, however, representative of the states. To provide an overview at the state level, the 2003 and 2013 rounds of DHS data are therefore used. See Data (database), DHS Program (Demographic and Health Surveys), ICF International. Rockville, MD (accessed January–April 2016), http://www.dhsprogram.com/Data/.

Map 4.4. Concentration Index of Productive Assets, Nigeria, 2003 and 2013

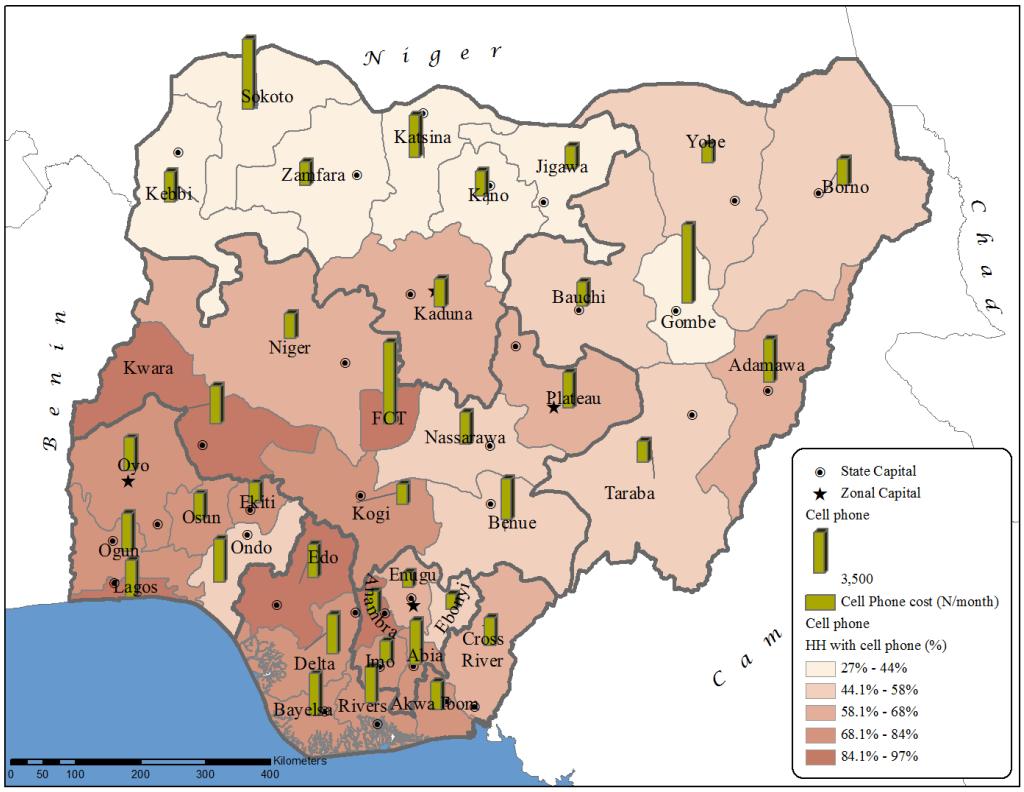
a. 2003 **b. 2013**



Source: World Bank calculations based on 2003 and 2013 DHS rounds.

Among productive assets, the rate of cell phone ownership is the lowest in the North West and increases across zones toward the south. In the upper north, the share of households owning a cell phone is as low as 27 percent, and the cost of cell phones is highest in the northern states of Gombe and Sokoto (map 4.5). Cell phone usage increases toward the south, where 84–97 percent of households in Abuja, Anambra, Edo, and Kwara have cell phones. In general, the southern zones seems to enjoy both higher usage and lower costs.

Map 4.5. Household Cell Phone Usage and Monthly Cost, Nigeria



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

Southern zones developed economies of agglomeration owing to more rapid urbanization

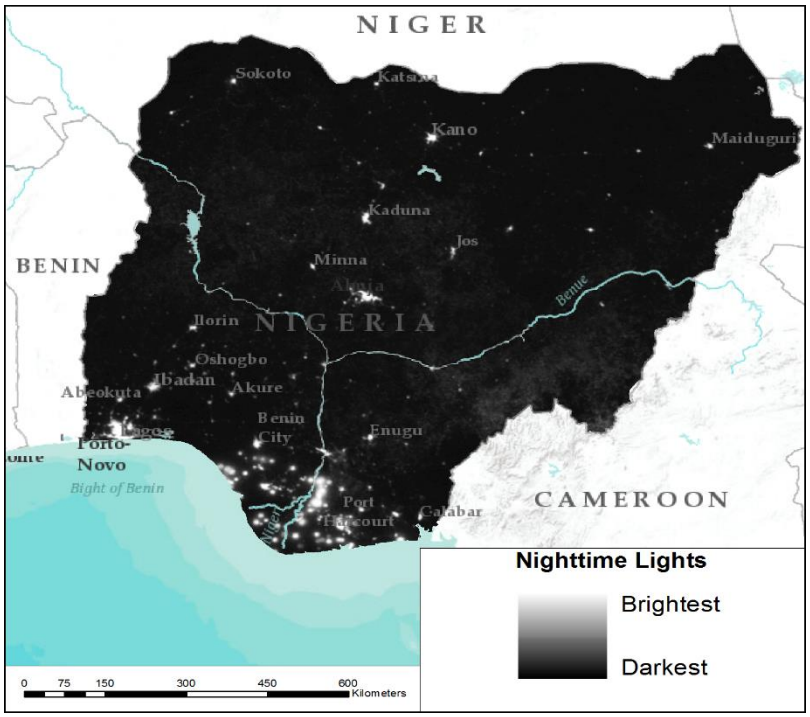
Econometric analysis suggests that residence in urban areas contributes to reducing the risk of poverty and that the degree of urbanization in the south contributed to the poverty divide. Urbanization plays a crucial role in facilitating the process of the structural transformation of the economy. Evidence from Ghana (Molini and Paci 2015) indicates that urbanization has enabled higher-quality education to reach a larger share of the population. Urban areas also have an advantage over small towns and rural areas in the provision of basic services, such as electricity, water, and sanitation. In general, urban areas likewise tend to offer more jobs opportunities than rural areas. Only in urban areas can economies of agglomeration occur. Indeed, the economies of scale and network effects that help businesses grow are typically located in urban areas, where communication is more rapid and cheaper, inputs more accessible, and market size relatively big.

Urbanization is nonetheless not a good alone. It needs to be regulated and managed because associated effects can undermine the benefits. Many Nigerian towns have experienced growing congestion as they have developed. Large segments of the population are now living in slums because of rapid population expansion. The quality of services has declined.

The distribution of urbanization is not homogenous across Nigeria. The dispersion of electric lighting across the country at night can be used as a proxy for economic activity and urbanization (Henderson, Storeygard, and Weil 2012). In Nigeria, the brightest places at night, Lagos and Port Harcourt, stand out as the most densely populated areas and the major economic centers of the country. With the exceptions of Abuja, Kaduna, and Kano, the darkness covering most of the north

confirm that economic activity and urbanization have not developed there. The unequal pattern in urbanization has implications for the provision of basic services and the development of business clusters in the dark areas, where poverty is mainly chronic (map 4.6).

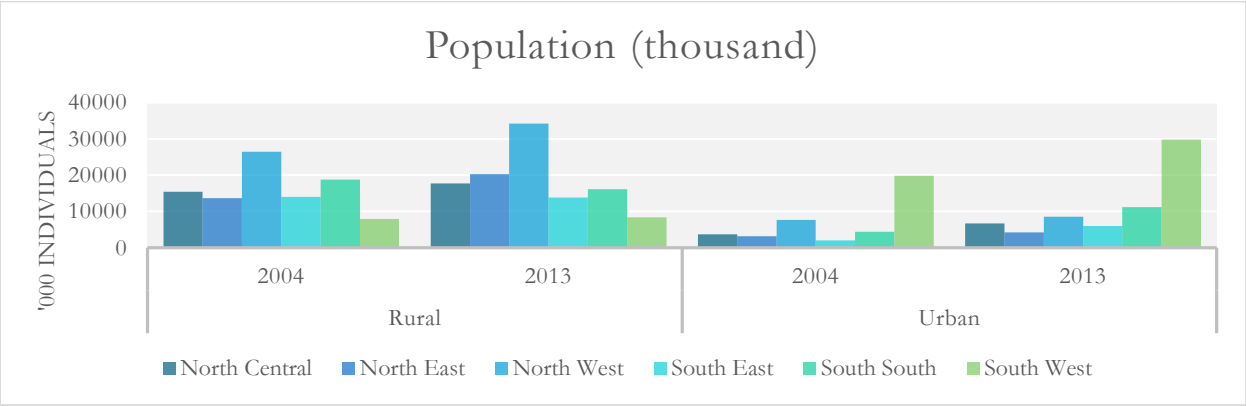
Map 4.6. Nightlight Satellite Image, Nigeria



Source: Gething and Molini 2015.

In the last decade, urbanization has occurred more quickly in the south than in the north. In the south, the urban population grew significantly between 2004 and 2013. It increased by 50 percent in the South West. In the north, meanwhile, population was skewed toward rural areas. This trend grew consistently across all northern zones during the decade (figure 4.7). For example, while in in South West, the urban population rose from 20 million to 30 million in in 2004–13, the population remained below 10 million during the period.

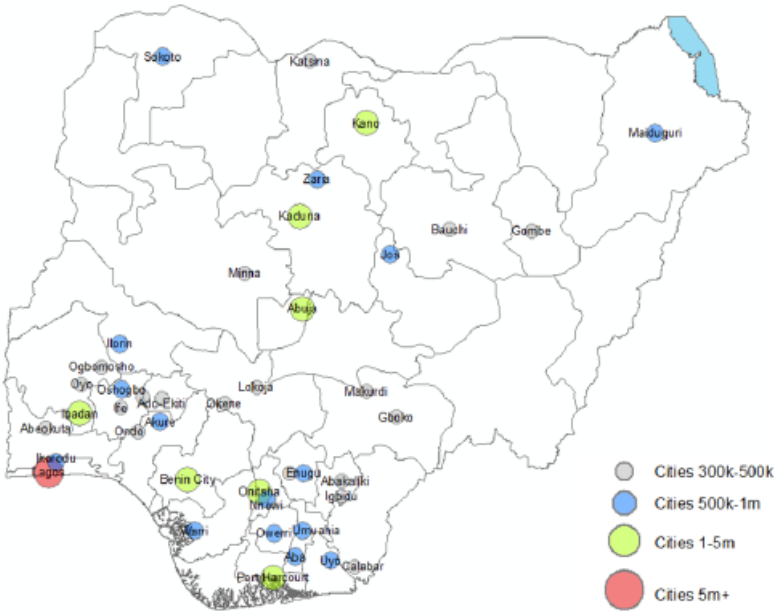
Figure 4.7. Population, by Location and Zone, Nigeria, 2004, 2013



Source: World Bank calculations based on NLSS 2003–04 (reestimated) and GHS 2010–11, 2012–13.

With a population of over 5 million in 2015, Lagos, in the South West, is the most populous city in Nigeria. Map 4.7 shows that, with the exception of Abuja, Kaduna, and Kano, cities with 1 million to 5 million people are concentrated in the south. Sokoto, in the North West, and Maiduguri, in the North East, are the two most populous cities of the far north, with over 500,000 people; they should thus be considered as strategic policy targets in the north of the country.

Map 4.7. Cities with a Population of at Least 300,000, Nigeria, 2015

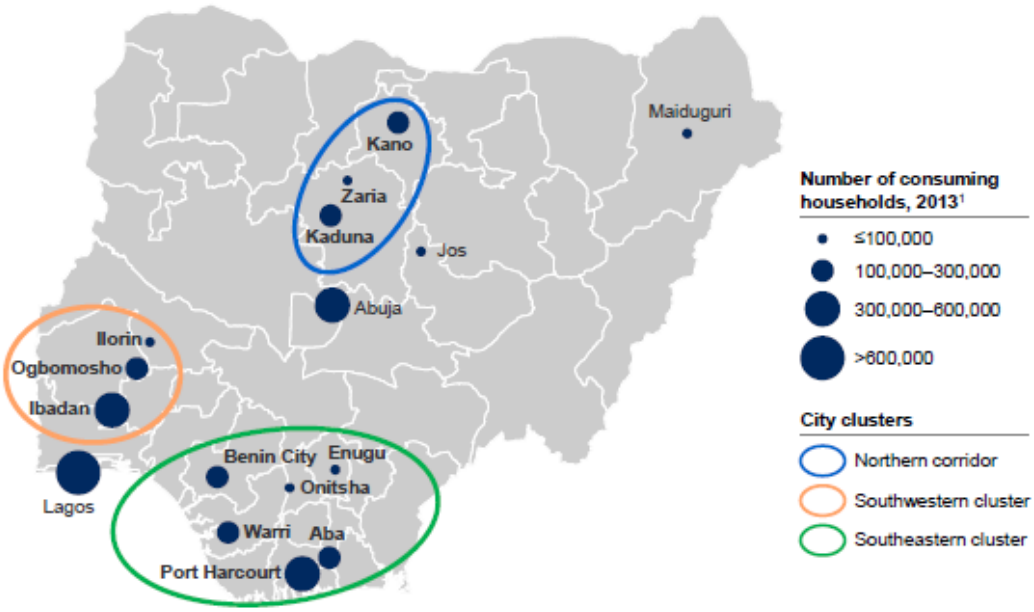


Source: World Bank 2016.

Greater urbanization translated into greater consumer concentration in the South East. Nigeria's major cities can be looked at as broad clusters, with the highest number of consumers concentrated in the South West, the South East, and the northern Kano-Kaduna corridor (Leke et al. 2014) (map 4.8). Moreover, almost half the consumers in these three key clusters and in Lagos are living in higher income households and are emerging consumers, middle-class consumers, or global consumers.[23]

[23] Leke et al. (2014) classify consumers into four types: basic needs, with household incomes at less than US$7,500 a year; emerging consumers, with incomes between US$7,500 and US$20,000; the consuming middle class, with US$20,000 to US$70,000 in annual income; and global households, which earn more than US$70,000.

Map 4.8. City Clusters, Nigeria



Source: Leke et al. 2014.

The connectivity between the north and the south is centered on the Lagos-Kano corridor, which is the main channel for domestic, regional, and international trade.[24] Trade along this corridor flows mainly from south to north. The corridor, which is the main link between the north and the south, gives Lagos a pivotal role in Nigeria's economic trade because three trans-African highways intersect there (map 4.9). The trade is focused on imported consumer goods shipped through the port at Lagos, manufactured goods produced in the south, petroleum, and inputs for manufacturing firms in the north. North-south trade mainly consists of livestock and agricultural produce, as well as some manufactured goods destined for export through Lagos.

Map 4.9. Trans-African Highways, West Africa

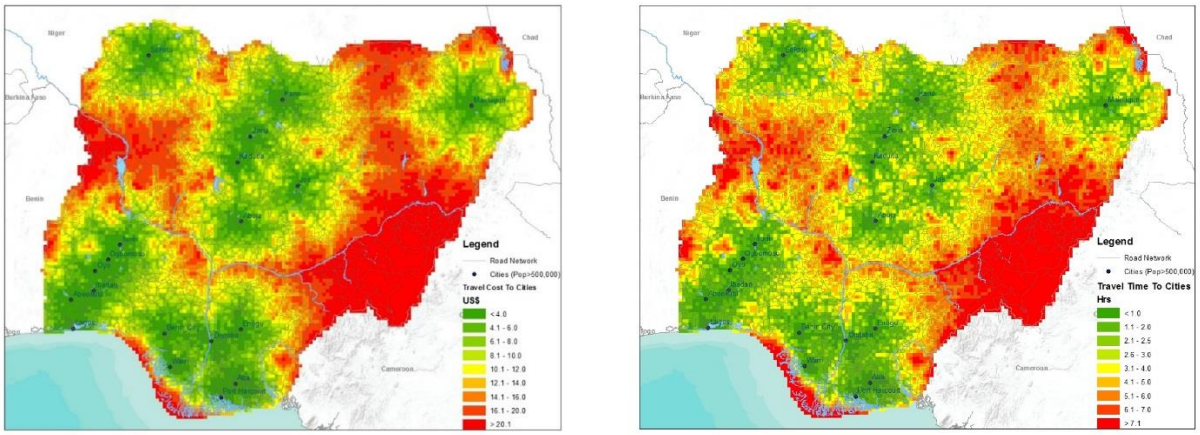
Source: World Bank 2016.

[24] The corridor spans approximately 1,000 kilometers, linking the country's two largest cities and passing through Ibadan, Ilorin, and Kaduna.

The road network is more well developed and less costly in the southern zones. Map 4.10 shows that most of the southern zones enjoy both lower travel costs and shorter travel times to cities. Well-developed connectivity reaches the areas around Abuja, Kaduna, and Kano, as well as the areas around Maiduguri and Sokoto in the far north. However, states such as Niger in the North Central zone and most of the states in the North East must bear the highest costs of mobility.

Map 4.10. Travel Costs and Travel Times to Cities, Nigeria

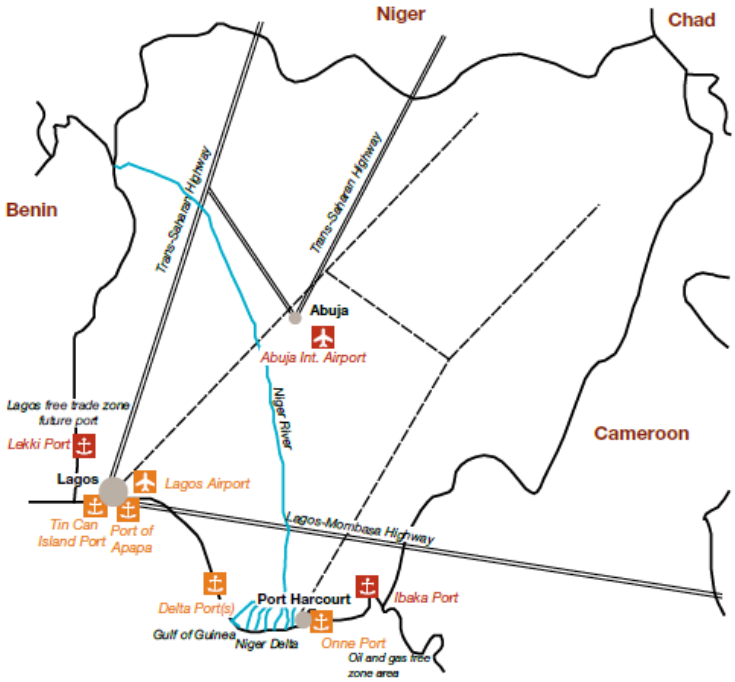
a. Travel costs **b. Travel times**



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

Maritime trade is also concentrated in the south. Major ports are located around Port Harcourt in the South South and in Lagos in the South West (map 4.11). The two most important ports in Nigeria are in Lagos. These are the Apapa (Port of Lagos) and Tin Can Island Port, which serve Lagos as well as western Nigeria. There are several ports serving the oil and gas sector, such as the Delta Port and the Onne Port in the petroleum- and natural gas-producing Niger River Delta region. In addition, two deepwater ports, in Lekki, near Lagos, and in Ibaka in Akwa Ibom State, are now under construction. The port at Lekki could become the gateway to the West African region, thus increasingly favoring trade flows in the south of the country.

Map 4.11. Major Seaports, Nigeria



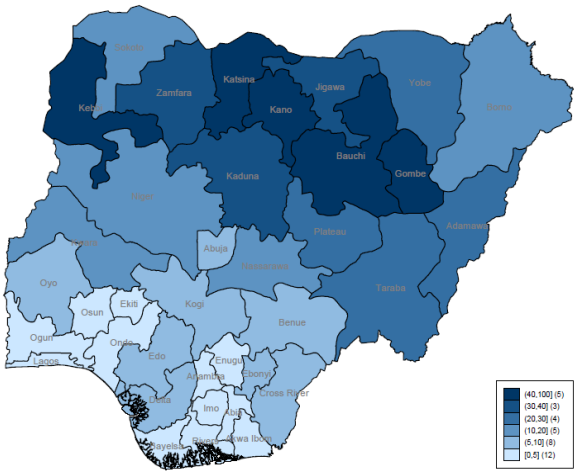
Source: PwC 2013.

The Southern zones show higher levels of human capital

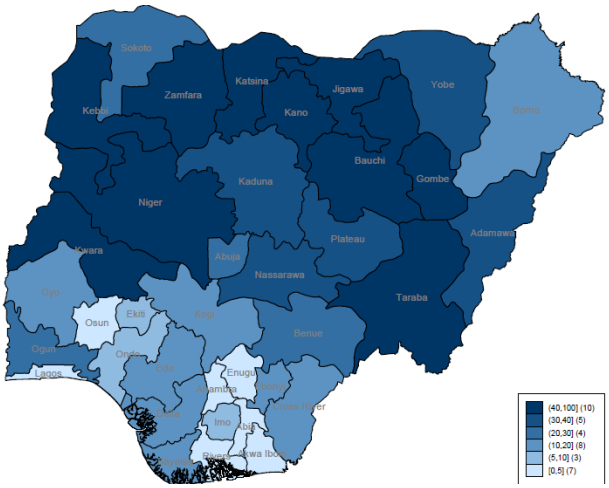
Literacy rates are much higher in the southern states than in the north. In the North East, 46 percent of the labor force has never attended school. This is also true of 36 percent of the labor force in the North Central zone and 43 percent of the labor force in the North West. In the southern zones, the share of the labor force without any education is 11.2 percent in the South East, 12.5 percent in the South South, and 26.0 percent in the South West. The breakdown of labor force illiteracy rates by states and age-groups illustrates a country that is struggling to reduce the gap in literacy rates between the north and the south. Even among the youngest, some northern states report illiteracy rates of 40 percent or higher (map 4.12).

Map 4.12. Illiteracy Rates, by Age-Group, Nigeria, 2011

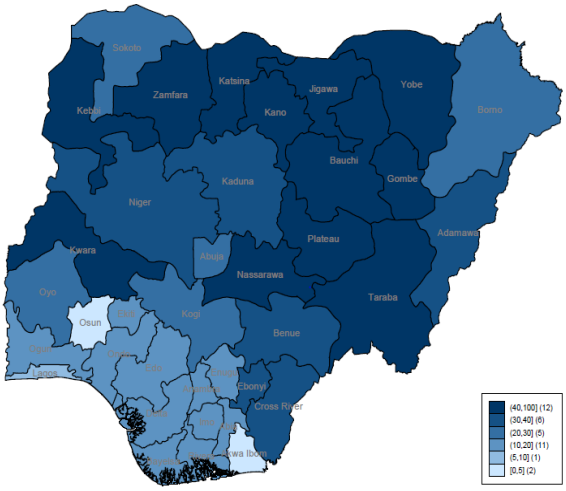
a. Ages 15–24



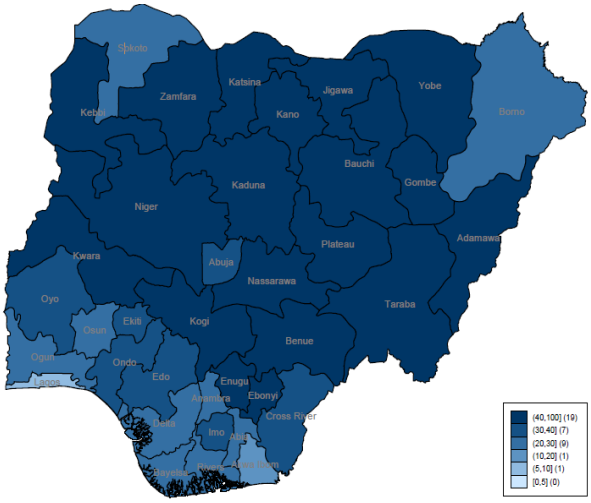
b. Ages 25–34



c. Ages 35–44



d. Ages 45–64



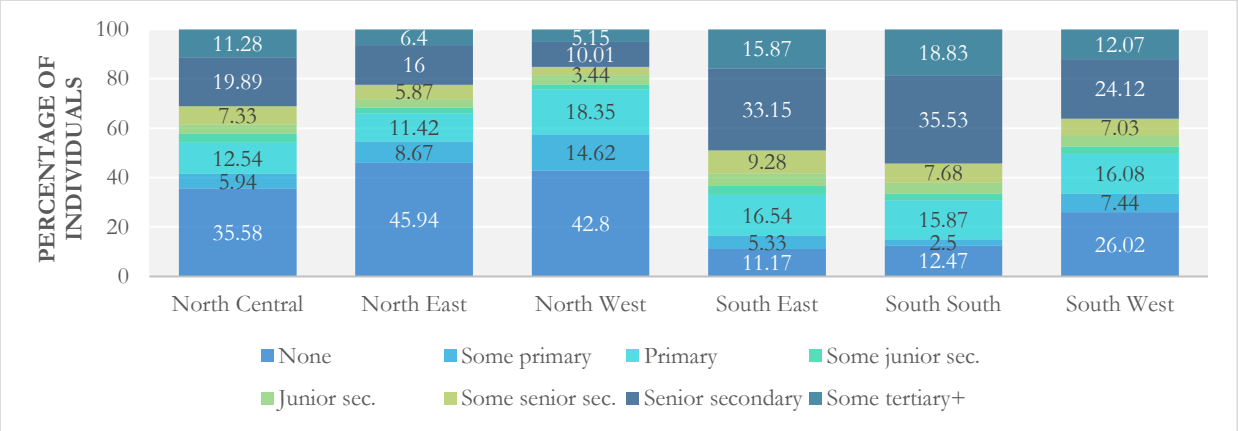
Source: Favara, Appasamy, and Garcia 2015 based on data of GHS 2010–11.

The profile of educational attainment among the labor force differs between the north and the south, and this contributes to the divide. The share of educated men and women in the labor force is a good predictor of the capabilities and growth potential of a country. As experience shows, any physical investment cannot be efficiently used and maintained without technical and managerial skills. These can be developed only by accruing, over a long period, human capital. Meanwhile, education also has an intergenerational impact: children with educated mothers are more well cared for and have better school outcomes.

Labor force educational attainment is particularly low in the north. In the North East, only 30 percent of the labor force has more than completed primary education, and the share drops to about 20 percent in the North West (figure 4.8). Whereas secondary and tertiary education are required for more complex types of jobs, good-quality basic education (9–10 years of schooling) provides the fundamentals for skills development and, except for basic jobs, is the minimum required for most jobs

outside agriculture (World Bank 2015b). The low educational attainment thus limits the scope for workers in the northern zones to migrate to the more dynamic south. Only low-paid jobs are available to them, and the opportunity cost of migrating thus becomes too high.

Figure 4.8. Labor Force Educational Attainment, by Zone, Nigeria, 2013

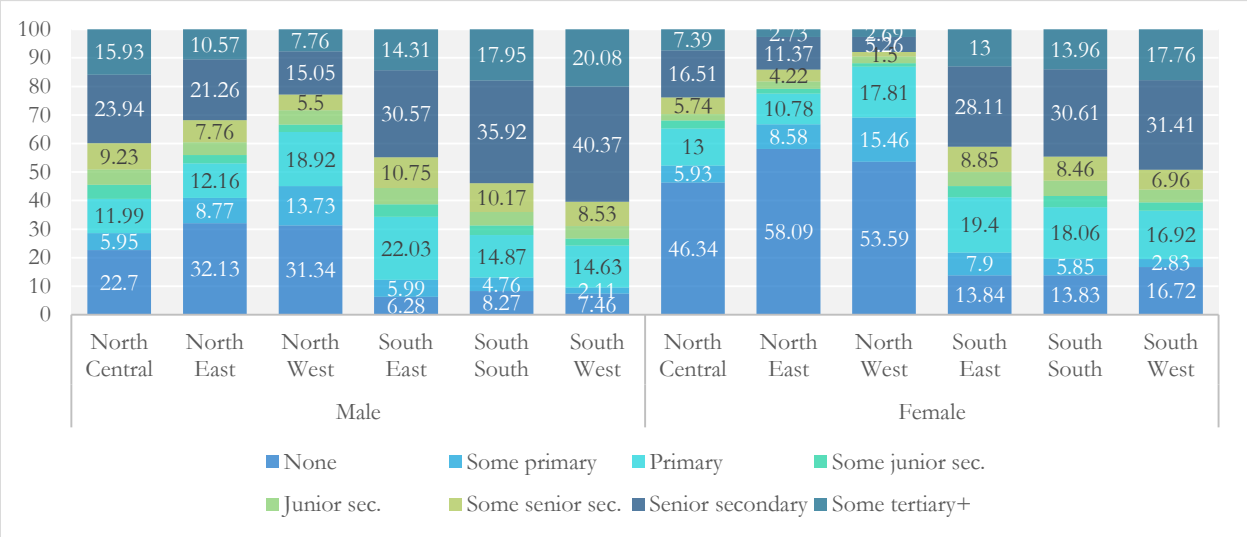


Source: World Bank calculations based on GHS 2012–13.

The share of secondary and tertiary educational attainment in the southern zones is double the shares in the North West and the North East. The scenario that emerges from the survey data is certainly that of a labor force polarized according to educational attainment. The shares of the labor force with upper-secondary or tertiary education is 19 percent in the South South and 16 percent in the South East, while the shares in the northern zones are 5–6 percent.

The gender gap in labor force educational attainment is a national issue, although it is more pronounced in the north. In 2013, 58 percent of women between 15 and 64 years of age residing in the North East had no education (figure 4.9). The same was true of 54 percent of women residing in the North West and 46 percent of women residing in the North Central. Although, in the south, women have less education than men, an average of 20 percent more women than men in the north have no education against a corresponding average of 8 percent in the south. In addition, women in the south have considerably higher secondary and tertiary educational attainment than women in the north. These differences in educational levels could result in differences in returns on various outcomes. For example, a World Bank study found that educational gaps drive productivity gaps between women and men farmers (Corral, Molini, and Oseni 2015). Thus, it is necessary to improve women's access to education, especially in the north, to avoid gaps in GDP-enhancing outcomes.

Figure 4.9. Labor Force Educational Attainment, by Gender and Zone, Nigeria, 2013



Source: World Bank calculations based on GHS 2012–13.

Agriculture is still the prevailing activity in the north

The Nigerian economy was diversified over the last decade, but agriculture, mining, and quarrying, mainly oil and gas, are still major players. The share of agriculture in GDP dropped from 37 percent in 1990 to 24 percent in 2010, and the share of mining and quarrying shrank from 26 percent to 16 percent over the same period. Employment is also shifting out of agriculture, the share of which in total employment fell from a peak of 58 percent in 2007 to 50 percent in 2011 (World Bank 2015b). While skill demands will still be largest in the farming sector, the nonfarm sector is gaining significance. About 27 million workers (50 percent of the workforce) are engaged in farm employment, followed by 17 million (29 percent) in household enterprises in off-farm self-employment.

The southern zones show a higher level of diversification outside agriculture and a higher share of wage employment. In the North East and North West, wage jobs account for less than 10 percent of total employment, while almost two-thirds of the population remain in farming. Most farming activities serve household subsistence needs, and wage employment—usually associated with higher earnings—is limited in the sector. By comparison, fewer than one worker in five in the South West is involved in farming, while over half the employed (56 percent) are self-employed, and one worker in four is on wages (figure 4.10).

Figure 4.10. Structure of Employment, by Zone, Nigeria, (%) 2011

Sources: Word Bank 2015b; World Bank estimates based on GHS 2010–11.

Over the decade, nonagricultural household income grew more quickly in the south. The income participation of nonagricultural wage workers and the nonagricultural self-employed rose, especially in the South South and the South West, where these activities accounted for 63 percent and 68 percent of household income in 2013, respectively (figure 4.11). Nonagricultural self-employment increased also in the north, especially in the North West, where it accounted for 42 percent of household income in 2013. Nonetheless, in 2013, the share of income from nonagricultural wage activities was as low as 13 percent in the North East. In the North Central and North East, the income of 43 percent of households derived from crop production (which most likely represented unpaid work or self-employment in agriculture), although the share had declined in the two zones by around 25 percentage points since 2004.

Figure 4.11. Shares of Household Income, by Zone, Nigeria, 2004, 2013

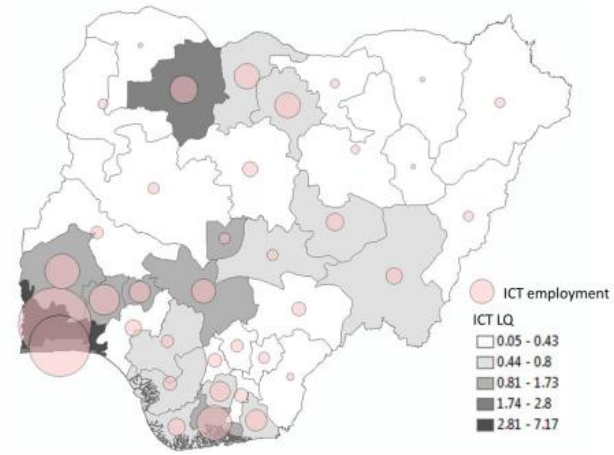
a. 2004 **b. 2013**

Source: World Bank calculations based on official income aggregates in RIGA (Rural Income Generating Activities) Database, Food and Agriculture Organization of the United Nations, Rome, http://www.fao.org/economic/riga/riga-database/en/, computed on NLSS 2003–04 and GHS 2012–13 data; population weights are applied.

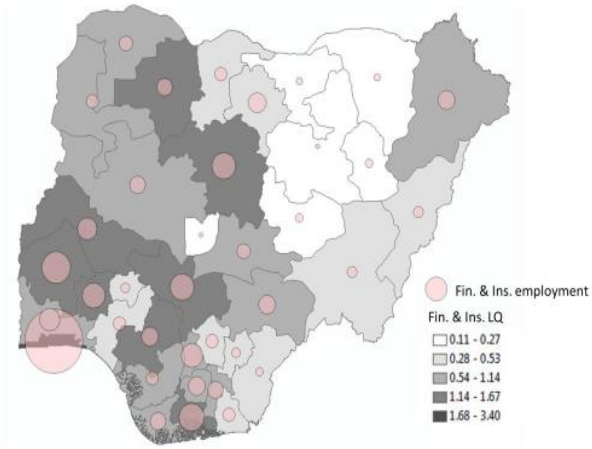
The growth of modern nonoil sectors such as information and communication technology and finance and insurance is also concentrated in the south. Employment in information and communication technology is greatest in Ogun State, with a location quotient of 7.2, followed by Lagos (map 4.13).[25] The service sector consists of diversified subsectors, but only three subsectors contributed to the 60 percent of growth in services between 1990 and 2010. These are professional, scientific, and technical services, the public sector, and finance and insurance (World Bank 2016). The use of information and communication technology and finance and insurance is largest in Lagos, and the use of professional, scientific, and technical services is largest in Ogun and Lagos in the South West. Thus, the majority of the modern, high-productive sectors are centered in the South West, but these sectors require high skills. Lack of adequate skills severely limits the capacity of young workers in the north to migrate toward the south to seek more productive jobs.

Map 4.13. Employment and LQ in High-Growth Service Sectors, by State, Nigeria, 2010

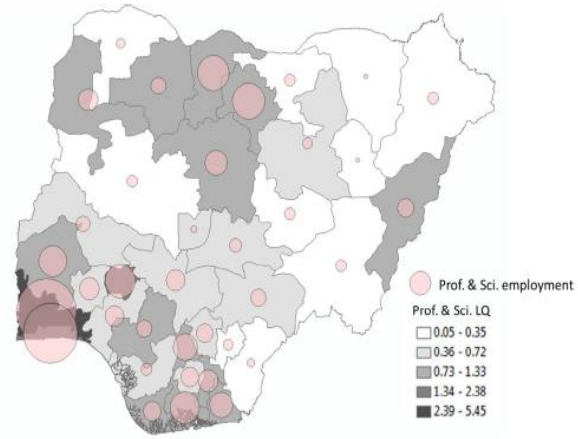
a. Information and communication technology



b. Finance and insurance



c. Professional, scientific, and technical activities



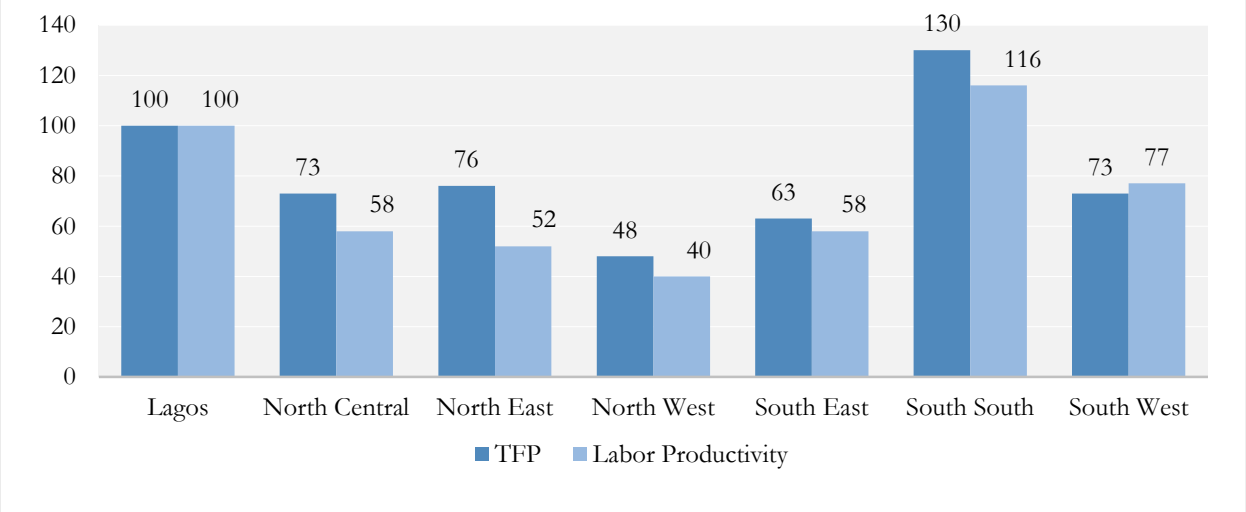
Source: World Bank 2016.

[25] The location quotient is a valuable way to quantify the concentration of a particular industry in a region relative to the concentration nationwide. See "What Are Location Quotients (LQs)?" Bureau of Economic Analysis, U.S. Department of Commerce, Washington, DC (accessed February 2016), http://www.bea.gov/faq/index.cfm?faq_id=478.

The econometric analysis in chapter 3 mainly detects zonal differences in endowments as the main driver of north-south poverty differentials. Nonetheless, although differences in returns are not fully captured by our model, we believe the higher returns reported in the south in both the formal and the informal sectors are also feeding the divide. Indeed, revenues, total factor productivity (TFP), and labor productivity seem to be higher among southern firms and NFEs.

Firms located in Lagos and in the South South zone are far more productive than firms elsewhere on both TFP and labor productivity. Although the participation of NFEs increased in both the north and the south between 2010 and 2012, TFP differs significantly between the two (Buba 2015). Indeed, the TFP of the median firm in the North West is less than half the TFP of the median firm in Lagos and the lowest among all zones. Labor productivity in the North West is also the lowest among all zones (figure 4.12).

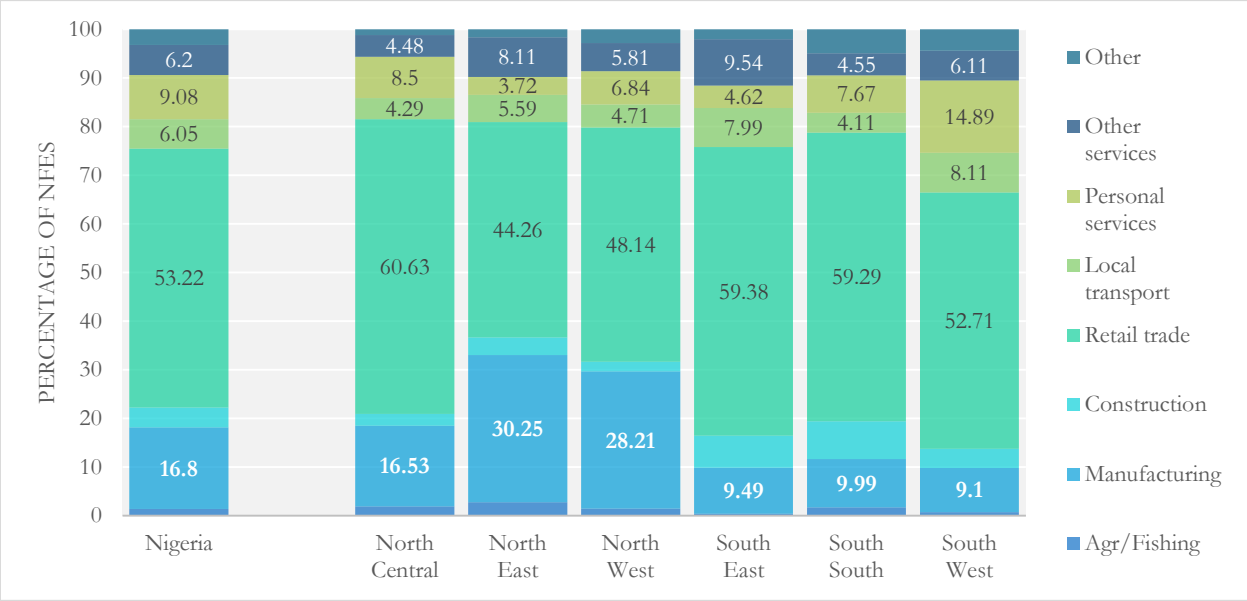
Figure 4.12. Index of TFP and Labor Productivity, by Zone, Nigeria



Source: Buba 2015 based on data in GHS 2012–13.
Note: Median firm in Lagos = 100.

Manufacturing NFEs are concentrated in the north, while retail trade, service, and construction NFEs are concentrated in the south. Figure 4.13 shows the number of NFEs across geopolitical zones. Although services and the retail trade are predominant across all zones, there is a clear difference between the north and the south. The manufacturing sector, for instance, is predominant in the north: nearly 30 percent of NFEs in the North East and North West are engaged in this sector. A large proportion of these businesses produce food products. In the south, meanwhile, more than half of NFEs are in retail trade, and the share of NFEs in construction and services is also larger in the south.

Figure 4.13. Share of NFEs, by Sector and Zone, Nigeria, 2013

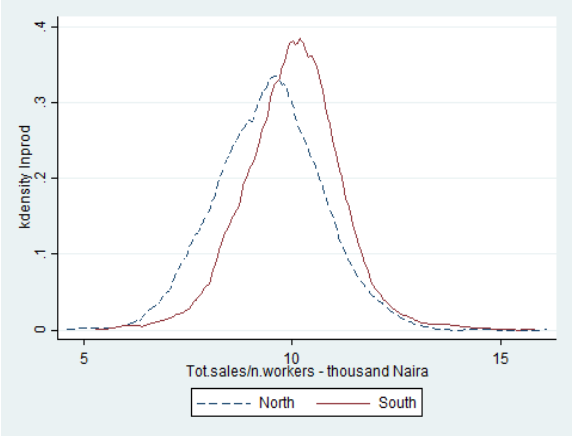


Source: World Bank calculations based on data in GHS 2012–13.

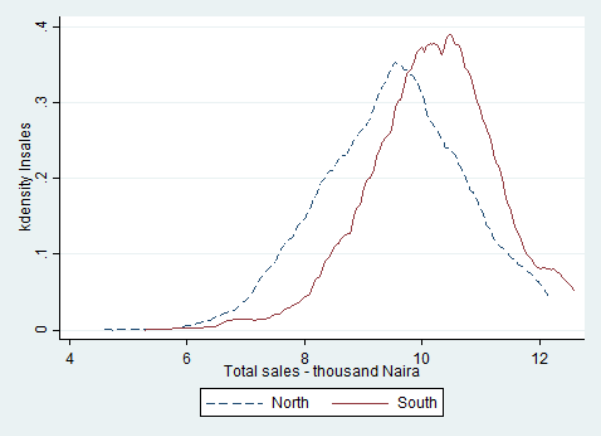
NFEs show lower labor productivity and sales in the north than in the south. Labor productivity in an NFE, calculated as monthly sales over the number of workers in the NFE, is lower in the north (figure 4.14). Likewise, NFE sales are lower in the north. These results suggest that NFEs are better performers in the south than in the north.

Figure 4.14. Performance of NFEs, by Region, Nigeria, 2013

a. Labor productivity



b. Sales

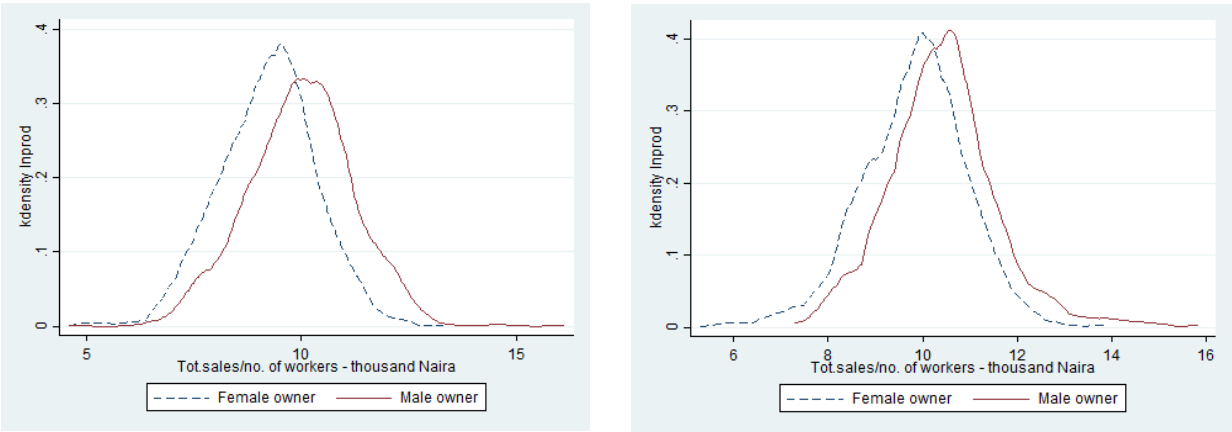


Source: Bertoni et al. 2015 based on data in GHS 2012–13.

In the north, the gap in NFE performance according to ownership by gender is wide. In the north, labor productivity is far greater among NFEs owned by men than among NFEs owned by women. In the south, labor productivity is also greater among NFEs owned by men, but the gender gap is narrower (figure 4.15).

Figure 4.15. NFE Labor Productivity according to Ownership by Gender, Nigeria

a. North **b. South**

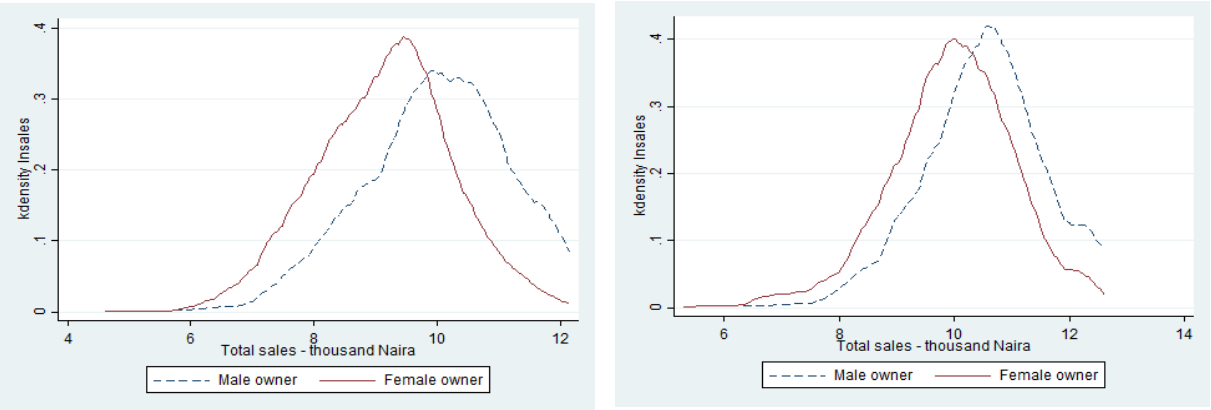


Source: Bertoni et al. 2015 based on data in GHS 2012–13.

Among NFEs owned by women, those in the north show lower sales than those in the south. Sales are greater among NFEs owned by men than among NFEs owned by women both in the north and the south. However, in the north, the gender gap in sales by ownership is wider; sales are substantially lower among NFEs owned by women. In the south, sales are lower among NFEs owned by women than among NFEs owned by men, but the gap is smaller than in the north (figure 4.16).

Figure 4.16. Mean NFE Sales according to Ownership by Gender, Nigeria

a. North **b. South**



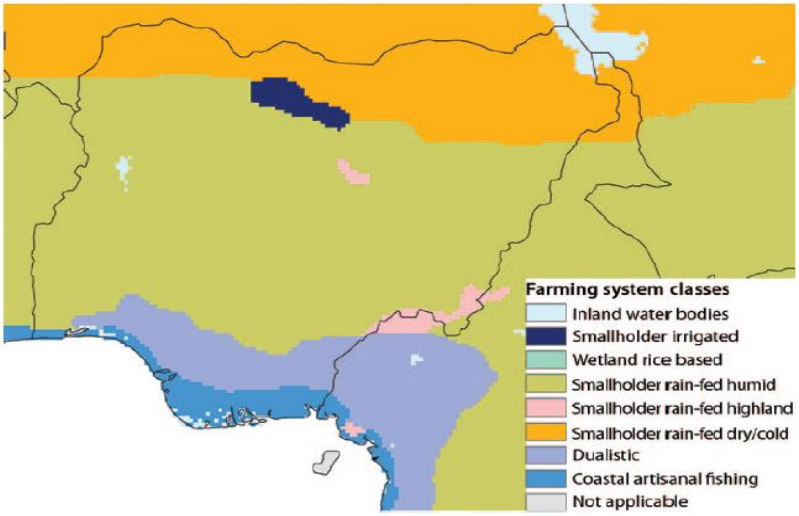
Source: Bertoni et al. 2015 based on data in GHS 2012–13.

Other constraints to poverty reduction are generally more binding in the north

A series of constraints to poverty reduction cannot be neglected in focusing on regional differences in the dynamics of poverty in Nigeria. The lack of adequate data hinders the inclusion of these factors in the econometric analysis in chapter 3. Nonetheless, these elements are equally important for the purpose of the analysis. Disparities in agroecological conditions and the recent eruption of violent conflict are the final pieces of the intricate mosaic that is poverty in Nigeria.

Northern Nigeria is partly covered by the semiarid Sudan-Sahel agroecological zone, while the southern half of the country lies in the humid Guinea Savannah and has more abundant precipitation. The disparities are projected to be accelerated in the future because of climate change. Nigerian farmers mainly rely on rainfed agriculture (map 4.14). Farmers residing in the semiarid North East and North West face serious rainfall constraints with respect to those farming in the humid south or in the Northern Guinea Savannah in the North Central zone. In addition, by 2050, Nigeria is expected to experience an increase in temperature with an extremely high increase in the North East. By shortening the crop-growing cycle, this temperature peak could lead to severe yield reduction, thus threatening food production, especially among subsistence farmers in the area (Cervigni, Valentini, and Santini 2013).

Map 4.14. Spatial Distribution of Farms, by Farming System Classes, Nigeria, 2007



Source: Cervigni, Valentini, and Santini 2013.

The North West and the North East are the bottom two zones in rainfall records, with average yearly precipitation at 71 and 78 centimeters in 2001–12, against 151 centimeters in the South South and 141 centimeters in the South East (table 4.1).

Table 4.1. Mean Yearly Precipitation, by Zone, 2001–12

centimeters

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
North Central	94.36	119.68	114.82	99.15	101.44	120.37	120.03	94.3	92.98	98.48	87	107.75
North East	82.24	80.92	84.11	69.95	80.82	83.75	79.88	67.39	69.32	72.45	70.28	92.53
North West	75.03	78.63	89.08	58.99	69.24	72.72	68.66	61.86	62.66	66.21	62.27	81.04
South East	133	152.16	153.51	145.6	140.71	147.04	176.31	141.66	107.45	129.04	125.6	138.87
South South	141.37	164.09	164.25	159.11	140.96	175.44	194.07	141.39	125.29	139.01	129.92	142.12
South West	92.99	104.78	117.33	99.69	86.73	104.89	107.26	106.89	92.16	128.85	103.93	114.79
Nigeria	101.99	115.41	120.82	104.78	100.9	115.81	122.32	103.07	91.78	108.96	97.6	112.94

Source: Data of the Climate Prediction Center, U.S. National Oceanic and Atmospheric Administration.

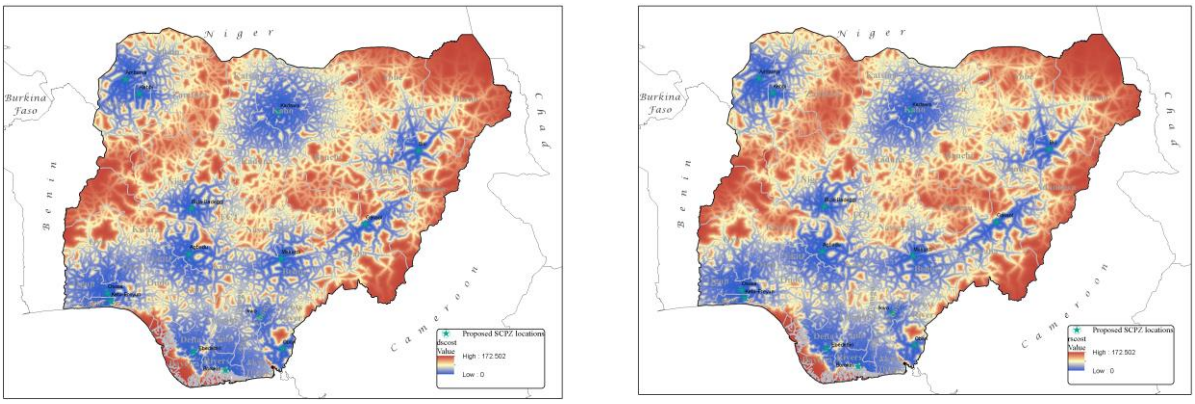
Agricultural markets in Nigeria have developed around a highly polarized infrastructure system. More infrastructure of higher quality is concentrated in the most densely populated areas, that is, the south and the areas around Kano State in the North West. The priority farming yields are

also different in the north and the south.[26] Differential access to and the cost of electricity and transportation and the proximity to crop facilities (for example, processing sites, warehouses, and so on) undermine already fragile market connectivity between the north and the south. A lack of infrastructure, such as roads, exacerbates the poverty in rural areas in the north by isolating farmers from needed inputs and profitable markets.[27] Food production in the north is also threatened by growing populations, which affect the diminishing resources, and by natural and climatic shocks, such as deforestation, overgrazing, drought (mainly in the north), soil erosion, and flooding (a major problem in the south).

In the north, agricultural crops are left unexploited because of poor market connectivity. The cost of transportation to the nearest processing zone is greater in the north than in the south (map 4.15). In addition to the natural constraint imposed by the semiarid climate, areas of high-density agricultural production in the north are confined by this inadequate market connectivity (the spots in map 4.16). Improving the livelihoods of the poor in these areas would mean creating more efficient market connectivity. Moreover, most of the southern zones and the areas around Kaduna, Kano, and Sokoto enjoy lower transportation costs in both the dry and the rainy seasons.[28]

Map 4.15. Transportation Costs, Nearest Staple Crop Processing Zone, by Season, Nigeria

a. Dry season **b. Rainy season**



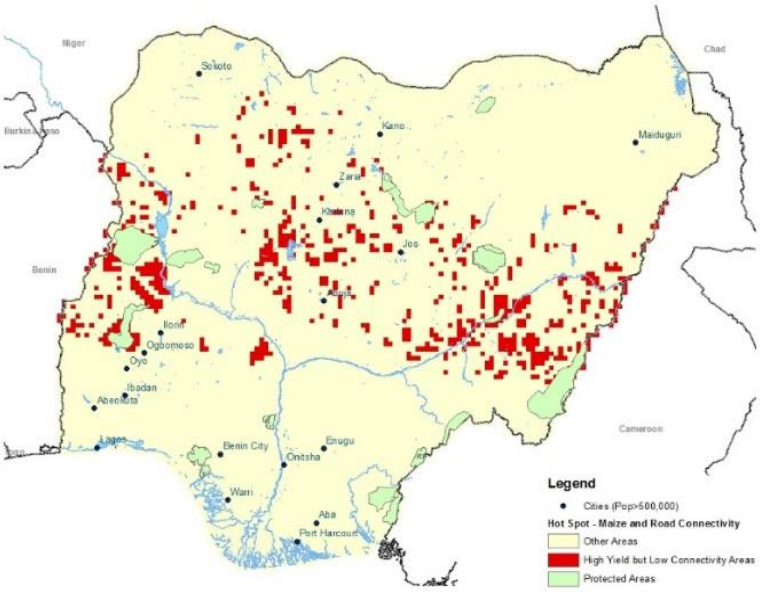
Source: Barra, Briceño-Garmendia, and Monchuk 2012.

[26] Cotton, onions, tomatoes, and sorghum are mainly produced in the North East and North West; maize and soybean in the North Central, while palm oil and cocoa are exclusively produced in the south. Rice and cassava are produced in both the north and the south. Livestock development is another important component of Nigerian agriculture and has abundant social and economic potential.

[27] "Nigeria," Food Security Portal, International Food Policy Research Institute, Washington, DC (accessed May 2016), http://www.foodsecurityportal.org/nigeria/resources.

[28] In the north, there is a single long dry season between October and April, while the rainy season is July to September. The south near the coast has two rainy seasons with maximum rainfall in May or June and again in October. This area is characterized by relatively drier periods between December and February and between July and September.

Map 4.16. Hot Spots, High Yield, Low Connectivity Areas, Nigeria



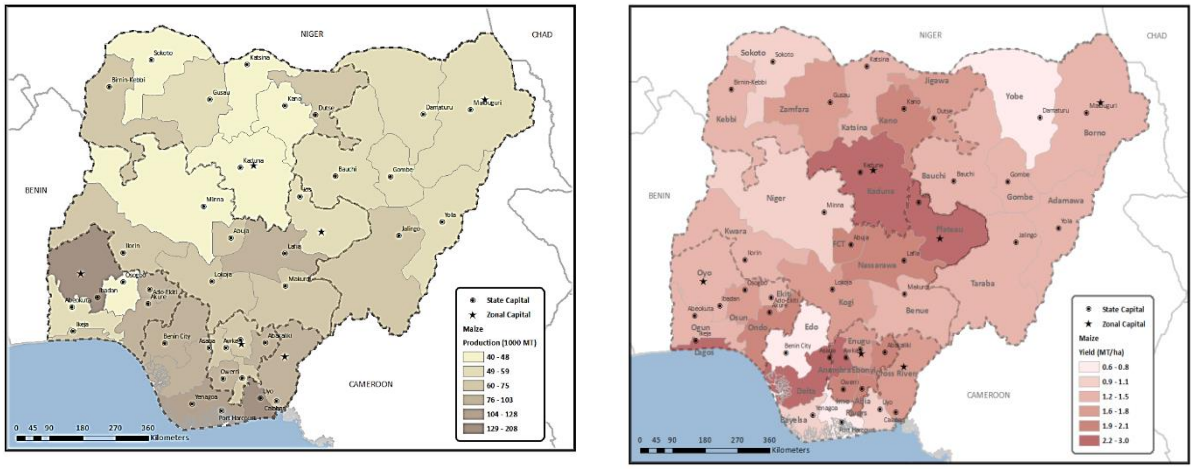
Source: Barra, Briceño-Garmendia, and Monchuk 2012.

The market dynamics of Nigeria's major crops—for example, maize, sorghum, rice, cassava, and palm oil—reflect the persistent lack of market connectivity between the northern and southern zones. With a coarse grain production of 19 million tons in 2015, Nigeria is the 12th largest producer of coarse grain in the world and the first in West Africa (FAO 2015).[29] Production is mainly developed in the south, but high yields are also reported in the northern states of Kaduna and Plateau. The country is a net producer of maize, and prices generally follow a north-south gradient whereby few southern states report higher prices, most likely because of lower yields given the shortage of land in predominantly urban areas (map 4.17). Similar dynamics are at play in other major crops (see map C.1 in appendix C).

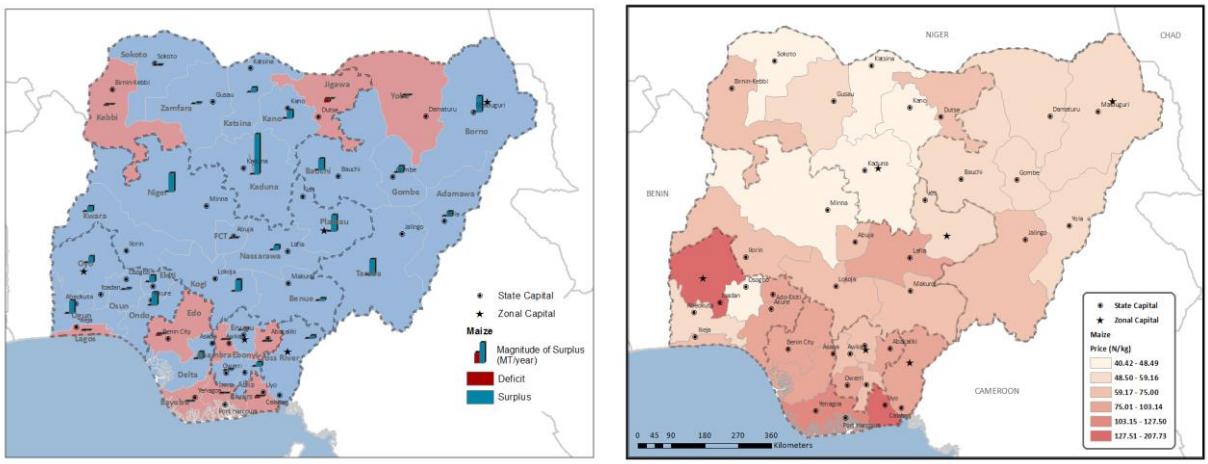
[29] Coarse grains include maize, barley, sorghum, oats, millet, rye, and other minor grains. Maize, millet, and sorghum are the most important cereal crops in quantity of production. The world's top-11 producers are the United States, China, the European Union, Brazil, India, Argentina, the Russian Federation, Ukraine, Mexico, Canada, and Indonesia.

Map 4.17. The Market Dynamics of Maize, Nigeria

a. Production **b. Yields**



c. Surplus **d. Prices**



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

After many episodes of conflict in the last decade, conflict is now focused in the upper north

Nigeria has historically been a conflict-prone country because of its ethnically, religiously, and culturally heterogeneous population. From the colonial proclamation of 1900 to independence in 1960, the British controlled Nigeria through indirect rule, adding fuel to the uneven development of the north and the south of the country.[30] Nigeria underwent a successful, though troubled transition from military to civilian rule in 1999, and it has held four elections since then. Violence has taken various forms in Nigeria, from religious and ethnoreligious violence in the north to local insurgencies that mutated into criminality and maritime piracy in the Niger Delta region and the clashes between farmers and pastoralists in the Middle Belt region (table 4.2).

[30] In 1903, the United Kingdom extended its protectorate from southern Nigeria to the northern Fulani Islamist Sokoto Caliphate that had ruled Nigeria since 1804.

Table 4.2. Selected Conflicts, Nigeria, Since 1967

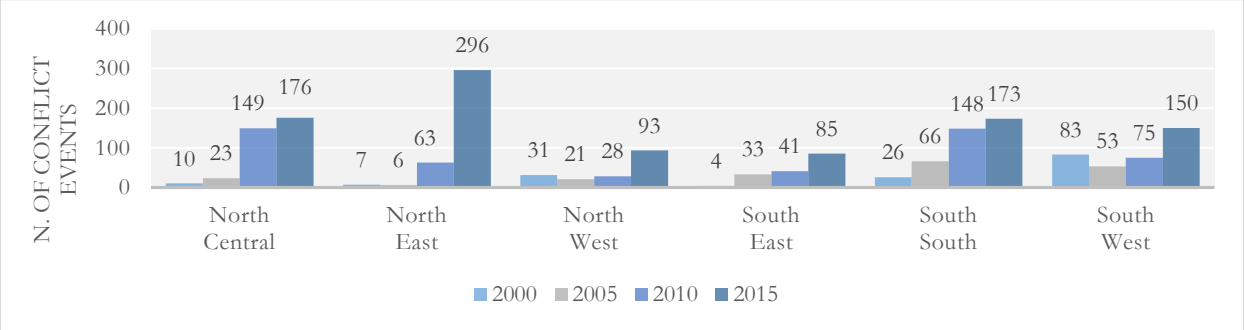
Name of conflict	Years	Nature of conflict	Estimated fatalities
Biafran War	1967-70	Civil war	500,000-2,000,000
Election-related violence	1999, 2003, 2007, 2011	Election-related violence	-
Niger Delta Conflict	2004-09	Insurgency	2,500-4,000
Boko Haram Uprising	2009-present	Insurgency	11,200

Source: Marc, Verjee, and Mogaka 2015.

Nigeria lies in a West African area of revived conflict, whereby spillovers undermining regional stability are recurrent. In the region, the nature of violence changed over the last decade from large-scale conflicts and civil wars to a new generation of threats such as rising election-related violence, extremism, and terrorist attacks, drug trafficking, maritime piracy, and criminality (Marc, Verjee, and Mogaka 2015). In addition, wars are increasingly being fought on the periphery of the state by armed insurgents who are factionalized and, in some cases, militarily weak (for example, Boko Haram in Nigeria and the Arab and Tuareg uprisings in Mali). Violence associated with the Boko Haram insurgency in northeast Nigeria is also spilling into other countries. Although the insurgency is, ultimately, a Nigerian crisis, militants have crossed into Cameroon, Chad, and Niger, where borders drawn by colonial powers at the end of the 19th century had "little social relevance set against the cultural unity of the old empire of Kanem-Bornu" (Pérouse de Montclos 2014, 8).

The country has experienced many conflict episodes in the last decade. Conflicts and armed violence are increasingly affecting the north, in particular the North East zone. The violence between Boko Haram and government forces in 2014 escalated and boiled over into a national state of emergency in May of the same year. It is estimated that the conflict has directly affected over six million people, forcibly displacing over 1 million, and making another 4 million food insecure (Marc, Verjee, and Mogaka 2015).[31] The number of conflicts in the North East rose significantly between 2000 and 2015 and peaked in 2014 with an estimated 503 conflicts. There was an average 102 conflicts per year in the North East, compared with 47 in the North West, 81 in North Central, 69 in the South West, 91 in South South, and 28 in the South East between 2000 and 2015 (figure 4.17). During 2000–15, Gombe, Taraba, and Yobe each experienced up to 100 conflicts, while Adamawa and Bauchi each underwent 100–200 conflicts. Borno was the most conflict-ridden state across all states, with an estimated 800–900 conflicts during the period (map 4.18).

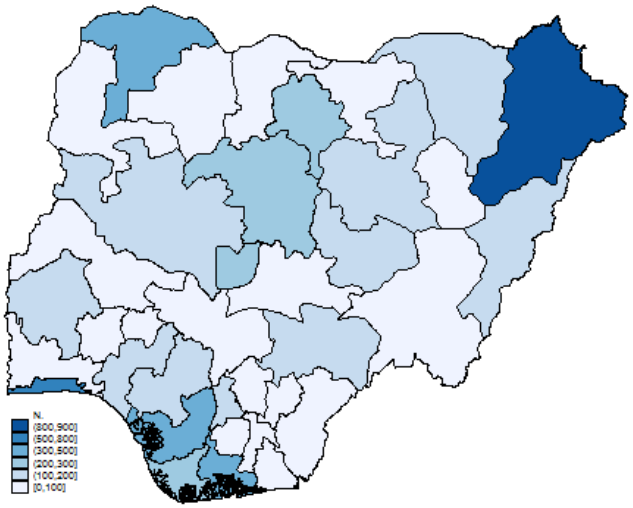
Figure 4.17. Conflict Events, by Zone, Nigeria, 2000–15



[31] A state of emergency was initially declared in the states of Adamawa, Borno, and Yobe in May 2013.

Source: World Bank calculations based on data of ACLED (Armed Conflict Location and Event Data Project) (database), Robert S. Strauss Center for International Security and Law, Austin TX, http://www.acleddata.com/.

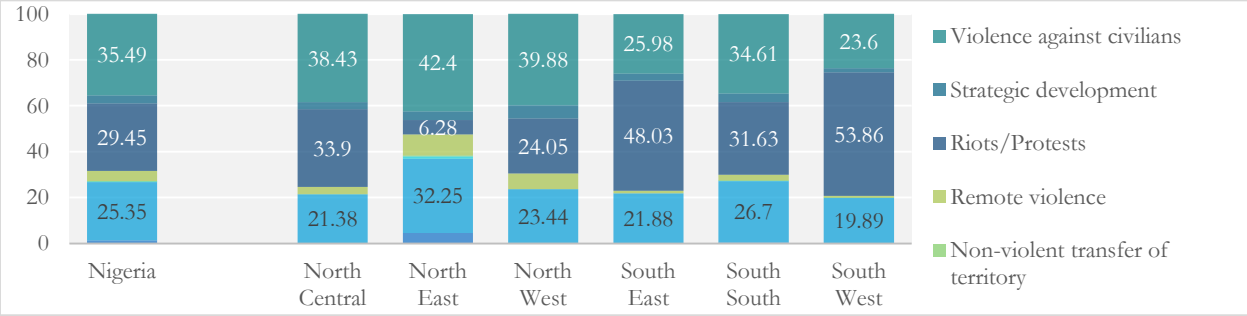
Map 4.18. Average Number of Conflict Episodes, by State, Nigeria, 2000–15



Source: World Bank calculations based on data of ACLED (Armed Conflict Location and Event Data Project) (database), Robert S. Strauss Center for International Security and Law, Austin TX, http://www.acleddata.com/.

The types of conflict events differ across regions. Violence against civilians is most widespread in the North East. Around 43 percent of conflicts registered in the North East between 2000 and 2015 involved violence against civilians, while 32 percent were battles that did not lead to changes in the disputed territory.[32] Riots and protests have been more common in the South West and the South East, the zones that report a lower incidence of violence against civilians (figure 4.18).[33]

Figure 4.18. Type of Conflict Events by Zone, 2000–2015



[32] From the "Armed Conflict Location and Event Data Project (ACLED) Codebook":
Violence against civilians: Violence against civilians occurs when any armed/violent group attacks civilians. By definition, civilians are unarmed and not engaged in political violence. Rebels, governments, militias, rioters can all commit violence against civilians. (Raleigh and Dowd 2016, 9)
Battle-No change of territory: A battle between two violent armed groups where control of the contested location does not change. This is the correct event type if the government controls an area, fights with rebels, and wins; if rebels control a location and maintain control after fighting with government forces; or if two militia groups are fighting. These battles are the most common activity and take place across a range of actors, including rebels, militias, and government forces, communal groups. (Raleigh and Dowd 2016, 8)

[33] From the "Armed Conflict Location and Event Data Project (ACLED) Codebook":
Riots/Protests: A protest describes a non-violent, group public demonstration, often against a government institution. Rioting is a violent form of demonstration. These can be coded as one-sided events. (Raleigh and Dowd 2016, 9)

Source: World Bank calculations based on data of ACLED (Armed Conflict Location and Event Data Project) (database), Robert S. Strauss Center for International Security and Law, Austin TX, http://www.acleddata.com/.

Decades-long violent conflicts between farmers and pastoralists were concentrated in the Middle Belt region of Nigeria. These events devastated local communities, drastically reducing both security and economic activity. In Nigeria's ethnically and religiously diverse Middle Belt, violent conflict between pastoralists and farmers arises from disputes over the use of resources, such as farmland, grazing areas, stock routes, and water points for both animals and households. A range of factors underlie these disputes, including increased competition for land (potentially driven in part by desertification, climate change, and population growth); lack of clarity around the demarcation of pasture and stock routes; and the breakdown of traditional relationships and formal agreements between pastoralists and farmers. A recent report of the Mercy Corps (2015) analyzes the economic consequences of farmer-pastoralist disputes in Nigeria's Middle Belt and estimates that Benue, Kaduna, Nasarawa, and Plateau states have lost up to ₦347 million (US$2.3 million in 2010 U.S. dollars) in combined internally generated revenue because of the conflicts through 2012. Mercy Corps also estimated that the average household affected by farmer-pastoralist conflict would experience at least a 64 percent increase in income if these conflicts were reduced to near zero (see map C.2 in appendix C).

Conflicts may vary in socioeconomic impact. They may affect early child development through different mechanisms, including the following: (1) reduced crop production and reduced household assets, (2) exposure to disease and unsafe water, (3) disruptions in food aid, and (4) physical displacement (Akresh et al. 2012). Moreover, the literature relating to conflict and children's health status has widely argued that childhood health influences health and economic status throughout adulthood, so that exposure to conflict during early childhood will reduce the future welfare levels of these children as adults (Akresh, Lucchetti, and Thirumurthy 2012; Akresh, Verwimp, and Bundervoet 2011; Bundervoet, Verwimp, and Akresh 2009; Case and Paxson 2010). Conflicts can have a direct impact on household consumption by, for example, hindering farm and nonfarm activities or simply disrupting farmers markets (Bozzoli and Brück 2009). To cope with the shock, households might be forced to resort to lower risk revenue activities with clear, negative consequences on their welfare. Finally, conflicts can contribute to the depletion of physical and human capital and can have a permanent effect on labor market structures.

Conclusions

Findings

In contrast to official estimates, the report documents a decline in poverty of 10 percentage points between 2004 and 2013 and a much lower level of poverty in the country. Data of the most recent comprehensive household survey (HNLSS) in 2009–10 indicate that the official poverty rate remained stubbornly high, at 62 percent, down only slightly from 64 percent in 2004. The report estimate indicates that the poverty rate was around 46 percent in 2004 and had declined to 36 percent by 2013. However, the report reassessment is only a partial analysis, and confirmation or refutation will have to await the next comprehensive NLSS, scheduled to start in February 2017.

Southern coastal states achieved rapid poverty reduction between 2004 and 2013. Starting from rates below 40 percent, all southern zones (South West, South East, and South South) saw a decline in poverty. The total number of poor decreased in the south by almost 6 million. South West alone

contributed 4 million poor to the decline. Were the GEP to be calculated only on the southern and North Central states, its value would be double, and the speed of poverty reduction would be greater than the speed of growth. Thus, considering only these zones, the GEP would be higher in Nigeria than in the rest of Sub-Saharan Africa.

The decline in poverty coincided with a period of sustained growth. Between 2004 and 2011, Nigeria's growth rates were among the highest in Sub-Saharan Africa. Beginning in 2004, the annual nonoil GDP growth rates averaged 8 percent, ranking Nigeria among the three top performers in Sub-Saharan Africa. This performance occurred in a context of prudent macroeconomic management and economic reform. A few areas of the country, particularly Lagos State, achieved impressive progress in development and service delivery.

The recent rebasing of GDP indicates that the economy is actually much larger, and the nonoil sector more important. The new GDP numbers imply that Nigeria is the largest economy in Africa and the 23rd largest economy in the world. After the rebasing, the economy emerged as more diversified. Manufacturing (especially food and beverages) and previously undocumented services (including the entertainment industry) turned out to be more crucial sources of growth.

During the last decade, Nigeria's political system was consolidated into a mature multiparty democracy in which power is transferred through a peaceful process. In March 2015, General Buhari of the opposition All Progressives Congress party, succeeded in winning the presidential election, marking a critical juncture in the democratic timeline of the country.

Against this positive background, however, the performance in poverty reduction was far from satisfactory. Nigeria has a low GEP, much lower than the average in Sub-Saharan Africa and in several rapidly growing African economies. For every 1 percent growth in GDP per capita, poverty declined by only 0.6 percent, against 1.2 percent in Sub-Saharan Africa, 1.1 percent in Ethiopia, and 2.2 percent in Uganda. Nigeria's GEP is only one-fourth of the GEP in other lower-middle-income countries. Furthermore, though the percentage of the poor declined, the number of poor rose by about 800,000 because of the rapid expansion in population.

The divide between the north and south widened significantly. Poverty was higher in the north in 2004, and the gap with the south increased during the subsequent decade. In the North West and the North East, poverty reduction stagnated at particularly high levels: 47.6 percent in the North East and 59.0 percent in the North West. North Central was the only northern zone that performed well, reducing poverty by almost 18 points, far above the national average. In 2004, the number of the poor in the North East and North West was 29 million, and it increased thereafter to 37 million. These additional 8 million poor people were equally split between the North East, the area most affected by the recent conflict, and the North West.

The widening in the regional disparity contributed to a rapid increase in inequality. Inequality in household consumption widened between 2004 and 2013 by about 15 Gini points; the consumption share of the top decile of the population increased from 26.6 percent to 33.7 percent at the expense of all the other deciles, which lost considerable ground. This rapid increase in inequality slowed poverty reduction. Simulations indicate that, if inequality had not widened, poverty would have dropped by 18 points rather than 10. The increase in inequality was particularly detrimental to poverty reduction in rural areas. Without the increase in inequality, rural poverty would have declined by 13

points rather than only 3. Meanwhile, growth translated almost entirely into poverty reduction in urban areas, though inequality narrowed by only 1 percent.

The big north-south divide is not a feature of the last decade alone; indeed, the chasm has existed for many years in various socioeconomic indicators and in economic opportunity. Demographic changes, access to basic infrastructure and productive assets, location of residence, educational attainment, and employment have been key factors driving the divide in poverty rates between the north and south. Background factors such as agroclimatic differences, climate change, and the recent escalation in conflict played and will increasingly play an important role in expanding the divide.

The security challenge in the North East has revealed the fragility of the equilibrium in the country's political economy and the lack of inclusive growth, if not since independence, at least in the last decade. At the root of the security challenges are high levels of poverty, joblessness, a growing demographic of frustrated youth, natural resource degradation, and climate stressors. Substantial population growth, still worrisome poverty rates, resource depletion, rainfall variability, recurrent droughts and floods, soil infertility and erosion, and deforestation are compromising the efforts of the 80 percent of northern Nigerians who depend on land and water resources for their economic and physical security.

Growth prospects have dramatically changed since 2013. Before 2013, Nigeria enjoyed high rates of growth, driven by growth poles concentrated along the coast and around Abuja. However, the good economic performance concealed imbalances and the limited inclusiveness of the growth model. The present crisis has been associated with substantially reduced growth and, as a consequence, only a limited trickle down of growth to other areas of the country. However, the new situation might become an opportunity to rethink the country's priorities and lay the groundwork for a different growth model.

The new situation requires additional research and analysis to gain a clearer picture of the implications of the events since 2013 in terms of poverty rates and a new poverty reduction strategy. The present report provides an overview of the last decade, but cannot offer much analysis on more recent events. The availability of new data in fall 2016 (GHS panel round 3) and at the beginning of 2018 (the new NLSS) will provide the basis for evaluating the poverty impact of recent conflicts and the economic slowdown.

A preliminary policy roadmap

Based on the report findings, a preliminary policy road map may be outlined. This road map can help the new government in identifying a comprehensive set of policies to address some of the structural problems the country is facing. Additional data and analytical work will help sharpen these recommendations that, at this stage, are broad and not sector-specific.

The rapid economic growth and the slow pace of poverty reduction describe a country with potential, but facing tight constraints. Job creation, economic diversification, the construction of effective safety nets, and improvements in service delivery are important elements that need to be addressed if the potential of Nigeria is to be unlocked. Sequencing and prioritization need to be carefully considered, however; a delicate policy balance must be struck. The new growth and poverty reduction strategy has to reflect the acute needs of the country's poorer areas, while not stifling the dynamism of the most dynamic areas.

The complexity of the development challenges is emphasized by the absence of one-size-fits-all solutions. The performances of the north and the south could not be more at odds. In particular, the coastal areas of the states in the South West and South South can be considered middle-income economies that have achieved important results in poverty reduction, but are facing the typical constraints of middle-income economies, such as chaotic urbanization, unanswered demand for quality services, and an unfavorable business climate. By contrast, the states of the upper north continue to experience deep poverty, sluggish growth, and limited access to basic services and infrastructure. This implies that, while the focus of the more dynamic states should be on improving the business climate and the quality of services, the poorer states face a rather more complicated set of challenges.

This complexity can be addressed through two sets of polices: distribution-blind interventions and poverty-targeted interventions. Distribution-blind interventions do not reflect a deliberate focus on the poor, although they may indirectly affect the welfare of the poor and the incidence of poverty. They can be pro-poor or completely distribution-blind depending on how the poor are affected. Examples of distribution-neutral policies include the construction of trunk highways, initiatives in higher education, and support for financial sector reform, while investments in rural roads, primary education, or reforms in poorer states tend to be pro-poor (Krumm, Molini, and Paci 2016). Poverty-targeted interventions are designed to target low-income individuals or households as the most direct beneficiaries.

Among distribution-blind interventions, priority should be given to interventions aimed at diversifying the economy away from oil. Rapid, diversified growth and job creation in Nigeria depend on the twin forces of industry- and service-driven wages in urban areas and agricultural productivity in rural areas. Policy intervention should thus focus on increasing the number of jobs in the modern private sector, boosting the productivity of traditional economic sectors, and fostering the occupational and geographical mobility of workers.

An increase in the number of jobs in the modern private sector requires substantial improvement in the business environment and investment in key infrastructure. All firms face a tough business environment in in Nigeria relative to other investment locations. According to the World Bank (2014b), Nigeria ranks near the bottom in the ease of doing business (170th among 189 countries). Around 83 percent of Nigerian business owners consider lack of electricity the biggest obstacle to doing business (Iarossi and Clarke). Transmission and distribution networks have limited capacity to meet the current needs in generated power. Nearly one out of every two units of electricity generated is lost to technical failures, commercial deficiencies, and theft. The high costs associated with traffic congestion and poor-quality infrastructure impede the competitiveness of urban areas by limiting their capacity to support local economic growth and attract investment (World Bank 2016). Poor roads, along with the multiple barriers represented by high local taxes and fees and frequent inspections, impose huge costs and delays and discourage external investors from servicing the country's urban markets (Foster and Pushak 2011).

Recent changes in labor market dynamics indicate some improvement, which is mostly concentrated in the south. After a long period of job creation limited mainly to agriculture and a decline in the share of wage jobs, the trend looks positive again. More jobs are now being created in the nonoil, nonagricultural sectors, areas where poor people usually find job opportunities; this also suggests that agricultural productivity is rising and that fewer people are depending exclusively on agriculture. Wage employment also gained momentum between 2004 and 2013, and, unlike the past,

the private nonoil sector was taking the lead. In the south, a key element in the expansion in services was the rapid growth in high–value added services, such as information and communication technology, finance and insurance, and real estate. However, the increase in nonfarm labor activities occurred in low–value added activities that are borderline between the formal and informal sectors: mainly construction, petty trade, and transport.

Boosting the productivity of traditional economic sectors implies transforming agriculture from a subsistence base to a market base. Millions of small farmers have the potential to produce more and become part of competitive value chains in agriculture, although few are linked to markets that would provide them with the stable income necessary for long-term productive investment. The government has launched a comprehensive reform program aimed at raising productivity in agriculture, expanding opportunities for commercial agriculture, and developing upstream industries, including food processing. The success of this initiative will have direct implications for poverty reduction in rural areas.

The shift from subsistence- to market-based agriculture presents many challenges. Markets are fragmented, and infrastructure limited, thus restraining the opportunities for generating agglomeration economies. Limited integration also reduces the scope for expansion in rural areas. Strong urban growth and job creation in several cities should increase the migration from rural to urban areas, thereby raising the productivity of the labor force that remains in agriculture. As demonstrated by Ghana's experience, for example, increasing productivity in agriculture can have a major effect on poverty reduction. However, the evidence on such a shift in rural areas in Nigeria is limited. Rural areas without good connectivity to larger markets rely primarily on small family farms and local services; they enjoy few opportunities to benefit from the expansion of more dynamic services. Poor people continue to be trapped in a downward spiral of low agricultural productivity, environmental degradation, and the substantial failure of the state to provide adequate basic services.

Fostering the mobility of workers calls for a concerted effort on both the supply side and the demand side. The growth of a modern nonoil sector requires a highly skilled labor force able to perform increasingly complex tasks. The Nigerian labor market, however, is characterized by substantial distortions that incentivize well educated workers to seek employment in the public sector, despite the relatively small size of the sector. According to the Nigeria jobs report (World Bank 2015b), more than half of workers with secondary or tertiary educational attainment in 2011 were active worked in the public sector. Three public sector workers in five had postsecondary educational attainment, compared with one in ten in the private sector. In general, there is a mismatch between the level of skills required in each profession and the educational level of the workforce employed in the profession. A recent report on skills in Nigeria confirms that many employees are either underqualified or overqualified for their occupations (Favara et al. 2015). About 34 percent of employees in skilled occupations never attended school or have only a primary education. These workers are presumably underqualified for their occupations. Conversely, about 45 percent of the employees working in low-skilled occupations have attained senior secondary or higher education; thus, they are likely to be overqualified. This mismatch generates a loss in human capital, and it signals that senior secondary or higher educational attainment does not automatically translate into a better occupation.

Urbanization played a prominent role in the growth of the nonoil sector. Empirical evidence on developing and developed countries shows there is a strong causal link between urbanization and economic development (World Bank 2009). However, not all regions benefit equally from

urbanization, owing to factors, such as weak institutions and poor infrastructure, that lead to negative environmental externalities, shortages in affordable housing, traffic congestion, and poor connectivity, among other problems. These are challenges cities in Nigeria face, which are compounded by the absence of an integrated approach at the local, state, or federal levels to maximize the growth potential of cities.

Besides urban-rural and north-south integration, there is scope for greater regional and global integration. The market consolidation of the Economic Community of West African States (300 million people) can attract more foreign direct investment and create economies of scale that would directly benefit Nigeria. The West African market offers significant growth potential for Nigeria's agriculture sector and natural gas–based industries and also promises tremendous opportunities for Nigeria's financial sector. To benefit fully from the growth potential offered by regional and global integration, Nigeria needs to adopt more open trade policies, along with measures to simplify border customs procedures and develop a regionally and globally competitive nonoil sector.

A number of poverty-targeted interventions could directly reduce the gap between the north and the south by tapping the potential of the north. Based on the report's analysis, three priority interventions are listed below. In conflict-affected areas, their success is clearly conditional on improved security and political stability. The first policy intervention pertains to the demographic dividend; the second, to the provision of basic services and infrastructures; and the third, to the construction of a social safety net system at the federal level.

1. **Policies must be put in place, particularly the north, to benefit from the demographic dividend, which has played an important role in the growth of East Asian and other economies.** To generate such a demographic dividend requires a transition to substantially lower mortality and fertility rates, especially in the north. While a demographic transition to lower rates has begun in the south, it has not started in the north; overall, the country has not achieved the pace seen in East Asia or South Asia. Because 42 percent of the population is under 15 years of age and out of school and out of work, because of poor education outcomes, and because population growth is at 2.7 percent, Nigeria will need to harvest the youth bulge to undertake more productive activities in school and work to capture the demographic dividend.

2. **Reducing the north-south divide also requires a renewed effort to provide more basic services, ranging from education services to greater access water and sanitation and to basic infrastructure such as secondary roads and electricity.** The north has not seen a substantial improvement in these indicators in recent years. At the same time, in the south, where access is better, service quality is still low. The large gap in the provision of these services contributes significantly to the enduring divide. This is because the inequality of opportunity in access to education, water and sanitation, and credit can be transmitted across generations and exacerbate the income disparities. Thus, poor nutritional and health conditions affect the cognitive skills of children of school age, limiting their capacity to acquire the skills needed to access better economic opportunities. Therefore, to enhance the inclusiveness of growth, it is essential for the government to invest in reducing the gaps in service delivery and basic infrastructure and to improve the provision of quality services, especially in the north.

3. **An important element of the policy intervention is the implementation of more and more well targeted social protection.** The expansion of social protection can have a positive impact in a country such as Nigeria in which (a) poverty is concentrated in specific geographical areas, (b) the

various dimensions of poverty overlap so that the poor are at a disadvantage in more than one dimension, and (c) the number of vulnerable people is high. Well-targeted social protection can help reduce the inefficiencies in the allocation of resources and boost the productive potential of individuals and communities by breaking the vicious circle that links inequalities in income and opportunity across generations. Experimenting with innovative ways to expand social insurance to cover the self-employed and informal workers can also lower the vulnerability of households to shocks.

Appendix A Technical Notes

This report relies on data of the last two rounds of the General Household Survey (GHS), conducted in 2010–11 and 2012–13, and of the NLSS 2003–04, for which the consumption module was reestimated using survey-to-survey techniques. This technical appendix provides the rationale for basing our analysis on these three datasets. There are two main reasons for our choice: (1) the severe underestimation of the household survey consumption module used for estimating the latest official poverty figures, the 2009–10 Harmonized Nigeria Living Standards Survey (HNLSS) consumption module; and (2) the 2003–04 consumption figures and the GHS panel are not directly comparable because the consumption data were collected according to a different methodology. The direct comparison thus required the reestimation of the 2003–04 consumption module. This appendix describes the underlying methodology.

The anomalies in the HNLSS 2009–10

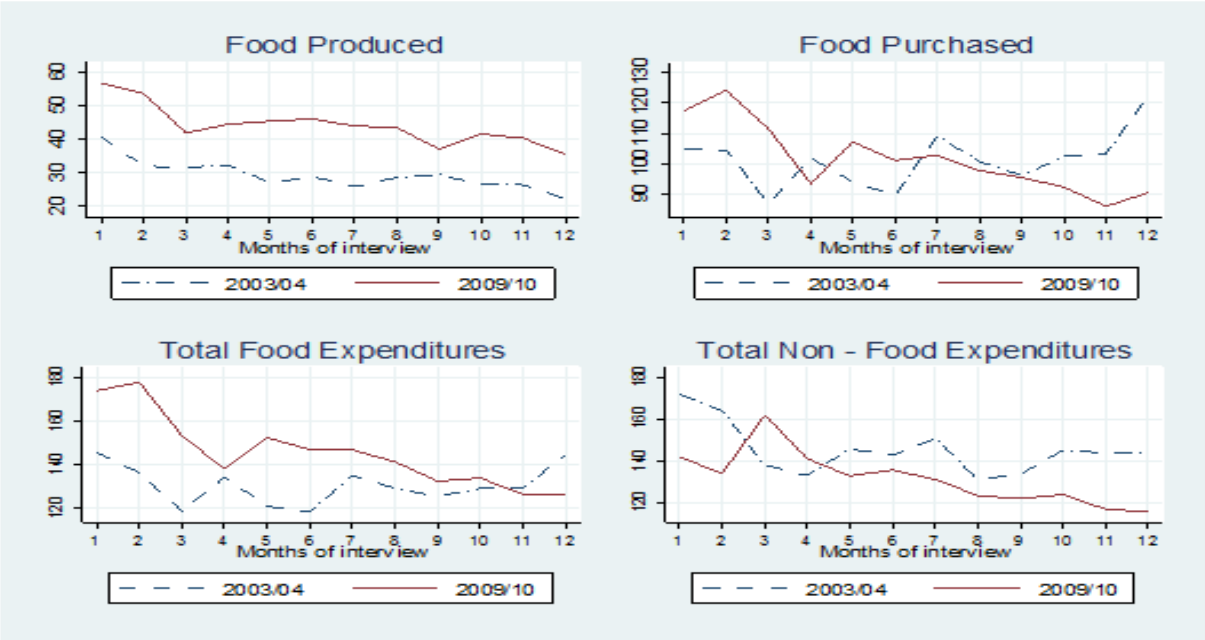
A thorough analysis of the HNLSS 2009–10 reveals clear anomalies that hinder the possibility to use this dataset for poverty calculations. First, the data reveal a high correlation between consumption data and month of collection: the data collected in the first months of interviews were systematically above the levels of the data collected in the following months, even after controlling for seasonality. Second, a look at the Engle curves illustrating the shares of food and nonfood items consumed by households also revealed anomalous results. Third, the postplanting module of the GHS 2010–11 data collection overlaps with the HNLSS 2009–10 data collection during three months (August to October), but the differences are greater than one would expect.

There is a clear pattern in the HNLSS 2009–10 that indicates a steep decline in consumption values starting from the fourth month of data collection (February 2010). The same decline is not detected in the 2003–04 data. Even taking into account that the 2010 survey started only in November and the 2004 survey in September, the divergences are numerous. First, consider the lean season, particularly the most critical part of it, the hunger season shortly before harvest.[34] In the north, this is between July and October (months 11, 12, 1, and 2 in the 2004 survey and 9–12 in the 2010 survey), while, in the south, it is between May and August (months 9–12 in the 2004 survey and 7–10 in the 2010 survey). Normally, during the lean season one should see, especially among farmers, a sudden drop in consumption and then a rapid recovery.

Figure A.1 compares the consumption from own production in the two periods (top left panel). This should be the part of consumption that is most affected by seasonality because, in general, only farmers produce food for themselves. The shapes during the year ranges suggest some seasonality, with a decline in the last months of the interview. This was because the last months coincide with the lean season in the south in the case of 2004 and in the north in the case of 2010. The trends in the two periods are similar.

[34] During the hunger season, food from the previous harvest has run out, but the new crops are still growing in, and small farmers may suffer food shortages.

Figure A.1. Average Expenditures, by Month of Interview, Nigeria, September 2003–August 2004 and November 2009–October 2010 (2010 Prices and Naira, 1,000s), 2003–04, 2009–10



Source: World Bank calculations based on NLSS 2003–04 and HNLSS 2009–10.

By contrast, the patterns in expenditures on purchased food were not so similar (figure A.1, top right panel). These should be less affected by seasonality because urban dwellers also purchase food. Yet, in 2010, purchased food expenditures started to fall in July (month 7) at a rapid pace. In 2004, food expenditures started to increase in May (month 9). The difference in food expenditures in August 2004 (month 12) and in August 2010 (month 10) is striking; the former represented an increase of 14 percent since the beginning of the survey, while the latter represented a decrease of 40 percent. Moreover, it is clear that the anomaly in 2004 is much more limited than the one in 2010. If we look at total food expenditures in 2004 (bottom left panel), the spike at the beginning is somehow reversed: the end value resembles that of the first month of interviews. The decline in purchased food expenditures significantly affects total food expenditures and makes the series decline as well. Furthermore, taking into account that nonfood expenditures also follow the same pattern shows that the decline affects the entire consumption aggregate.

Because these expenditures are reported by a sample of households representing the population of Nigeria, one should expect that there would be month-to-month variability in spending. In particular, the fact that the high spending occurs in November and December, which are festive months among Muslims and Christians, respectively, lends some credence to such an argument. However, visual inspection of the spending patterns by month suggests that they are not usual sampling variability. Rather, the variability appears systematic.

The food and nonfood expenditures by month of interview are all nominal values and therefore not corrected for monthly inflation. This renders the patterns even more unlikely because inflation alone would have led one to predict that nominal spending in the later months of the survey year would be greater. This would especially be the case of expenditures reported at the beginning and end of the survey because the months would have been separated by a year of double-digit inflation.

That nominal spending in October 2010 is so much lower than nominal spending in November 2009 corroborates the nonrandom nature of this problem.

Table A.1 presents another important anomaly: the Engel relationship does not seem to be upheld. Gross domestic product (GDP) rose, and the poverty rate declined. Yet, the share of total food consumption increased between 2004 and 2010 by about 6 percent, and the share of consumption from own production, normally associated with poor conditions and fragmented markets, climbed by 4 percent. The share of food consumption followed an unexpected trend across different geographical areas. It expanded both in zones in which the poverty rate fell (the South West and North Central) and in zones in which it rose (the North East and the North West), but it stayed the same in the South East and South South.

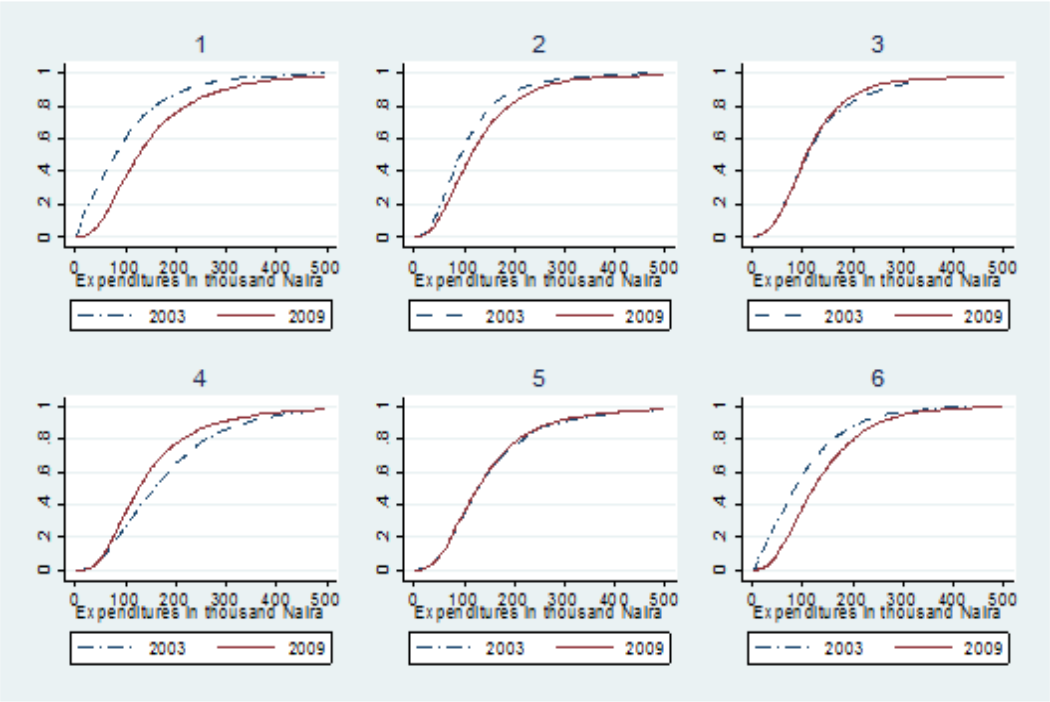
Table A.1. The Share of Consumption Components in the Total, Nigeria, 2004, 2010

Area	*Purchased food*	*Auto consumption*	*Total food*	*Education*	*Health*	*Total nonfood*
2004						
National	38.2	14.2	52.5	4.9	8.0	47.5
Urban	*39.6*	*6.0*	*45.6*	*7.5*	*7.7*	*54.4*
Rural	*37.1*	*21.0*	*58.0*	*2.8*	*8.2*	*42.0*
North Central	26.5	22.7	49.3	6.4	9.2	50.7
North East	37.1	16.4	53.4	1.6	8.0	46.6
North West	42.1	14.8	57.0	1.1	5.7	43.0
South East	40.1	17.9	58.0	4.2	10.5	42.0
South South	41.8	11.6	53.4	5.5	8.5	46.6
South West	38.8	7.7	46.5	8.9	7.7	53.5
2010						
National	40.5	17.4	58.0	1.8	8.1	42.6
Urban	*47.7*	*4.4*	*52.1*	*2.5*	*6.7*	*47.9*
Rural	*35.8*	*26.0*	*61.8*	*1.3*	*9.0*	*38.2*
North Central	35.6	26.2	61.8	0.8	6.0	38.2
North East	34.7	28.3	62.9	0.6	7.8	37.1
North West	35.9	26.7	62.6	0.8	8.4	37.4
South East	36.4	20.7	57.1	2.0	12.3	42.9
South South	43.2	9.5	52.7	2.8	8.9	47.3
South West	50.2	3.6	53.9	2.9	6.2	46.1

Source: World Bank calculations based on NLSS 2003–04 and HNLSS 2009–10.

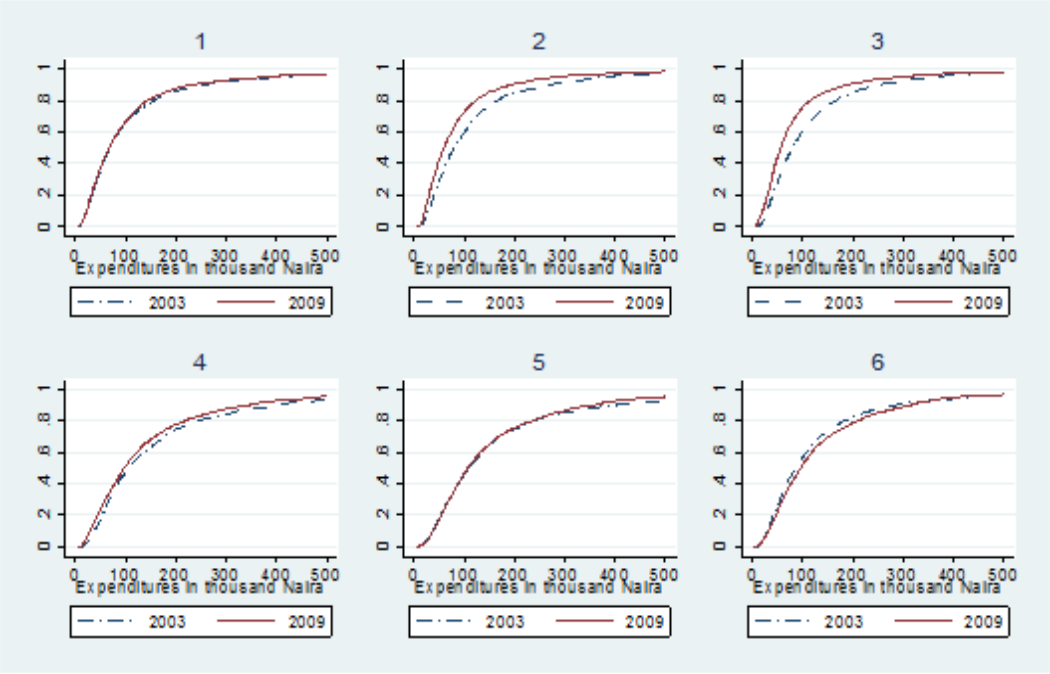
Figures A.2 and A.3 complement the analysis by illustrating the entire distribution. Analysis has been carried out on total food and nonfood expenditures. Zones that reduced poverty relative to 2004 did so thanks to an increase in food consumption. Thus, for example, there was less variation in nonfood consumption in North Central and the South West. In zones in which poverty worsened, such as the South East and the North East, faced a sharp decline in nonfood consumption that, in the case of the North East, offset the positive gains deriving from food consumption. Yet, the changes in food and nonfood consumption seem to have moved in the same direction only in the South East, and there was no movement in the South South, but, in the other zones, the changes moved in opposite directions.

Figure A.2. Cumulative Distribution of Food Expenditures, by Zone, Nigeria, 2003, 2009



Source: World Bank calculations based on NLSS 2003–04 and HNLSS 2009–10.
Note: 1 = North Central, 2 = North East, 3 = North West, 4 = South East, 5 = South South, 6 = South West.

Figure A.3. Cumulative Distribution of Nonfood Expenditures**,** by **Z**one**, Nigeria, 2003, 2009**



Source: World Bank calculations based on NLSS 2003–04 and HNLSS 2009–10.
Note: 1 = North Central, 2 = North East, 3 = North West, 4 = South East, 5 = South South, 6 = South West.

These spending patterns also suggest that household caloric intake was far too low and appeared to be highly correlated with the month of interview. Table A.2 shows the share of households with per capita kilocalorie intake of less than 1,550 and 2,250 per day (columns 3 and 4), respectively. The 1,500 kilocalories is only half the intake threshold of the food poor in Nigeria, and 2,250 kilocalories is three-quarters of the food poor threshold. The table illustrates that, according to reported expenditure patterns, almost 40 percent of Nigerian households would not have reached even half the food poor threshold during the last two months of the survey. By comparison, during the first two months of the survey, only one-third would have had less than half the calories needed to meet the food poor threshold. More generally, the reported expenditure patterns suggest that the average household per capita calorie intake declined, which should not occur under normal circumstances, and moreover, far too many people were reportedly unable to meet the recommended daily caloric intake.

Table A.2. Implied Caloric Intake, by Month of the HNLSS Interview, Nigeria, 2009–10

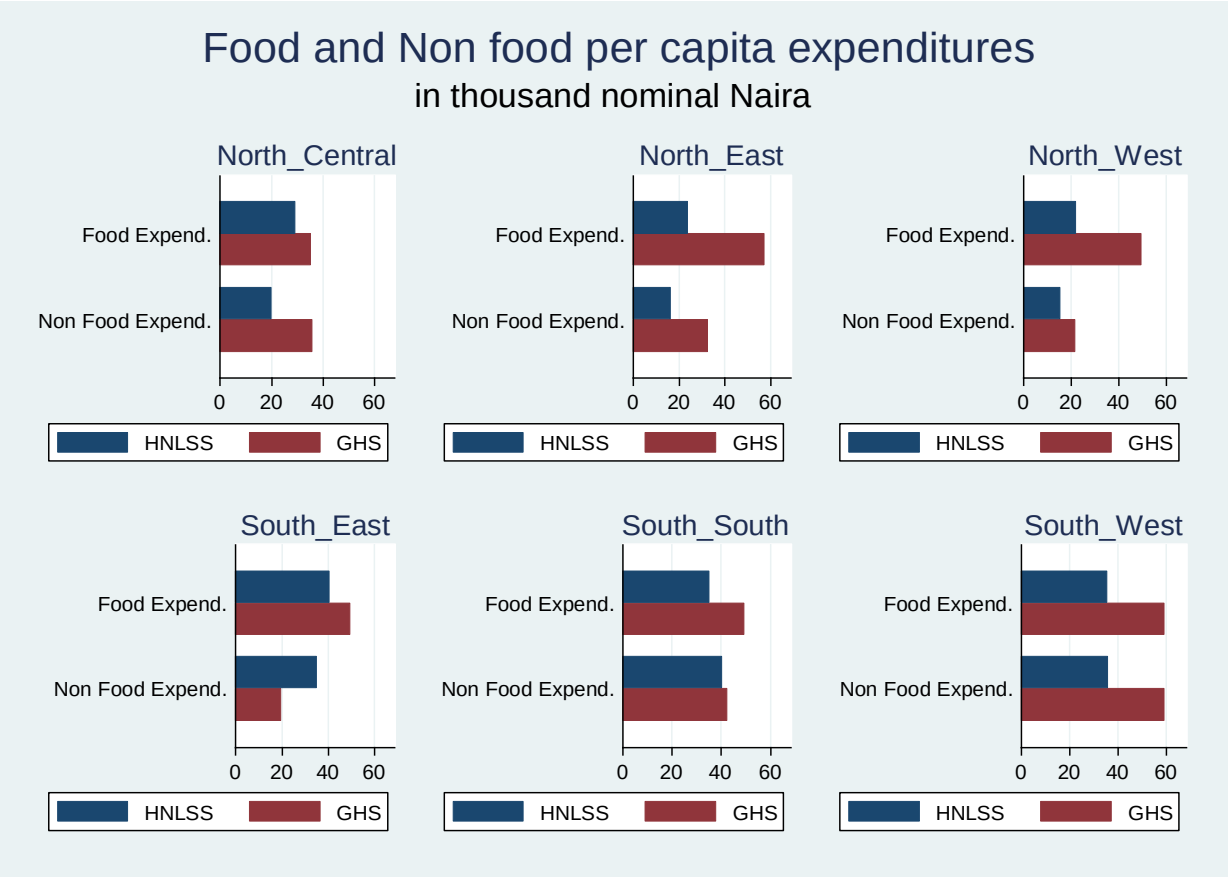
Year	Month of survey	Fraction of households with per capita daily calories less than 1550Kcal	Fraction of households with per capita daily calories less than 2250Kcal	Average household daily calories per capita
2009	11	0.27	0.49	3,050
2009	12	0.26	0.46	3,103
2010	1	0.27	0.54	2,610
2010	2	0.37	0.62	2,426
2010	3	0.40	0.60	2,518
2010	4	0.42	0.64	2,478
2010	5	0.35	0.56	2,539
2010	6	0.34	0.61	2,524
2010	7	0.38	0.63	2,278
2010	8	0.39	0.63	2,256
2010	9	0.42	0.67	2,206
2010	10	0.38	0.64	2,333

Source: World Bank calculations based on HNLSS 2009–10.

The second check that reveals anomalies in the HNLSS is the comparison with the GHS 2010–11. The HNLSS uses a month-long diary, and enumerators were in the field for the 12-month survey. For the GHS 2010–11, enumerators were in the field for three months during the postplanting period (August–October 2010) and three months during the postharvest season (February–April 2011), and the GHS uses a seven-day recall method. Although the time in the field and the recall period were different in the two surveys, there was a wide overlap in the food and nonfood spending sections of the GHS and the HNLSS consumption modules. On food spending in particular, there was close to a 90 percent overlap.

Evidence from the literature suggests that the diary method captures consumption, especially the more frequently consumed items, better than a recall.[35] One would thus expect that consumption expenditure should be higher in the HNLSS than in the GHS panel. The fact that food expenditures were significantly higher in every zone in the GHS than in the HNLSS is additional evidence that consumption is underestimated in the HNLSS (figure A.4).

Figure A.4. Per Capita Food Expenditure, by Zone, Nigeria, GHS and HNLSS, August–October 2010



Source: World Bank calculations based on HNLSS 2009–10 and GHS 2010–11.

Comparing NLSS 2003–04 and GHS 2010–11 and 2012–13: the survey-to-survey method

A comparison of measures of poverty or inequality computed on surveys relatively distant in time can capture more accurately the effect of structural modifications in income distribution. Excluding cases of sudden shocks, these measures generally tend to change relatively slowly. Consumption data from the NLSS 2003 and the GHS are not directly comparable. Table A.3 summarizes the main differences. The most relevant for comparability is the difference in data collection methodology (recall versus diary), while the difference in stratification implies that the maximum level of disaggregation of the GHS poverty numbers is by zones, while, for the NLSS, the poverty numbers refer to the states.

[35] See, for example, Ahmed (2014); Beegle et al. (2010).

Table A.3. Main Differences between the NLSS 2003–03 and the GHS Panel, Nigeria

Data	*GHS panel, 2010–11, 2012–13*	*NLSS 2003–04*
Sample	5,000 households	36,000 households
Representativeness	6 zones	States
Methodology: purchased food and produced food	7-day recall period	Month-long diary
Time period	Postplanting (August–October) and postharvest (February–April)	Whole year (September–August)

Source: World Bank calculations based on NLSS 2003–04 and GHS 2010–11, 2012–13

To enable the data comparison, survey-to-survey imputation techniques are used; notably, the GHS 2010–11 is used to impute consumption on the 2003–04 NLSS survey. The imputation process is a simplified version of the methodology developed in Elbers, Lanjouw, and Lanjouw (2003). Stifel and Christiaensen (2007) provide theoretical guidance on the variables to be included in imputation models. They recommend including covariates that change over time, but call for excluding variables associated with rates of return that are likely to change markedly in the face of evolving economic conditions. Following Stifel and Christiaensen (2007), several household durables are included in the analysis here, but mobile phones are excluded because, while they may be good predictors of household well-being, their relationship in total household expenditure has been changing rapidly in the last 10 years. The ownership of a mobile phone was a good predictor of substantial wealth 10 years ago, but it is widespread today among lower-middle-income groups and even among the poor (Ahmed et al. 2014). Other variables include household location. Educational attainment is excluded because, over the 10 years, the returns on this variable may have changed too rapidly.

The procedure follows two stages. First, a model of log per capita expenditures is estimated on a sample from panel wave 1. The model can be defined as follows:

$$lnY_{ik} = a + \beta X_{ik} + \gamma Z_{ik} + (\eta_k + \varepsilon_{ki}), \qquad \text{(A.1)}$$

where α is an intercept; X_{ci} is the vector of explanatory variables for household *i* and location *k*; β is the vector of regression coefficients; Z is the vector of location-specific variables; and γ is the vector of coefficients. The residual is decomposed into two independent components: the cluster-specific effect, η_k, and a household-specific effect, ε_{ki}. This structure allows both a location effect—common to all households in the same area—and heteroskedasticity in the household-specific errors.

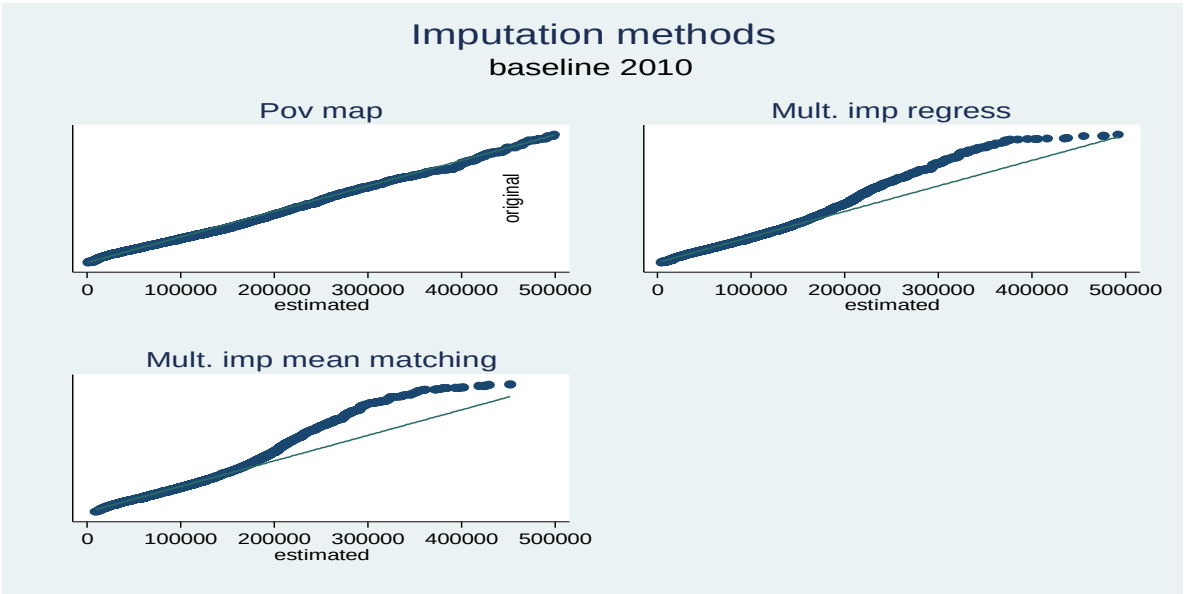
To control for the location effect and heteroskedasticity, errors are drawn from the distribution of residuals for households with similar assets and in the same zone. The sample is divided into six groups based on the six zones. The sample of the target distribution is also divided into six groups using the same methodology used for the original sample. Residuals are then drawn and imputed to households within each of the six groups. Following the bootstrap principle, the

residual distribution is drawn for a number R = 50 of replications to obtain a number R- distributions. To preserve the statistical features of the distribution, such as the standard deviation, the distribution with the median standard deviation is selected among the 50 replications instead of calculating the mean consumption expenditure per capita for each household.

Various procedures are applied to test the validity of the model, first, by means of in-sample criteria, that is, by evaluating the R-square size of the predicting model (as in equation A.1); then, using out-of-sample criteria, by testing the predictive capacity of the model on a known consumption distribution (2012–13) by quantile-to-quantile analysis and other visually oriented techniques such as kernel density comparison.

Figures A.5 and A.6 compare the results using various imputation methods. The model in equation A.1 using the error sampling and imputation method is compared with two alternative methods in the capacity to simulate the 2012–13 consumption distribution: the Gaussian normal regression imputation method (mi_reg) and the predictive mean matching imputation method (mi_pmm).[36] In figure A.5, the three methods are compared via a quantile-to-quantile regression. The method used in this report (labeled pov map) more effectively minimizes the distance between the real 2012–13 distribution and the simulated distribution, particularly for values located in the upper tail of the distribution. As an additional robustness test, figure A.6 shows the results of a comparison of the kernel densities of the 2012–13 consumption distribution (labeled orig), the pov map simulation, and two multiple imputation outcomes. As the figure shows, all the simulations are quite accurate in predicting the original data, but, unlike the mi outcomes, the pov map model does not truncate the distribution and reproduces almost perfectly the upper tail.

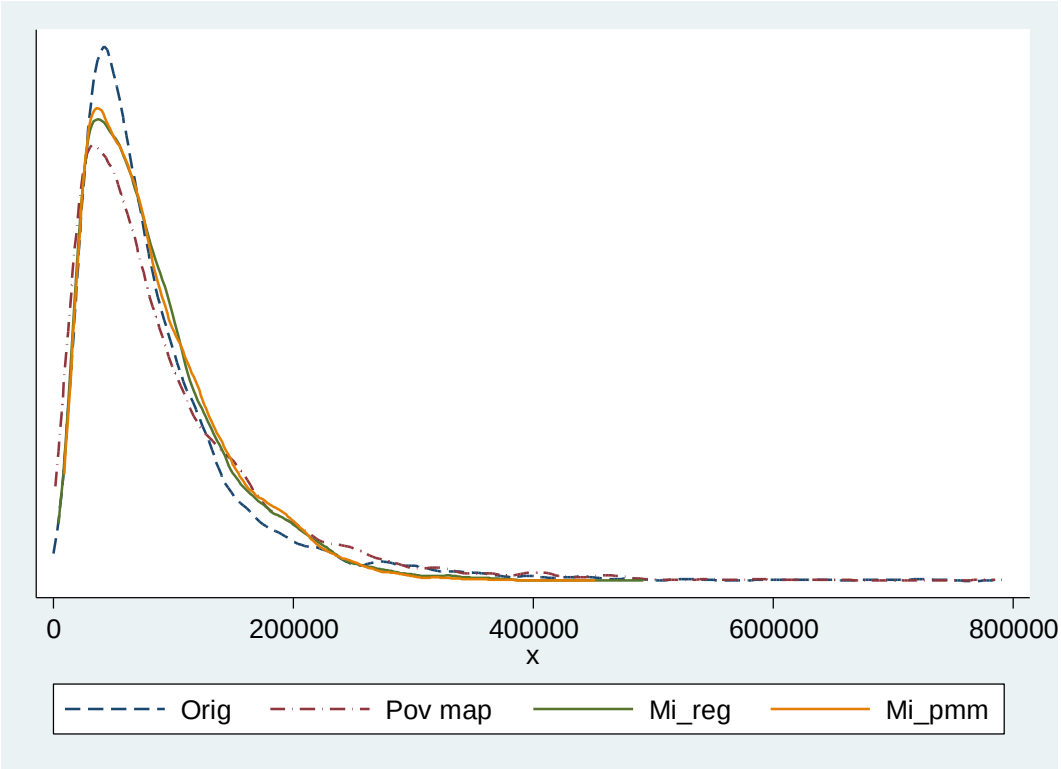
Figure A.5. Quantile-to-Quantile Analysis



Source: Clementi et al. 2015.

[36] See, respectively, "mi impute regress: Impute using linear regression," StataCorp LP, College Station, TX (accessed March 2016), http://www.stata.com/manuals13/mimiimputeregress.pdf; "mi impute pmm: Impute using predictive mean matching," StataCorp LP, College Station, TX (accessed March 2016), http://www.stata.com/manuals13/mimiimputepmm.pdf.

Figure A.6. Kernel Distributions



Source: Clementi et al. 2015.

Appendix B Zone and State Summary

North Central

Table B.1. North Central: Summary

Demographics	2004	2013
Population (thousand)	19,122	24,341
Rural population (thousand)	15,404	17,690
Urban population (thousand)	3,718	6,650
Fertility rate	5.7	5.3
Dependency rate	80.78	91.47

Poverty	2004	2013
Poverty rate	56.14	38.80
Poverty gaps	20.58	10.98
Severity of poverty	10.14	4.84
Number of poor (thousand)	10,721	9,402

Consumption	2004	2013
Per capita expenditure, mean	56,479	75,126
Per capita expenditure, median	47,290	59,414

In the North Central zone, poverty was reduced rapidly, although the rural population grew quickly as well. The population increased by 27 percent during the decade. In rural areas, the increase was 78 percent. The rapid expansion can be attributed to the high fertility rate, which is consistently above 5. The rate is the lowest among northern zones, but higher than the rates in southern zones. Accordingly, the dependency ratio increased by about 10 percentage points.

The North Central zone achieved the largest poverty reduction among the northern zones, but the poverty rate is still higher there than in southern zones. The poverty rate had declined to 39 percent by 2013, more than a 17 percentage point decline since 2004. North Central is the only zone in the north in which the number of the poor decreased during the decade.

The North Central zone exhibits higher levels of education and accessibility to infrastructure compared with other northern zones, but still lags the southern zones (table B.2). Among household heads, 36 percent have no education, whereas, in the North East and the North West, the share is above 40 percent. By contrast, in the south, the rate is much lower, at around 10 percent. Similarly, access to electricity and sanitation are the highest among northern zones, but lower than in southern zones.

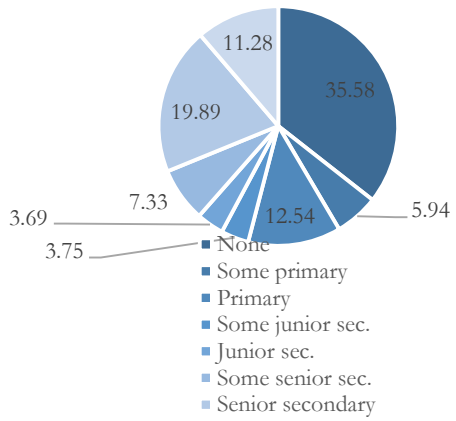
Table B.2. North Central: Education and Infrastructure

Education

	Male	Female
Literacy rate	74.00	48.78

Infrastructure	2004	2013
Access to electricity	31.51	40.57
Access to improved water	47.54	48.46
Sanitation	8.9	12.46

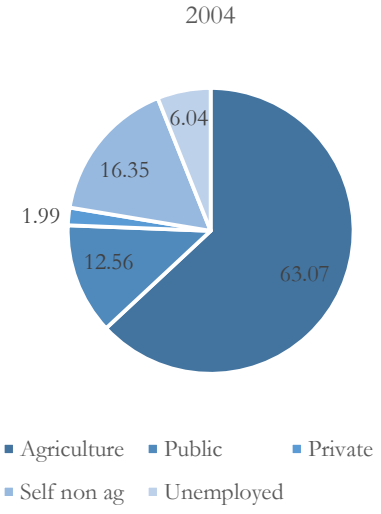
Household heads, educational attainment

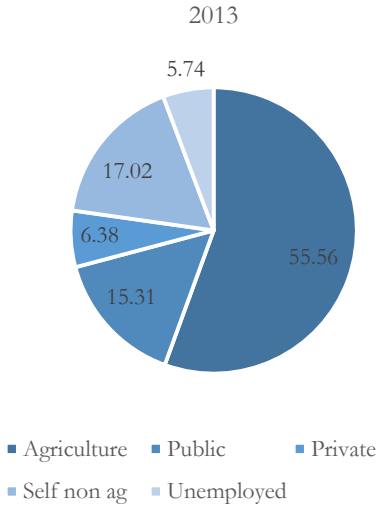


Labor

The last decade saw a slight shift away from employment in agriculture to wage employment, but agricultural employment is still high (figure B.1). More than half the population was active in agriculture. The main crops are maize and soybeans.

Figure B.1. North Central: Employment among Household Heads, 2004, 2013

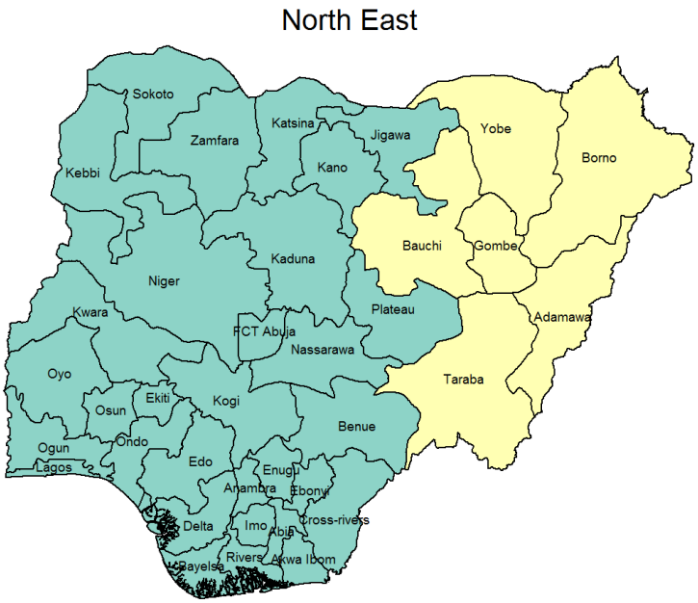




North East

Table B.3. North East: Summary

Demographics	2004	2013
Population (thousand)	16,808	24,549
Rural population (thousand)	13,643	20,308
Urban population (thousand)	3,165	4,241
Fertility rate	7	6.3
Dependency rate	94.39	98.01



Poverty	2004	2013
Poverty rate	45.53	47.56
Poverty gaps	15.60	13.82
Severity of poverty	7.34	5.76
Number of poor (thousand)	7,686	11,735

Consumption	2004	2013
Per capita expenditure, mean	64,590	81,233
Per capita expenditure, median	54,794	52,664

The North East saw significant rural population growth, and the number of the poor rose rapidly. Population growth was significant in rural areas during the decade. The zone has the second highest fertility rate in the country and the second highest dependency ratio. The North East has the second highest poverty rate in the nation after the North West. In 2013, the poverty rate was particularly high, at 47.6 percent after a 2.0 percent increase since 2004. The number of the poor also rose, by 53 percent over the same period.

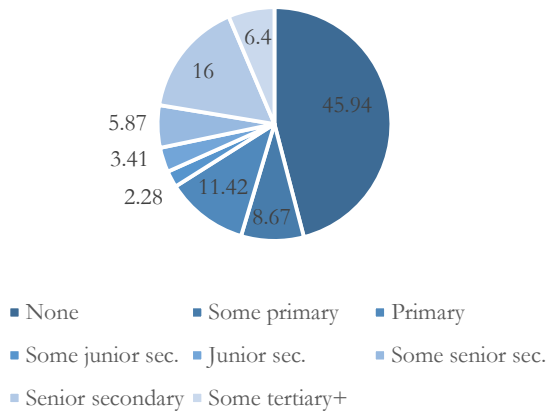
The economy of the North East grew quickly, only a few points below the national average, but inequality grew much more quickly. The stagnation in the median per capita expenditure suggests that most of the growth benefited only the upper percentiles and had a minimal impact on poverty. The Gini coefficient was 0.46, the highest in the country.

The North East is currently affected by a serious security challenge. The number of conflicts in Nigeria rose significantly between 2000 and 2015 and peaked in 2014, with an estimated 503 conflicts. The North East showed the highest average, at 102 conflicts per year, followed by 47 in the North West and 81 in the North Central.

The North East has a shortage of human capital. Literacy rates among both men and women are the lowest in the nation (table B.4). Among the labor force, 46 percent never attended school, and only 30 percent had completed more than primary school.

Table B.4. North East: Education and Infrastructure

Education			Household heads, educational attainment
	Male	Female	
Literacy rate	66.29	40.27	
Infrastructure	2004	2013	
Access to electricity	20.12	25.19	
Access to improved water	42.03	56.88	
Sanitation	3.45	2.59	

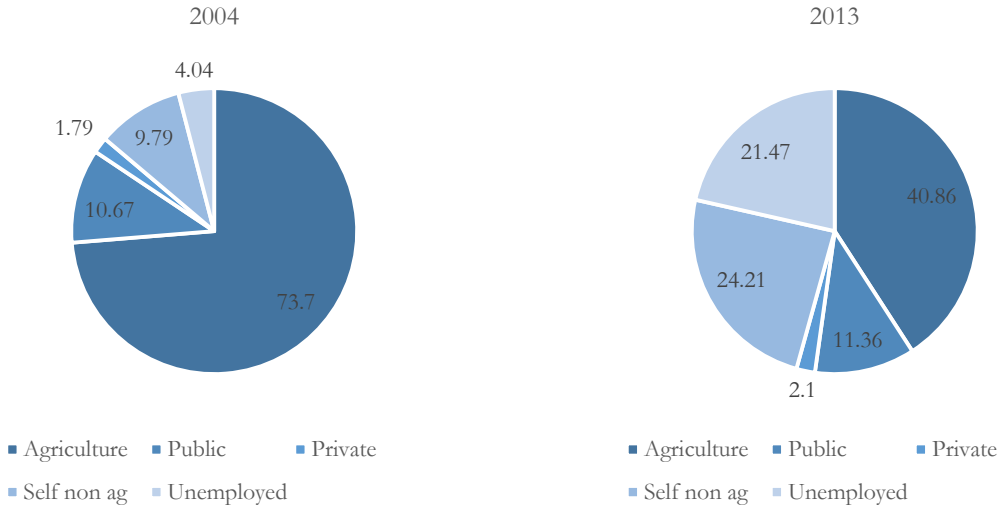


Access to infrastructure is lowest in the North East. Access to electricity is stagnant, at around 25 percent of households, and more than 90 percent of households did not have access to sanitation in 2013.

Labor

A shift from agricultural employment to unemployment was observed in the zone (figure B.2). Agricultural employment declined by more than 30 percent during the decade. Unemployment rose from 4 percent to 21 percent, and nonagricultural self-employment increased by 14 percent. The share of young people who are underemployed was nearly 14 percent in the North East, while it was less than 1 percent in the South West.

Figure B.2. North East: Employment among Household Heads, 2004, 2013



North West

Table B.5. North West: Summary

Demographics	2004	2013
Population (thousand)	34,151	42,766
Rural population (thousand)	26,495	34,234
Urban population (thousand)	7,656	8,532
Fertility rate	6.7	6.7
Dependency rate	97.11	114.73

Poverty	2004	2013
Poverty rate	61.39	59.08
Poverty gaps	24.78	19.02
Severity of poverty	13.11	7.94
Number of poor (thousand)	21,326	25,261

Consumption	2004	2013
Per capita expenditure, mean	51,105	59,439
Per capita expenditure, median	42,769	45,750

In the North West, poverty reduction stagnated. The poverty rate was particularly high, at 59 percent. The North West accounts for about 45 percent of the chronic poor in the country. The incidence of poverty is especially high among people living in rural areas. The number of the poor also rose during the decade. In 2004, the number of the poor residing in the North East and the North West was 29 million, and it increased to 37 million during the next decade. The additional 8 million poor were equally split between the North East, the zone most affected by recent conflicts, and the North West. Growth is limited; average real consumption in the North West grew by 15 percent, an average of 1.6 percent a year, or half the national rate of growth.

The North West has the highest fertility rate among zones, at around 7.0 children per woman in 2013, against the national average of 5.5 and the average of 4.5 in the south. Stunting and malnutrition rates are the highest in the country, at 54.8 and 47.4 in 2013, respectively.

The North West has a shortage of human capital, and the gender gap in education is large. More than 40 percent of the population has no education. The gender gap in the literacy rate is the biggest in the nation: 71 percent of men and only 44 percent of women are literate (table B.6).

The North West has poor access to infrastructure. Access to electricity is around 28 percent. Kano, a state in the North West, is the most industrialized state in the north, but it experiences the

longest electrical outages in the country: 16 days a month. More than 90 percent of households did not have access to sanitation in 2013.

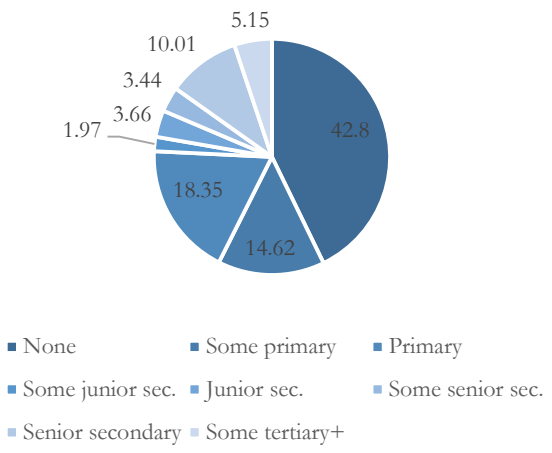
Table B.6. North West: Education and Infrastructure

Education

	Male	Female
Literacy rate	70.97	43.87

Infrastructure	2004	2013
Access to electricity	26.81	27.82
Access to improved water	64.13	60.18
Sanitation	2.98	6.09

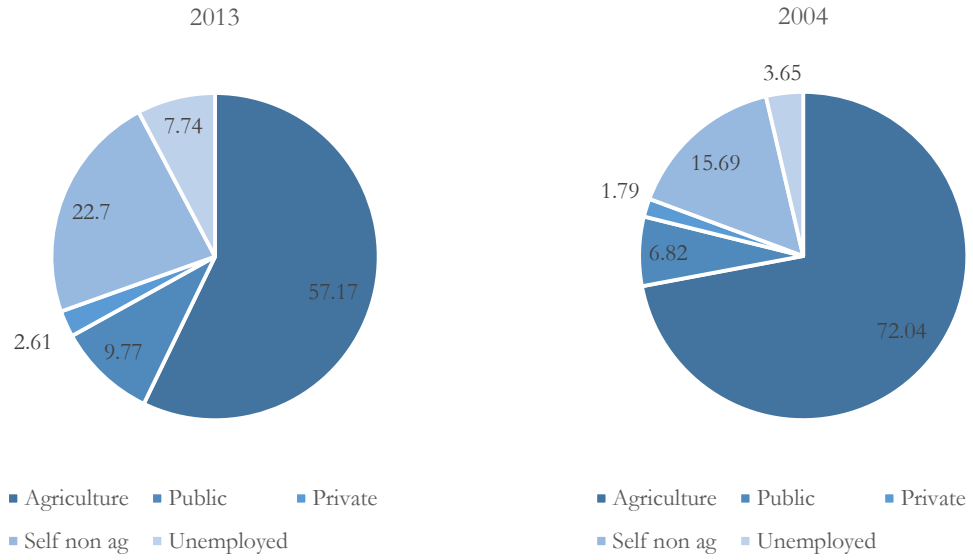
Household heads, educational attainment



Labor

Similar to the other northern zones, employment is high in agriculture. Between 2004 and 2013, there were changes in the composition of labor: the employment share of nonagricultural self-employment rose from 16 percent in 2004 to 23 percent in 2013 (figure B.3).

Figure B.3. North West: Employment among Household Heads, 2004, 2013



South East

Table B.7. South East: Summary

Demographics	2004	2013
Population (thousand)	16,085	19,850
Rural population (thousand)	14,059	13,863
Urban population (thousand)	2,026	5,987
Fertility rate	4.1	4.7
Dependency rate	73.16	75.43

Poverty	2004	2013
Poverty rate	36.82	29.48
Poverty gaps	10.99	8.54
Severity of poverty	4.85	3.35
Number of poor (thousand)	5,809	5,900

Consumption	2004	2013
Per capita expenditure, mean	76,056	97,126
Per capita expenditure, median	63,666	72,752

The South East was less dynamic than other southern zones between 2004 and 2013. Mean consumption rose by 27 percent during the decade, which is the smallest growth rate among southern zones. Population increased, but the increase was moderate relative to other zones, and it occurred predominantly in urban areas. The number of the poor rose slightly, from 5,809 to 5,900.

In most indicators, the South East generally performs better than the northern zones, but worse than the other southern zones, the South South and South West. The poverty rate was 29 percent in 2013. This was lower than the rates in the northern zones, where the range was from 39 percent to 48 percent, but higher than the rates in South South and South West.

Despite the lack of much improvement, the South East has a good endowment of human capital. Literacy rates among men and women are among the highest in the country, and two-thirds of household heads had attained some junior secondary or higher education (table B.8).

The South East has better access to infrastructure than northern zones, but less than other southern zones. Access to electricity is at 54 percent; improved water, 74 percent; and sanitation, 34 percent. Access to improved water improved significantly during the decade, by more than 30 percent.

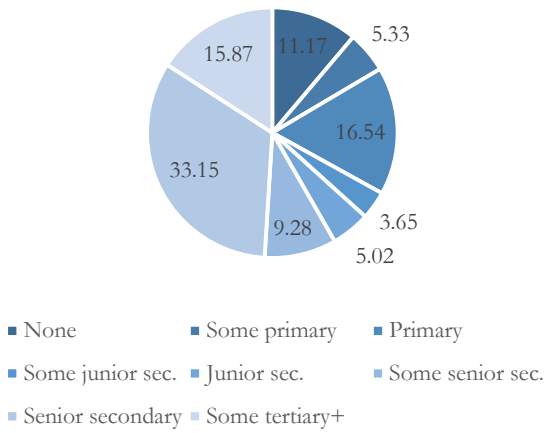
Table B.8. South East: Education and Infrastructure

Education

	Male	Female
Literacy rate	89.78	76.88

Infrastructure	2004	2013
Access to electricity	44.31	54.26
Access to improved water	43.54	73.83
Sanitation	14.34	33.59

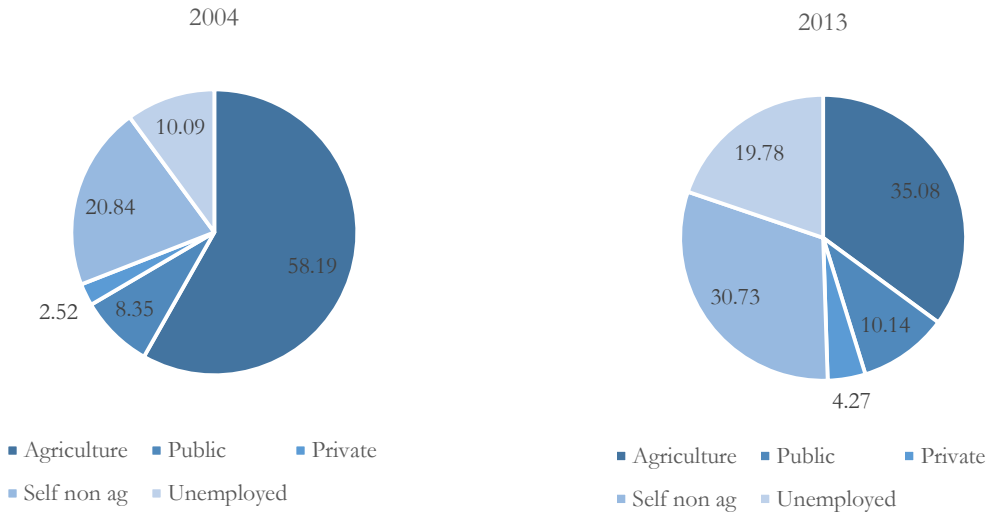
Household heads, educational attainment



Labor

Employment among household heads shifted out of agriculture to self-employment in the nonagricultural sector. During the decade, employment in agriculture shrank from 58 percent to 35 percent to the benefit mainly of nonagricultural self-employment (figure B.4).

Figure B.4. South East: Employment among Household Heads, 2004, 2013



South South

Table B.9. South South: Summary

Demographics	2004	2013
Population (thousand)	23,242	27,325
Rural population (thousand)	18,817	16,165
Urban population (thousand)	4,425	11,160
Fertility rate	4.6	4.3
Dependency rate	68.78	69.32

Poverty	2004	2013
Poverty rate	38.32	24.77
Poverty gaps	12.38	6.71
Severity of poverty	5.61	2.56
Number of poor (thousand)	8,763	6,760

Consumption	2004	2013
Per capita expenditure, mean	76,133	120,000
Per capita expenditure, median	62,295	73,375

At the center of the oil economy, South South benefited from rapid growth, which was not inclusive, however. The zone saw rapid growth in average per capita expenditure, but poverty reduction did not keep pace because widening inequality offset the benefits of growth.

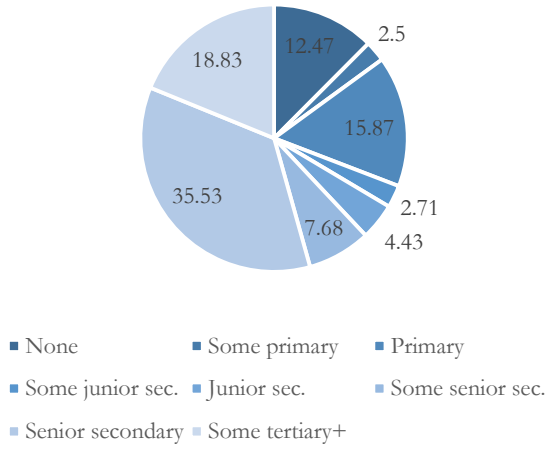
The South South zone has a highly educated labor force. The literacy rate among women, 79 percent, is the highest in the nation, and the literacy rate among men is the second highest (table B.10). Educational attainment is also at the top; nearly 70 percent of the population has some junior secondary education or higher. The share is the highest among all zones. The share of the labor force with tertiary education is at 19 percent.

The zone is characterized by inequality and low inclusiveness, but access to infrastructure improved during the decade. Access to electricity expanded by 20 percent, and more than half the population had access to electricity. This improvement was possible because power plants are highly concentrated in the zone. Access to improved water showed an even greater improvement, increasing by more than 30 percentage points during the decade.

Table B.10. South South: Education and Infrastructure

Education			
	Male	Female	
Literacy rate	88.18	78.67	
Infrastructure		2004	2013
Access to electricity		34.87	53.49
Access to improved water		46.36	78.04
Sanitation		8.56	36.05

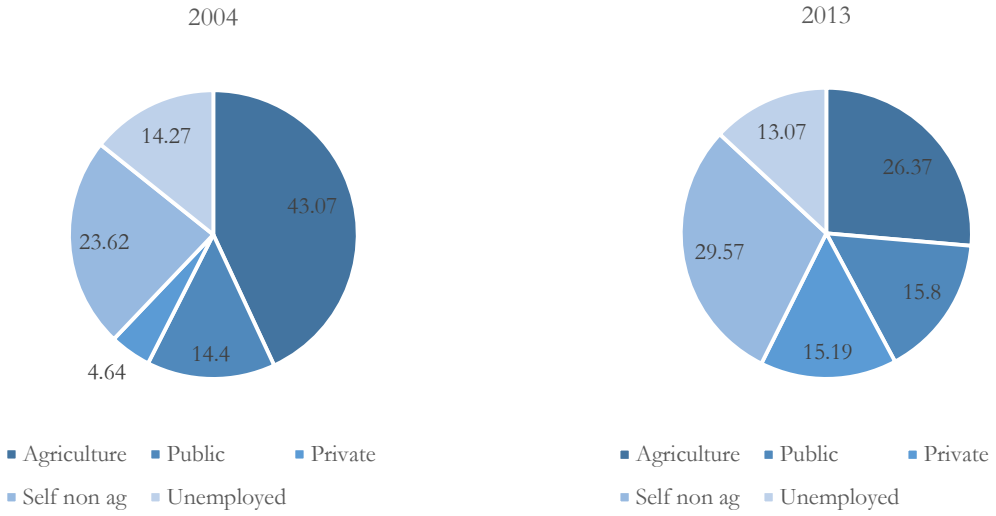
Household heads, educational attainment



Labor

Similar to other zones, employment in South South diversified away from agriculture during the decade, but, unlike the northern zones, there was a substantial increase in wage employment (figure B.5).

Figure B.5. South South: Employment among Household Heads, 2004, 2013



South West

Table B.11. South West: Summary

Demographics	2004	2013
Population (thousand)	27,693	38,231
Rural population (thousand)	7,892	8,388
Urban population (thousand)	19,801	29,843
Fertility rate	4.1	4.6
Dependency rate	69.67	75.45

Poverty	2004	2013
Poverty rate	34.14	14.20
Poverty gaps	10.45	3.34
Severity of poverty	4.56	1.19
Number of poor (thousand)	9,359	5,393

Consumption	2004	2013
Per capita expenditure, mean	80,309	110,000
Per capita expenditure, median	65,777	89,643

During the decade, the South West enjoyed high economic growth and rapid poverty reduction. Average per capita expenditure grew by 36 percent. The South West performed particularly well in poverty reduction: the poverty rate declined by more than half, to only 14 percent by 2013, more than 10 percentage points below the rate in the South South zone.

Growth was driven by the nonoil economy. The quickly growing nonoil sectors included information and communication technology, finance and insurance. These activities are concentrated in Lagos and Ogun states.

These modern sectors flourished thanks to the highly educated labor force. Information and communication technology, finance and insurance require a highly skilled workforce. In the South West, more than half the population has completed more than primary school. Literacy rates are also high among both men and women (table B.12).

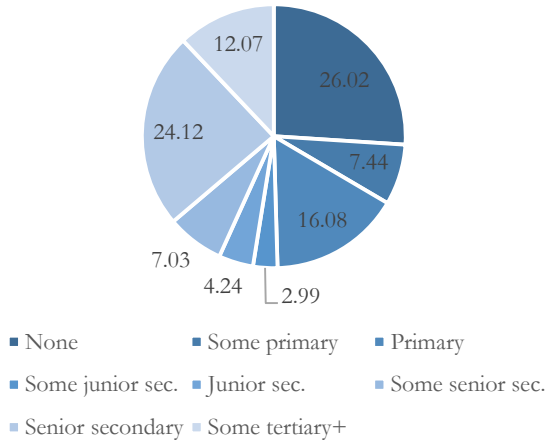
Households in the South West had higher than average access to electricity, water, and sanitation. In the South West, more than 70 percent of households had access to electricity and improved water. Access to sanitation was at the highest level in the nation: 46 percent of the population had access, while, in other southern zones, it was at around 34 percent to 36 percent.

Table B.12. South West: Education and Infrastructure

Education	Male	Female
Literacy rate	82.10	73.38

Infrastructure	2004	2013
Access to electricity	72.82	73.54
Access to improved water	77.15	71.6
Sanitation	27.91	45.98

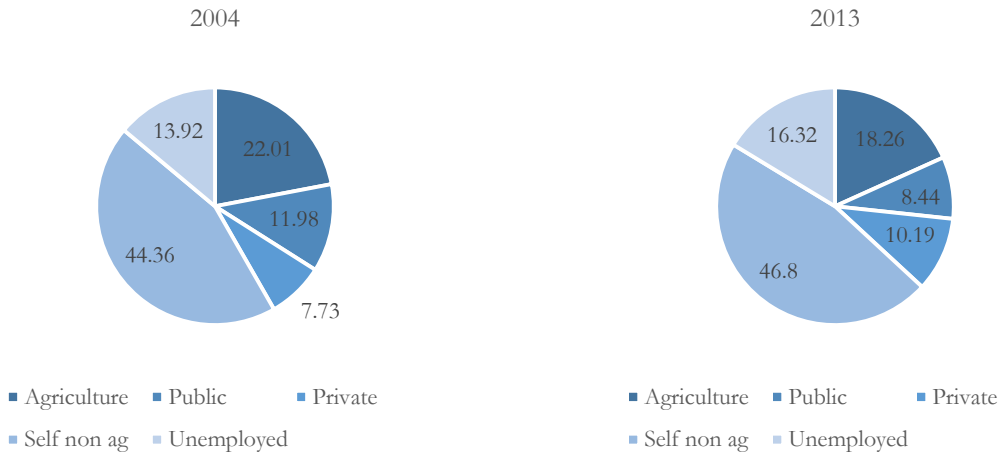
Household heads, educational attainment



Labor

In the South West, particularly in Lagos, self-employment increased during the decade, especially in information and communication technology (figure B.6). Self-employment activities accounted for 68 percent of household income in 2013. Indeed, Lagos is becoming a hub for big technology investments, coupled with a rising number of technology start-ups (Bright 2016).

Figure B.6. South West: Employment among Household Heads, 2004, 2013



Appendix C Econometric Results

Table C.13. The Profile of Chronic Poor, Transient, and Permanent Nonpoor Households, Nigeria, GHS Panel 2011–13

	Panel 2011-2013		
	Chronic Poor	**Transient**	**Permanent Non-Poor**
Household composition			
Mean number of hh members	7.70	6.38	4.59
Mean n. of members aged 0-4	1.54	1.12	0.59
Mean n. of members aged 5-14	2.56	1.97	1.06
Mean n. of members aged 15-64	3.33	3.02	2.67
Mean n. of members aged 65+	0.26	0.26	0.26
Household literacy rate	47.81	54.99	74.61
Household head characteristics			
Female	7.64	11.97	18.76
Male	92.36	88.03	81.24
Mean age of household head	49.24	49.63	50.06
Mean years of education of hh head	3.76	4.84	7.94
Household head is engaged in agriculture	62.54	54.87	27.15
Marital status of hh head			
Married monogamous	56.76	61.92	61.36
Married polygamous	36.11	25.31	12.30
Divorced/separated/widowed	6.77	12.49	20.07
Never married	0.36	0.29	6.27
Highest Educational level of hh head			
None	62.86	46.62	25.30
Primary	26.27	36.19	31.57
Secondary	8.37	10.42	21.34
Higher	2.50	6.77	21.80
Employment status of hh head			
Public	6.79	10.01	14.92
Private	3.05	3.66	9.88
Self-employed	75.40	74.74	60.88
Own account worker	0.23	0.46	0.37
Other	1.62	0.83	0.93
Unemployed	12.90	10.29	13.01
Region of residence			
North Central	15.67	16.50	11.08
North East	14.42	15.50	7.53
North West	44.98	25.97	10.52
South East	8.67	10.60	16.67
South South	8.50	14.27	18.63
South West	7.76	17.16	35.56
Area of residence			
Rural	88.27	74.93	45.84
Urban	11.73	25.07	54.16

	Panel 2011-2013		
	Chronic Poor	**Transient**	**Permanent Non-Poor**
Ownership of durables			
Radio	60.98	61.10	68.33
Television	9.95	25.87	58.78
Fridge	2.01	7.63	29.93
Stove	18.95	30.07	65.45
Bicycle	28.81	25.55	14.64
Motorcycle	24.59	30.51	26.32
Car	2.41	3.06	15.67
Generator	4.02	12.99	31.92
Iron	14.66	28.28	50.72
Fan	9.28	25.32	61.63
Bed	92.07	91.08	94.71
Household has electricity in dwelling	23.77	41.03	71.88
Household main cooking fuel			
Firewood	94.87	84.75	49.10
Charcoal	0.39	0.79	1.26
Kerosene/oil	2.63	12.23	44.74
Electricity/gas	0.11	0.36	2.93
Other	1.99	1.87	1.98
Household main lighting fuel			
Electricity/Gas	12.04	25.37	45.78
Kerosene/oil	36.25	39.58	37.11
Candles/Battery/Other	29.05	18.04	7.87
othlgt	22.65	17.01	9.23
Household main toilet facility			
No facility	21.24	26.21	16.33
Flush toilet	1.80	5.18	30.45
Improved pit latrine	3.86	2.64	2.20
Uncovered pit latrine	57.88	50.79	41.09
Other	15.22	15.18	9.94
Household main source of water			
Pipe water sources	4.19	5.79	11.23
Other improved water sources	49.29	49.48	53.53
Unimproved water sources	46.51	44.73	35.24

Source: World Bank calculations based on the household panels in GHS 2010–11, 2012–13.

Table C.14. RIF Regression Results on the Middle Class, Nigeria, 2013

	Dependent variable	Middle class	
		North	**South**
Household composition	Household size	-0.0129***	-0.0282***
		(0.00296)	(0.00481)
	Dependants	-0.00468	-0.0507***
		(0.00419)	(0.00725)
Educational attainment	HH head has primary education	0.0669***	-0.0120
		(0.0196)	(0.0303)
	HH head has secondary education	0.0338	0.0973***
		(0.0241)	(0.0344)
	HH head has above secondary education	0.127***	0.286***
		(0.0263)	(0.0367)
Labor market structure	HH head is employed in agriculture	-0.0340**	-0.0502**
		(0.0163)	(0.0242)
Basic Infrastructure	HH has safe water/electricity in dwelling/improved toilet	0.0318***	0.0431***
		(0.0106)	(0.0130)
Productive assets	Asset Index	0.0634***	0.0529***
		(0.00947)	(0.0100)
Location	Urban	0.0590***	0.0260
		(0.0199)	(0.0250)
	Constant	0.243***	0.543***
		(0.0240)	(0.0406)
	Observations	1,625	1,559
	R-squared	0.150	0.235

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on GHS 2012–13.

Table C.15. RIF Regression Results on Vulnerability, Nigeria, 2013

	Dependent variable	Vulnerable - Nat. log of per capita expenditure (70 percentile)	
		North	**South**
Household composition	Household size	-0.0215***	-0.0478***
		(0.00823)	(0.0107)
	Dependants	-0.0423***	-0.0758***
		(0.0127)	(0.0168)
Educational attainment	HH head has primary education	0.0407	-0.0827
		(0.0441)	(0.0619)
	HH head has secondary education	0.109	0.126*
		(0.0709)	(0.0710)
	HH head has above secondary education	0.429***	0.485***
		(0.0936)	(0.0866)
Labor market structure	HH head is employed in agriculture	-0.108**	-0.0830
		(0.0520)	(0.0537)
Basic Infrastructure	HH has safe water/electricity in dwelling/improved toilet	0.0937***	0.0888***
		(0.0312)	(0.0317)
Productive assets	Asset Index	0.136***	0.0785***
		(0.0337)	(0.0251)
Location	Urban	0.230***	0.0418
		(0.0710)	(0.0571)
	Constant	11.68***	12.19***
		(0.0775)	(0.0894)
	Observations	1,625	1,559
	R-squared	0.202	0.225

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: World Bank calculations based on GHS 2012–13.

Appendix D Agriculture and Conflicts addendum

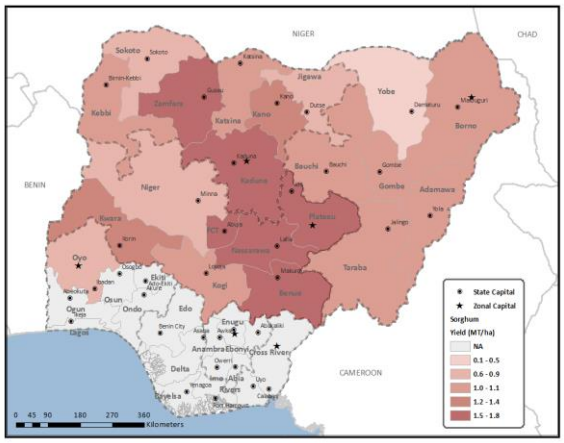
The market dynamics of Nigeria's major crops

Sorghum is the third most important cereal in Nigeria by quantity of production after maize and millet. The production volume accounts for about 71 percent of the total sorghum output of Sub-Saharan Africa. It is the primary food crop in the north of the country (FAO 2013). It grows well in the deep, fertile, and well-drained loamy soils common in the Northern Guinea Savannah and the Sudan Savannah agroclimatic zones, corresponding to the North West and the North East (map C.1, panel a). Even if sorghum is mainly cultivated in the north, the major markets and processing sites are

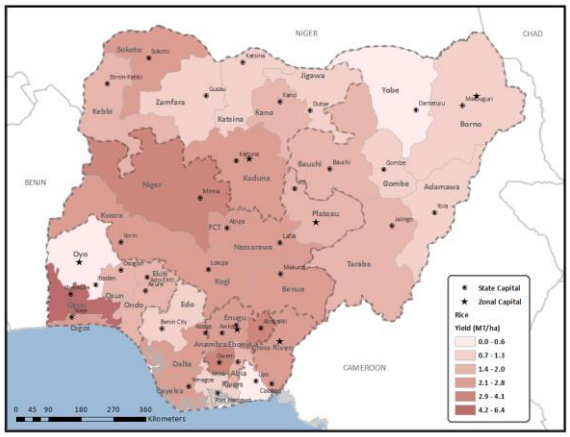
in the south and in the areas around Kaduna State. Combined with the higher transportation costs in the north and the weak market connectivity with the south, this results in higher prices for the few high-yielding North Central states.

Map C.1. Geographical Distribution of the Yields of Selected Major Crops, Nigeria

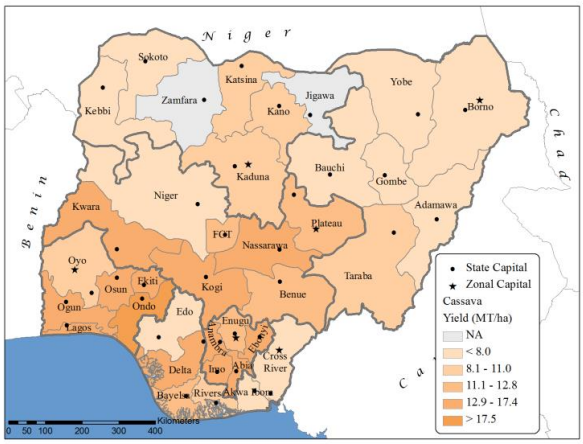
a. Sorghum



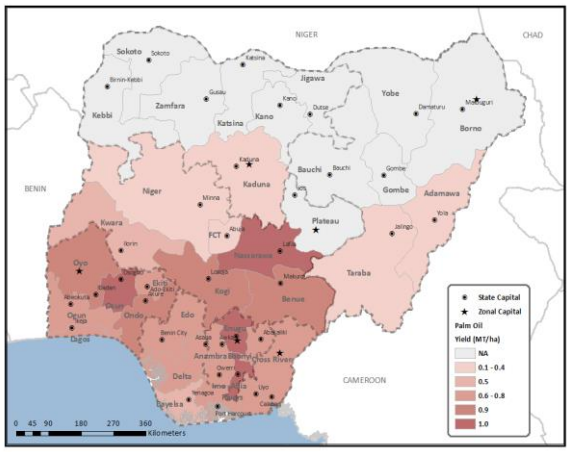
b. Rice



c. Cassava



d. Palm oil



Source: Barra, Briceño-Garmendia, and Monchuk 2012.

Rice. Nigeria is Africa's leading consumer of rice, the largest rice-producing country in West Africa, and one of the largest rice importers in the world. The main areas of rice cultivation in the country include the Middle Belt, other northern states, such as Niger and Kaduna, and states in the South West and South East (map C.1, panel b). Prices appear to be lower in North Central states that are net producers, with the exception of Abuja and Kaduna, where the higher prices may be related to the generally higher transport costs in the north. The major processing sites are located in Kaduna and in the North Central states of Plateau and Benue.

Cassava. Nigeria is the world's largest cassava producer and leads in Sub-Saharan African production, with 57 million tons forecasted for 2015, accounting for 35 percent of total African production and 20 percent of the world's production (FAO 2015).[37] Production is concentrated in the North Central and southern states. These same areas appear to be more productive in that they report higher yields

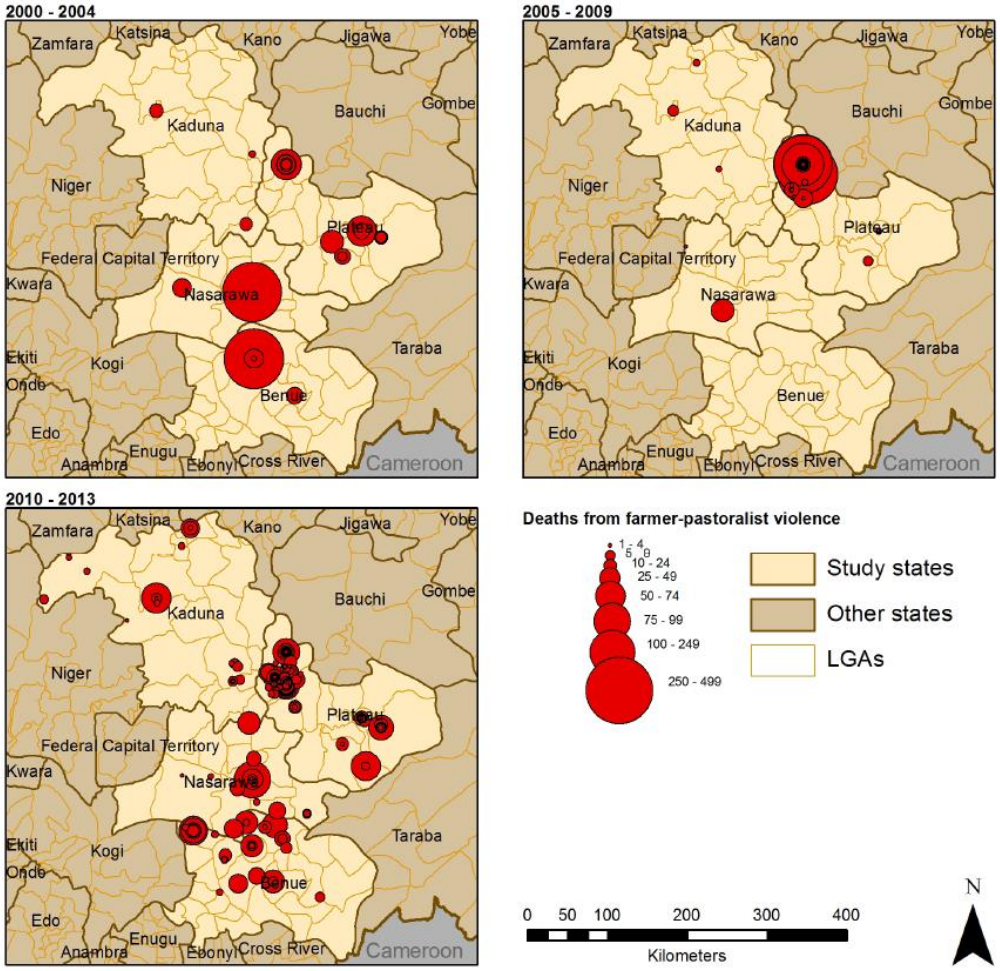
[37] The second largest producer is Latin America, led by Brazil, and the third is Asia, led by Thailand.

per hectare (map C.1, panel c). The greater presence of processing sites in the south gives comparative advantage to the region, especially to the South East, where a production surplus is evident. The northern states are generally net importers. Cassava prices follow a general north-south gradient that rises from the south to the north. Higher prices generally correspond to areas associated with higher transport costs, longer distances to processing sites, and larger production deficits.

Palm oil is the main vegetable oil produced in Nigeria. It is consumed in all regions, but is produced exclusively in the south and in some states of the North Central zone (map C.1, panel d). Demand is concentrated in the south, where the majority of the processing sites are also located. Inefficiencies and disparities in distribution lead to price differentials across states. Higher prices are mostly concentrated in the north because of the higher concentration of processing sites and production in the south and the weak market connectivity between the north and the south.

Deaths caused by farmer-pastoralist violence in the Middle Belt

Map C.2. Deaths Caused by Farmer-Pastoralist Violence, Middle Belt States, Five-Year Increments



Source: Mercy Corps 2015 based on data of UCDP (Uppsala Conflict Data Program) (database), Department of Peace and Conflict Research, Uppsala University, Uppsala, Sweden, http://ucdp.uu.se/?id=1); data of ACLED (Armed Conflict Location and Event Data Project) (database), Robert S. Strauss Center for International Security and Law, Austin TX, http://www.acleddata.com/.

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