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# Evolution of Inequality in Nigeria: A Tale of Falling Inequality, Rising Poverty and Regional Heterogeneity\*

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October 16, 2022

## Abstract

Recent research on Nigeria indicates declining income inequality. In contrast, anecdotal evidence suggests that only the upper class has benefited from economic growth in Nigeria overtime. The disconnect between these findings and anecdotal evidence, and the limitation in how inequality was estimated in the past literature are the motivation for our research. First we consider if inequality decreased in Nigeria between 2010 and 2018. We then examine how changes in inequality relate to changes in consumption and poverty. In addition, we examine whether there has been convergence in inequality and consumption across regions over this period? Leveraging data from the four waves of the Nigeria General Household Panel Survey (GHS) and carefully measuring inequality using consumption expenditure, our results suggest that inequality has decreased and median consumption expenditure increased. At the same time, poverty incidence and severity increased precipitously. Our findings suggest convergence in estimated inequality by regions but we do not find evidence of convergence across regions in consumption.

**Keywords:** Inequality, Gini, Nigeria, Income Distribution, Poverty, Regional Disparities  
**JEL CODES:** D31; I32; O15; O10

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# 1 Introduction

Nigeria is a country of significant contrasts. It is the largest economy in Africa but was also ranked highest among 152 countries in inequality in 2017 using Oxfam Inequality Index. While recent research suggest a decline in inequality and poverty, anecdotal evidence points to falling living standards and significant heterogeneity across regions in welfare. These seeming contradictions call for a more careful examination of the evolution of inequality.

We focus on two main questions. First, has inequality decreased between 2010 and 2018 in Nigeria and what consumption sources are driving this change? We also examine if the change in inequality mirrors changes in consumption and poverty over time. Second, is there evidence of convergence in inequality and consumption across regions and do differences across regions contribute more to national inequality than differences within? To answer these questions we make use of the four waves of the General Household Survey (GHS).

Inequality can be examined using multiple measures each with strengths and weaknesses. In this paper we focus on the Gini coefficient estimated on consumption expenditure (Gini 1936).<sup>1</sup> Our results suggest that inequality in consumption decreased by 13.5% between 2010 and 2018. In contrast, poverty incidence increased by 22 percentage points. The rise in poverty is surprising given the 6% increase in consumption expenditure over this period. In addition, while our results suggest that regional estimates of inequality are converging overtime, median consumption estimates by region are diverging. Furthermore, inequality across regions contribute significantly more to the national inequality estimate than within region differences. We also find that inequality in the flow from durable goods consumption is the highest contributor to our estimate of consumption inequality.

Our paper contributes to the literature by providing careful estimates of inequality and its evolution in Nigeria. Given the significant role of Nigeria in Africa, having reliable recent estimates of inequality over time that are comparable is valuable and has the potential to drive policy changes. In addition our results provide a cautionary tale as to why solely examining inequality or changes in consumption as a way to gauge economic progress and development could be misleading.

## 2 Literature Review: Inequality in Nigeria

Inequality in Nigeria is multidimensional and disparities across regions has been suggested by most of the past literature.<sup>2</sup> Deriving estimates of income inequality for Nigeria began over four decades ago. Early papers provided estimates of inequality solely for regions in

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<sup>1</sup>Given the limitations of the Gini coefficient, in the extended version of this paper we also examine several other measures of inequality and income dispersion.

<sup>2</sup>See Kosemani, 1993 and Aka, 2000, for evidence of disparities across regions.

Nigeria. For example Teriba and Philips (1971), estimated the Gini coefficient using the 1962/63 income of taxpayers in then-Western Nigeria.<sup>3</sup>

Earliest studies using countrywide survey data sets began in the 1980s. Canagarajah et al. (1997) using data from the National Consumer Survey (NCS) conducted in 1985/86 & 1992/93, reported increased income inequality. Aigbokhan (2000) estimated inequality using the 1985/86, 1992/93 and 1996/97 NCS. He finds increased consumption inequality and regional disparities. Ogwumike et al., (2003) used the 1998/99 General Household Survey (GHS) data to estimate inequality noting high inequality among employed households. Oyelere (2010) used four rounds of the GHS data set for 1997/1998, 1998/1999, 1999/2000 and 2005 to compare income inequality, pre and post democracy across gender and geopolitical zones noting significant increases. Several researchers have also made use of the National Living Standard Survey (NLSS) to examine inequality. For example Oyekale et al. (2006) estimate a Gini of 0.58 using the 2003/2004 NLSS and Odozi et al.,(2010) using the same data, but with a focus on the North-Eastern region estimated a Gini of 0.46.

In the last 15 years more comprehensive datasets have emerged but papers using these datasets to accurately estimate inequality are few. The National Bureau of Statistics (NBS 2010) used the Harmonized Nigeria Living Standard Survey (HNLSS) 2009/2010 to estimate income Gini suggesting a 4.1% increase from 2004 estimates. Aigbokhan (2017) employed the 2012/2013 & 2015/2016 waves of the GHS-Panel to estimate inequality. In contrast to NBS (2010) he notes an increase from 0.362 to 0.387 in income Gini. The most recent estimate of inequality was provided by NBS (2020). Using the latest NLSS for 2018-19, they estimated a national consumption expenditure Gini of 0.35. This estimate is not directly comparable to NBS(2010) because the Gini was computed using consumption versus income.

The aforementioned literature provides a foundation but several gaps exist. First, out of the three recent Gini estimates for Nigeria, two are based on income which has limitations. In particular collecting accurate estimates of income in developing countries with high levels of informality is challenging. The preferred approach is to estimate inequality using consumption data. The Gini in the 2020 NBS report is based on consumption. However the calculation of consumption in the NLSS survey can lead to imprecise estimates of inequality because the purchase price of durable goods is included in consumption expenditures rather than the consumption flow from durable goods (Deaton and Zaidi 2002). In our paper to derive a more accurate picture of inequality, we estimate inequality using consumption expenditure, and include the flow from durable goods and not the purchase price.<sup>4</sup>

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<sup>3</sup>See also Essang (1970) providing estimates for Western Nigeria and Adesina (2000) for Southern Nigeria.

<sup>4</sup>See Amendola Vecchi (2014) for a detailed discussion of durable goods and correct imputation in consumption expenditure and poverty analysis.

### 3 Evolution of Inequality in Nigeria- Data and Results

#### Data and Methodology

To address our questions of interest, we make use of the GHS. There are four waves currently of this panel (2010, 2012 2015 and 2018). The GHS-Panel is a nationally representative survey of approximately 5,000 households. A major change was implemented in the survey of 2018. In particular, a significant number of households in the prior three panels were dropped and replaced with 3,600 refresh households. Only 1,507 households (nationally representative) from the original 2010 panel were re-interviewed in 2018.<sup>5</sup> This significant reduction in the households originally interviewed in 2010 in the most recent 2018 survey create some estimation challenges which necessitate our use of the unbalanced panel.<sup>6</sup>

To measure inequality more accurately we avoid using income and instead use consumption. In summing up total consumption we include the flow of consumption from durable goods and also estimate the cost of consumption from transfers and own production. We divide household consumption by adult equivalence an approach suggested by Deaton (2003). In addition, for an accurate comparison of consumption expenditure over time, we convert all monetary values to real values using a base year of 2010. We evaluate inequality using two kinds of expenditure: Total Consumption Expenditure Per Adult Equivalence (TCEPAE) and Food Expenditure Per Adult Equivalence (FEPAE). Our rationale for also providing results using FEPAE is linked with the challenges in estimating total consumption expenditure and the advantages of using a food expenditure measure despite its own limitations.<sup>7</sup>

#### Results

The first question we address is focused on if inequality decreased between 2010 and 2018 in Nigeria. To answer this question we first construct Lorenz curves (Figure 1) using both TCEPAE and FEPAE.<sup>8</sup> The Lorenz curves both suggest that inequality has decreased comparing 2010 to 2018. The results in Table 1 Panel A and Panel 3 provide estimates of inequality for Nigeria overall and across regions for the 4 survey periods. The national Gini coefficients confirms the inference of declining inequality between 2010 and 2018 highlighted in the Lorenz curves. Inequality as measured by the Gini decreased from 0.63 in 2010 to 0.50 in 2012 then increased significantly to 0.61 in 2015 and then dropped to 0.54 by 2018.

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<sup>5</sup>See the World Bank micro-data website for more details on the sampling <https://microdata.worldbank.org/index.php/catalog/3557metadata-sampling>.

<sup>6</sup>We provide a more detailed description of the data and the challenges created from the refresh in the extended version of this paper. Estimates using both the balanced and unbalanced panel are also provided in that version.

<sup>7</sup>See Canagarajah (1997) for a discussion on the benefits and challenges of these measures.

<sup>8</sup>Our main measure of inequality and discussion would be based on TCEPAE. However we also present results using FEPAE for completeness and provide more discussions in the extended version of the paper.

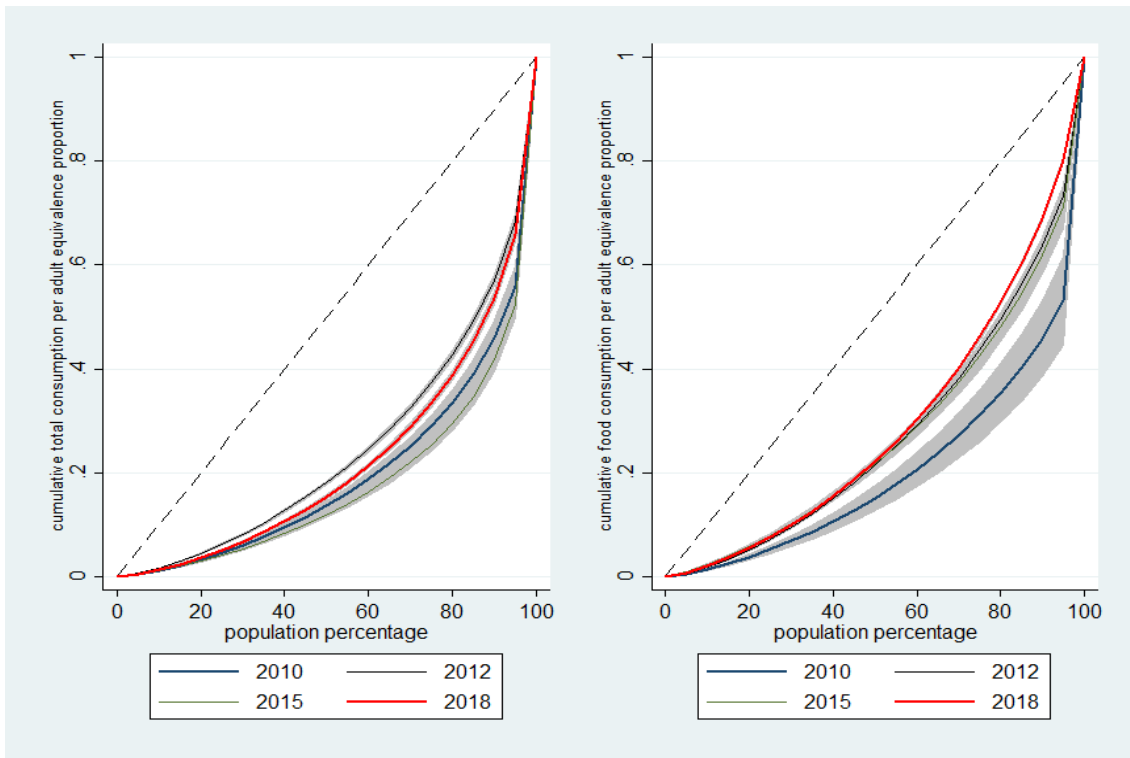


Figure 1: Lorenz Curves: TCEPAE and FCPAE Per Adult Equivalence 2010-2018

Comparing 2010 to 2018, inequality decreased by 13.5%. It is important to note that our 2018 estimate is higher than the NBS(2020) estimate from the same period (0.54 vs 0.35). Suggesting a downward bias in NBS estimates of inequality in 2018.<sup>9</sup>

To examine a potential channel for the decrease in inequality, we compute the changes in the median real TCEPAE and FEPAE over the period for Nigeria as a whole and across regions.<sup>10</sup> These results are summarised in Table 1 panel B and D. Median TCEPAE increased by about 6% from 2010 to 2018 but median FEPAE declined by 4.3%. The overall increase in real median TCEPAE is noteworthy and could be a channel through which inequality decreased. However the decrease in median FEPAE suggests that welfare may not have increased for those below the median despite a decrease in FEPAE Gini.<sup>11</sup>

Typically, noting a decline in inequality and an increase in TCEPAE would be lauded as an indicator of economic progress but given the decrease in FEPAE amidst significant increase in TCEPAE, it is necessary to consider alternative measures of inequality focused on the lower end of the distribution. Using consumption expenditures versus income, we estimate poverty incidence ( $P_0$ ), poverty gap ( $P_1$ ) and poverty severity ( $P_2$ ) in each survey. We subsequently compute the changes in these measures between 2010 and 2018.<sup>12</sup>

Table 2 is a summary of poverty estimates for Nigeria as a whole and for each region. We

<sup>9</sup>Our results using Gini based on FEPAE also suggests a substantial decline in inequality by  $\approx 36\%$  from 2010-2018. The high Gini for the South-Eastern region in 2010 stands out requiring further investigation.

<sup>10</sup>We do not compute the means and focus rather on the median given the data is not symmetrically distributed and contains extreme values.

<sup>11</sup>The trend in the TCEPAE is consistent with the trend in GDP per capital over the period. With increases in GDP per capital between 2010 and 2012 and a decline between 2015-2018.

<sup>12</sup>See Foster et al (1984) for more information on these poverty measures. We derive the poverty line for each year of data using information from the World Bank and convert these poverty lines to Naira (local currency) using the relevant exchange rates for each year of data.

Table 1: Gini and Median Consumption Expenditures by regions and overall

	2010 (1)	2012 (2)	2015 (3)	2018 (4)	2010-2018(%) (5)
Panel A	Gini using Total Consumption Expenditure per adult				equivalence
<b>Nigeria</b>	<b>0.63</b>	<b>0.50</b>	<b>0.61</b>	<b>0.54</b>	<b>-13.53</b>
North Central	0.57	0.46	0.54	0.55	-2.74
North East	0.57	0.50	0.52	0.57	1.34
North West	0.48	0.43	0.47	0.47	-0.88
South East	0.80	0.50	0.59	0.49	-38.50
South South	0.60	0.47	0.55	0.50	-17.26
South West	0.50	0.49	0.62	0.50	-0.46
Panel B	Real Total Consumption Expenditure per adult				equivalence (naira)
<b>Nigeria</b>	<b>125702.6</b>	<b>94132.98</b>	<b>148610.2</b>	<b>133300</b>	<b>6.06</b>
North Central	126257.4	85279.73	148822.6	126344.8	0.07
North East	92403.56	59313.91	102581.6	83356.49	-9.79
North West	93436.59	69811.67	92292.66	99436.44	6.42
South East	140564.1	108632.9	179847.5	192397.7	36.88
South South	162545.9	132118.1	253746.9	197773.2	21.67
South West	174402	146241.9	235500.2	210310.9	20.59
Panel C	Gini using Food Consumption Expenditure per adult				equivalence
<b>Nigeria</b>	<b>0.63</b>	<b>0.41</b>	<b>0.43</b>	<b>0.40</b>	<b>-35.55</b>
North Central	0.50	0.38	0.41	0.38	-24.33
North East	0.41	0.59	0.32	0.34	-15.45
North West	0.39	0.33	0.31	0.41	5.89
South East	0.89	0.34	0.32	0.39	-56.49
South South	0.38	0.46	0.38	0.36	-7.49
South West	0.37	0.33	0.55	0.34	-6.14
Panel D	Real Food Consumption Expenditure per adult				equivalence (naira)
<b>Nigeria</b>	<b>56891.26</b>	<b>46292.86</b>	<b>57080.54</b>	<b>54448.43</b>	<b>-4.29</b>
North Central	54933.34	42453.56	48151.47	44484.04	-19.02
North East	43549.1	30549.96	49027.81	37649.56	-13.55
North West	51775.38	43875.48	48728.04	42059.99	-18.76
South East	56837.39	49373.94	65553.95	79958.24	40.68
South South	70641.36	54419.2	86115.59	78732.92	11.45
South West	71027.27	53358.34	60764.78	72606.35	2.22
<i>N</i>	28375	30295	32917	33355	

calculate these poverty measures identifying individuals with total consumption expenditure per adult equivalence below the poverty line. Poverty has increased significantly over the period.  $P_0$  increased by 22.6 percentage points from 21.6% in 2010 to 44.2% in 2018.  $P_1$  also increased by 10.3% points and poverty severity increased by 5.75% points.<sup>13</sup> The substantial increase in  $P_0$  and falling FEPAE even as TCEPAE increased and inequality declined warrants further investigation.<sup>14</sup> A significant take away from these results is that decreases in inequality do not necessarily translate to improvement in welfare for those at the lower percentiles of the income distribution. Poverty can increase as inequality decreases.

Our second question is focused on testing for evidence of convergence in inequality across regions and figuring out if differences across regions in inequality contribute more to national inequality than within region differences. The Gini estimates by region are summarized in Table 1 Panel A and C. While real median TCEPAE and FCPAE estimates by region are

<sup>13</sup>It is noteworthy that  $P_0$  and  $P_2$  have more than doubled amounting to over a 100% change.

<sup>14</sup>The rising poverty and falling inequality trend is robust to restricting the sample to the balanced panel over the four data panels. These results are available in extended version of this paper.

summarized in Table 1 panel B and D.

Table 2: Poverty Measures 2010-2018 (using consumption per adult equivalence)

	2010	2012	2015	2018	2010-2018
	(%)	(%)	(%)	(%)	(% point $\Delta$ )
	(1)	(2)	(3)	(4)	(5)
Panel A	Poverty Incidence				
<b>Nigeria</b>	<b>21.61</b>	<b>48.39</b>	<b>31.86</b>	<b>44.23</b>	<b>22.62</b>
North central	21.49	53.29	30.43	45.39	23.90
North east	32.59	68.53	47.81	68.48	35.89
North west	31.22	68.34	56.12	59.67	28.46
South east	20.19	39.26	20.71	24.65	4.46
South south	11.20	31.38	11.66	24.01	12.81
South west	8.87	23.63	14.09	18.34	9.47
Panel B	Poverty Gap				
<b>Nigeria</b>	<b>6.62</b>	<b>18.53</b>	<b>10.06</b>	<b>16.94</b>	<b>10.33</b>
North Central	6.50	20.80	10.81	16.57	10.06
North East	10.04	32.98	15.94	29.07	19.03
North West	9.00	25.25	17.82	23.73	14.73
South East	6.51	13.58	5.33	7.99	1.48
South South	3.87	10.72	3.49	7.71	3.83
South West	2.94	7.04	3.74	5.45	2.51
Panel C	Poverty Severity				
<b>Nigeria</b>	<b>2.83</b>	<b>9.43</b>	<b>4.39</b>	<b>8.59</b>	<b>5.75</b>
North Central	2.97	11.12	5.50	8.46	5.49
North East	4.28	19.26	7.14	15.48	11.20
North West	3.57	11.79	7.50	12.17	8.60
South East	2.78	6.18	1.99	3.51	0.73
South South	1.79	5.02	1.53	3.50	1.72
South West	1.43	3.12	1.48	2.37	0.94
<i>N</i>	28375	30295	32917	33355	

The results in Table 1 paint a picture of significant heterogeneity across regions within Nigeria in 2010 and 2018. We find evidence of convergence when comparing the estimated Gini in each region in 2010 with their 2018 estimate. In particular, inequality declined in all regions but the North East which experienced a 1.3% increase and also had the highest Gini in 2018. In 2010 inequality was higher on average in the southern regions but this flipped by 2018 with northern regions on average exhibiting higher within region Gini.<sup>15</sup> Our results also provide evidence of convergence across regions in estimates of inequality using FEPAE. The variance across estimated Gini by region declined over time.

While within region Gini coefficients appear to be converging, our results suggest significant divergence across regions in both food and total consumption expenditures. Table 1 panel B and D provide evidence consistent with this trend. In 2010 the 3 southern regions had the highest median TCEPAE and these 3 regions had the highest growth in median TCEPAE (36.9%, 21.7% and 20.56%). In contrast average growth in TCEPAE was only 0.01% in the North Central region and 6.4% in the North West. TCEPAE shrunk in the North Eastern region by 9.8%. This decline in consumption in this region that has suffered

<sup>15</sup>In Table 1 Gini coefficients are approximated to just two decimals for ease of presentation but the change between 2010-2018 is computed based on the full Gini estimate.



significantly from armed conflict since 2009 is consistent with Odozi and Uwaifo Oyelere (2019) who provide evidence of the impact of conflict on welfare. In terms of FEPAE our results show that the overall decline of 4.3% by 2018 was driven solely by a decline in all the northern regions. FEPAE shrunk in all northern regions (-19.2%, -18.8% -13.6%) but increased significantly in all southern regions (40.68%, 11.5% and 2.2%).

In terms of the question of what contributes more to the national level of inequality, our estimations (table not included) suggest that between region differences contribute more than within region differences in every survey year. In 2010 the Gini between regions contributed 41.3% to overall inequality and it decreased to 34.3% by 2018. In contrast, inequality within regions contributed 15.1% in 2010 and 15.9% in 2018. When we decomposed the FEPAE Gini we find a similar trend. While Gini between regions contributed more to inequality in both 2010 and 2018, the gap in contributions declined by 2018. In contrast, the contribution of within region differences increased. This result together with the other finding from Table A panel B and D suggest that while within region differences in consumption exist and should be attenuated, the major challenge is the growing disparities between northern and southern regions in consumption.

The significant disparities across the North and South regions is corroborated with the estimates of poverty by region, and the changes in poverty overtime summarized in Table 2. In 2010 the Northern regions had higher levels of poverty and this trend persists in 2018. What is more concerning is that while  $P_0$  has increased across all regions in Nigeria between 2010 and 2018, the increases in the southern regions are significantly smaller than the northern regions.  $P_0$  increased in the northern regions by approximately 35, 28 and 24 percentage points respectively. In contrast  $P_0$  increased by approximately 13, 9 and 4 percentage points respectively in southern regions. The poverty gap ( $P_1$ ) has also grown across all regions in Nigeria but the growth in the northern regions is again significantly higher than the southern regions. Poverty severity ( $P_2$ ) follows a similar trend. In all the northern regions, ( $P_2$ ) more than doubled while in the southern regions ( $P_2$ ) increased but the change is much less. The divergence across the northern and southern regions in ( $P_0$ ), ( $P_1$ ) and ( $P_2$ ) from 2010-2018 is consistent with the divergence across the northern and southern regions in TCEPAE and FEPAE. Further, the declining FEPAE in the northern regions could be as a result of the significant increase in poverty in these regions.

Finally, to better understand the sources of inequality in consumption over time in Nigeria, we follow the approach to the decomposition of inequality by income sources laid out in Lerman and Yitzhaki (1985). We implement this decomposition in Stata using a Distributive Analysis Stata Package (DASP) by Abdelkrim and Duclos (2007). Similar to the rest of our paper, we use consumption instead of income for this analysis. Consumption expenditure

Table 3: Consumption Expenditure source decomposition over time

	$(S_k)$ Share of Expenditure Source (1)	$G_k$ Source Gini (2)	Absolute Contribution (3)	Relative Contribution (4)
Panel A		Year 2010		
Real food expenditure per adult equivalent	0.434 (0.028)	0.627 (0.040)	0.249 (0.036)	0.397 (0.046)
real nondurable expenditure per adult equivalent	0.115 (0.006)	0.605 (0.005)	0.057 (0.003)	0.091 (0.007)
Real durable expenditure per adult equivalent	0.451 (0.023)	0.750 (0.008)	0.321 (0.018)	0.512 (0.040)
Panel B		Year 2012		
Real food expenditure per adult equivalent	0.398 (0.005)	0.412 (0.005)	0.136 (0.003)	0.270 (0.008)
real nondurable expenditure per adult equivalent	0.211 (0.005)	0.603 (0.010)	0.109 (0.005)	0.217 (0.009)
Real durable expenditure per adult equivalent	0.391 (0.007)	0.717 (0.007)	0.258 (0.008)	0.513 (0.012)
Panel C		Year 2015		
Real food expenditure per adult equivalent	0.249 (0.005)	0.425 (0.012)	0.081 (0.005)	0.133 (0.008)
real nondurable expenditure per adult equivalent	0.126 (0.004)	0.619 (0.015)	0.068 (0.005)	0.112 (0.007)
Real durable expenditure per adult equivalent	0.626 (0.006)	0.750 (0.004)	0.458 (0.007)	0.755 (0.010)
Panel D		Year 2018		
Real food expenditure per adult equivalent	0.299 (0.005)	0.404 (0.003)	0.093 (0.002)	0.172 (0.005)
real nondurable expenditure per adult equivalent	0.144 (0.002)	0.521 (0.003)	0.063 (0.001)	0.116 (0.003)
Real durable expenditure per adult equivalent	0.557 (0.006)	0.721 (0.006)	0.386 (0.008)	0.712 (0.007)

Standard error in parentheses.

can be divided into 3 main sources: food, non-durables and durables. In column (1) of Table 3, the share of each expenditure source in TCEPAE ( $S_k$ ) is presented and in column (2) the expenditure source Gini ( $G_k$ ) is summarized. In column (3) the contribution of each consumption source Gini share to over Gini is summarized and in column (4) the relative contribution to overall inequality is presented. Each panel is a summary for a survey year.

The results show that a significant portion of inequality in TCEPAE is stemming from inequality in the consumption flow from durable-goods expenditure per adult equivalence. The relative contribution of durables to inequality is greater than its share in TCEPAE each survey year and has increased between 2010 and 2018. While the level of inequality in durables across households has decreased, this Gini is still high (0.71). With respect to non-durable goods expenditure per adult equivalence, while its Gini is consistently the lowest among the expenditure sources, its relative contribution to inequality has increased. However its relative contribution to inequality is lower or equal to its share in total expenditure. Inequality in food expenditure decreased as noted above and its relative contribution to inequality decreased over the period. We can infer from these results that the decrease in inequality by 2018 was driven primarily by a decrease in inequality in food expenditure.<sup>16</sup>

<sup>16</sup>In the extended version of this paper we use regression analysis to identify the factors that explain differences in equality across local government areas in Nigeria.

## 4 Summary, Conclusion and Policy Implications

In this paper, we focus on the evolution of inequality and consumption in Nigeria as a whole and across regions. Our period of analysis is 2010-2018. First we estimate inequality using Gini and evaluate its evolution over the period of analysis. Our results suggest a decline in inequality from 2010 to 2018, corroborating other earlier studies. We also find that despite the 6% increase in median TCEPAE, median FEPAE decreased by 4%. More concerning is the noted increase in poverty measures over this period.  $P_0$  rose by 22.6 percentage points,  $P_1$  increased by 10.3 percentage points and  $P_2$  more than doubled. These results suggest that welfare for those at the lower end of the distribution has decreased overtime which is consistent with the current sentiment of declining living standards in Nigeria.

Our second question focused on investigating convergence across regions in simple measures of welfare. While we find evidence of convergence between 2010-2018 in measured within region Gini, median consumption expenditures diverged across regions. Southern regions experienced much higher increases in expenditure than northern regions, further exacerbating differences in TCPEPAE noted in 2010.<sup>17</sup> We also note divergence across regions in poverty incidence, poverty gap and poverty severity. Most of the increase in poverty incidence, severity and gap in Nigeria is driven by significant increases in the Northern regions.

Our results raise questions that set the stage for further research. For example, why has there been a significant rise in poverty especially in Northern Nigeria, despite GDP per capita growth in Nigeria of 4.5% over this period? Based on past research by Odozi and Uwaifo Oyelere (2019), an increase in armed conflict appears to be one reason but others factors could matter. Second, what are the determinants of inequality across regions in Nigeria? Third, why has convergence in welfare across regions in Nigeria been limited? These are important questions that need answers for there to be effective policy actions to ameliorate this situation. We address the question of what explains differences in inequality across LGAs in the extension to this paper. Finally, our results provide a cautionary tale about the importance of looking at multiple indicators of welfare. Increases in median consumption expenditures may not provide a robust picture of welfare improvement. Although the median person in Nigeria consumed more in real terms in 2018 than 2010, poverty increased precipitously. Given that the first of the 17 adopted Sustainable Development Goals (SDGs) in 2015 is to end poverty in all its forms everywhere, rising poverty in Nigeria is antithetical to this goal and warrants robust policy action.

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<sup>17</sup>The only region with a decline in median TCEPAE by 2018 is the North-East.

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