Republic of Rwanda

NISR
NATIONAL INSTITUTE OF
STATISTICS OF RWANDA

The Fifth Integrated Household Living Conditions Survey
EICV5

2016/17
Rwanda Poverty Profile Report

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November 2018

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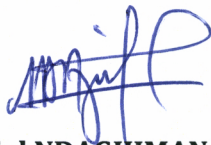from the British people

WORLD BANK

Foreword

The Government of Rwanda needs accurate and up-to-date information in order to monitor and evaluate progress on poverty reduction. The policies for addressing poverty, and the goals for poverty reduction, are set out in the First National Strategy for Transformation (NST1), the Vision 2020 and Vision 2050 strategies, and the 2030 Sustainable Development Goals (SDGs).

The 2016/17 Integrated Household Living Conditions Survey (EICV5) is the fifth in a series that began in 2000/01, and is now undertaken every three years. Each new round of the survey is accompanied by a series of reports, some focusing on areas such as education or health, and others on broader themes. All the reports draw on the detailed information collected from a sample of thousands of households, covering such measures as consumption spending, employment, income, health, education, housing, and the ways that household responds to shocks.

This report focuses on poverty. It sets out the main facts related to poverty, and then constructs a profile of the poor. This is a necessary step in the on-going efforts to identify the poor and address their challenges.

The EICV5 survey shows that 38.2% of the population was poor in 2016/17, as compared to 39.1% as measured by the EICV4 survey of 2013/14. During the same period, extreme poverty went from 16.3% to 16.0%. This is modest progress compared to previous survey rounds and this report explains the reasons, including the drought of 2016/2017. However, progress has been faster in some of the non-monetary dimensions of well-being, including access to electricity, and improved sources of water and sanitation. But these are only a few of the things that are presented in this report.

I would like to thank the National Institute of Statistics of Rwanda (NISR) for the excellent and highly professional work that it has done in collecting, analyzing, and reporting the data for this report. I am also most grateful to the many collaborators – from households who patiently answered the long survey questionnaire, to those who provided financial and technical assistance – whose efforts have produced this most useful study.

Dr. Uzziel NDAGIJIMANA
Minister of Finance and Economic Planning

Acknowledgements

Executive Summary

The data in this report come from the fifth Integrated Living conditions survey (EICV5), which interviewed 14,580 households, representing 64,314 people, throughout the country between late October 2016 and early October 2017. The data collected covered a wide range of economic and socio-demographic variables.

The focus of the report is on the measurement of poverty, and on the variables that are associated with poverty, which are presented in the form of a poverty profile. The measure of wellbeing used here, and in previous studies of poverty in Rwanda, is real consumption per adult equivalent. For each household, total consumption is obtained by adding up the amounts spent on a large range of items, including the value of goods produced and consumed at home. The total household consumption is then divided by the number of adult equivalents – adults aged 20-39 get a weight of 1, children under one year old are given a weight of 0.41, and so on – to arrive at a measure of consumption per adult equivalent. This measure is then adjusted for regional and monthly differences in prices, and expressed in the prices of January 2014. The headcount poverty rates are obtained by comparing real consumption per adult equivalent to the poverty line (RWF 159,375 per year) or the extreme poverty line (RWF 105,064).

The key findings are shown in Table 1. The proportion of people who were poor in 2016/17 was 38.2%, compared to 39.1% in 2013/14. The reduction in the poverty between these two time periods was not statistically significant. The poverty gap rate, which measures the gap between people's spending and the poverty line, also showed a non-significant change to 11.7 in 2016/17, from 12.0 in 2013/14.

Table 1. Summary of poverty rates, 2011-2017

	EICV3: 2010/11	EICV4: 2013/14	EICV5: 2016/17
Headcount Poverty rate	44.9*	39.1*	38.2
Poverty Gap rate	14.8*	12.0*	11.7
Sample size	14,308*	14,419*	14,580

Source: NISR, EICV3, EICV4 and EICV5. Note: * includes panel sample.

Although overall poverty rates did not change much, there was a substantial movement of people into and out of poverty, as Table 2 shows. While a quarter of the population was poor both in 2013/14 and 2016/17, and half the population was not poor in either year, the remaining quarter of the population transited into poverty (12%) or out of it (13%). A companion report (EICV5 Panel Report) examines these poverty dynamics in more detail.

Table 2. Poverty transition matrix

		EICV5: 2016/17	
		Poor	**Not poor**
EICV4: 2013/14	**Poor**	24.6	13.4
	Not poor	11.7	50.2

Source: EICV4 and EICV5 panel surveys. Matrix uses EICV4 population weights, so total poverty rates correspond to the EICV4 rates shown in Table 10 (up to a rounding error).

There are substantial geographical differences in the poverty rate, as Table 3 shows, with lower rates in urban areas than elsewhere. There was a statistically significant drop in the poverty rate in Kigali City, but the changes in other provinces were not statistically significant.

Table 3. Geographic breakdown of poverty rates, 2014/2017

	Total Poverty				Extreme Poverty		
	2013/14 (EICV4)	**2016/17 (EICV5)**	**Change % points**		**2013/14 (EICV4)**	**2016/17 (EICV5)**	**Change % points**
	Percentages						
Nationally							
Rwanda	39.1	38.2	-0.9		16.3	16.0	-0.4
Standard error	*0.62*	*0.61*	*0.87*		*0.47*	*0.45*	*0.64*
Area of Residence							
Urban	15.9	15.8	0.0		5.4	5.9	0.4
Rural	43.8	43.1	-0.7		18.5	18.1	-0.4
Province							
Kigali City	20.9	13.9	-6.9 *		9.4	4.2	-5.2 *
Southern	38.4	41.4	3.1		12.9	16.9	4.0 *
Western	45.2	47.1	1.9		21.5	21.6	0.1
Northern	45.9	42.3	-3.6		20.1	17.4	-2.8
Eastern	38.0	37.4	-0.6		15.5	15.3	-0.2

Source: NISR, EICV4 and EICV5.
Note: * indicates change in poverty rate is statistically significant at 10% level of significance. Totals may not add up exactly due to rounding errors. Based on responses from 14,149 households for EICV4 and 14, 580 households for EICV5.

Rwanda experienced 14% growth in GDP per capita between 2014 and 2017. However, this growth in GDP did not translate into higher consumption per adult equivalent, as Table 4 shows. The main explanation for this is that there was a substantial rise in the price of food, and especially (staple) vegetables and root crops that coincided almost exactly with the period of the EICV5 survey, thereby reducing the purchasing power of most Rwandans. The price spike was not unique to Rwanda; there was a similar increase in the region, and to a lesser extent worldwide.

Table 4. Consumption per adult equivalent, RWF '000, 2011-2017

	EICV3: 2010/11	EICV4: 2013/14	EICV5: 2016/17	% change, 2014-2017
	Thousands of RWF per year			
Total (mean)	265	282	279	-1.2
Total (median)	169	187	191	2.1
No. of observations	14,308	14,419	14,580	

Source: NISR, EICV3, EICV4 and EICV5 Note: * denotes change is significant at the 10% level or better.

The poverty profile shows that children are more likely than adults to be poor; and poor children are less likely than non-poor children to be enrolled in school, particularly at the secondary level. Poor households are predominantly rural, and when compared to non-poor households they are less likely to have health insurance or to have a cement floor in their dwelling, or to use electricity or own a phone. However, on all these dimensions there appears to have been some modest progress since 2014.

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Chapter 1: Introduction

Over the past two decades, Rwanda's GDP has increased almost fourfold, far outpacing the growth of the population. This has been reflected in a rising standard of living, and improvements in a wide array of social indicators. The Rwanda Vision 2020, as articulated in 2000 and revised in 2012, established ambitious targets for further economic and social development over the years ahead.

One of the targets is a substantial reduction in poverty, and the central purposes of this report are to provide an update on the extent of poverty in Rwanda, to document the trends in poverty, and to set out the correlates of poverty in the form of a poverty profile.

The main reason to measure poverty is to help ensure that the poor are not overlooked, which in turn helps keep public policy focused on ways to help people rise out of poverty. A second reason is to allow one to determine the extent to which policy measures – such as education, health insurance, and transfer payments – are reaching the poor and serving them well.

It is widely accepted that poverty has many dimensions. Amartya Sen conceives of poverty as the lack of those elements that allow individuals to function successfully in society. This includes money, of course, but also such things as good health, literacy, self-confidence, adequate housing, and the ability to connect with others. Some researchers have tried to create an index of multidimensional poverty that aggregates such measures (Alkire et al. 2015; UNDP 2016), recognizing the need to acknowledge the complexity of poverty and the need for some summary measure of it.

The approach used in this report is a traditional one of using a money metric whereby a measure of monetary poverty is constructed, and substantial details about other measures such as housing and the association with monetary poverty are provided. The benefit of this approach is that it generates a measure of poverty that is widely understood and is comparable with measures of poverty from earlier surveys, allowing us to track the evolution of poverty over time. As a practical matter, measures of wellbeing such as consumption or income per adult equivalent are closely correlated with other dimensions of poverty, and tell a similar story.

The data presented in this report comes from the fifth Integrated Living Standards Survey (EICV5). A total of 14,580 randomly-chosen households, representing 64,314 people, were surveyed between late October 2016 and early October 2017, and asked about their habits of spending, the sources of their income, and a wide variety of other variables related to such things as education, health, demography, assets, housing, and their response to economic shocks. Care has been taken to ensure that EICV5 numbers are comparable with those collected in 2013-

14 under EICV4, which allows us to look at the evolution of poverty and other indicators over time. For convenience, this report will refer to EICV5 data as being for 2017, and the EICV4 data as being for 2014, although some of the data were collected late in the previous years.

For consistent trend analysis, the poverty line used in this report is the same as the one used in the analysis of the EICV4 data, and a detailed description of how the poverty line was constructed appears in the EICV4 poverty profile report; a summary of the method is provided in Section 3.4. The essential characteristics of the EICV5 survey – sample design, size, coverage, dates – are summarized in Section 3.1. And the process of translating household consumption per adult equivalent into the prices of January 2014 is outlined in Section 3.3.

In what follows we first provide some context in the form of information on the recent performance of the Rwandan economy, and summarize the evolution of a variety of measures of wellbeing. We then present the main findings on poverty, broken down geographically, and discuss its evolution over time. The latter part of the report sets out the poverty profile.

Chapter 2: Economic Context

2.1.   Gross Domestic Product (GDP)

Before reporting the poverty rate for 2017, and its evolution since 2014 (or earlier), it is helpful to provide some context, starting with information on GDP. Figure 1 shows the evolution of real GDP (in 2014 prices) between 2007 and 2017. During this period, real GDP rose from RWF 3.26 trillion to RWF 6.69 trillion, or by an average of 7.45% per year. Given that population growth average 2.4% per year, this means that real GDP *per capita* rose by 4.84% annually over the past decade. Total real GDP was 22.4% higher in 2017 (the year of EICV5) than it was in 2014 (the year of EICV4), or 14.0% higher in per capita terms.

Figure 1. GDP in constant prices by major sector, 2007-2017
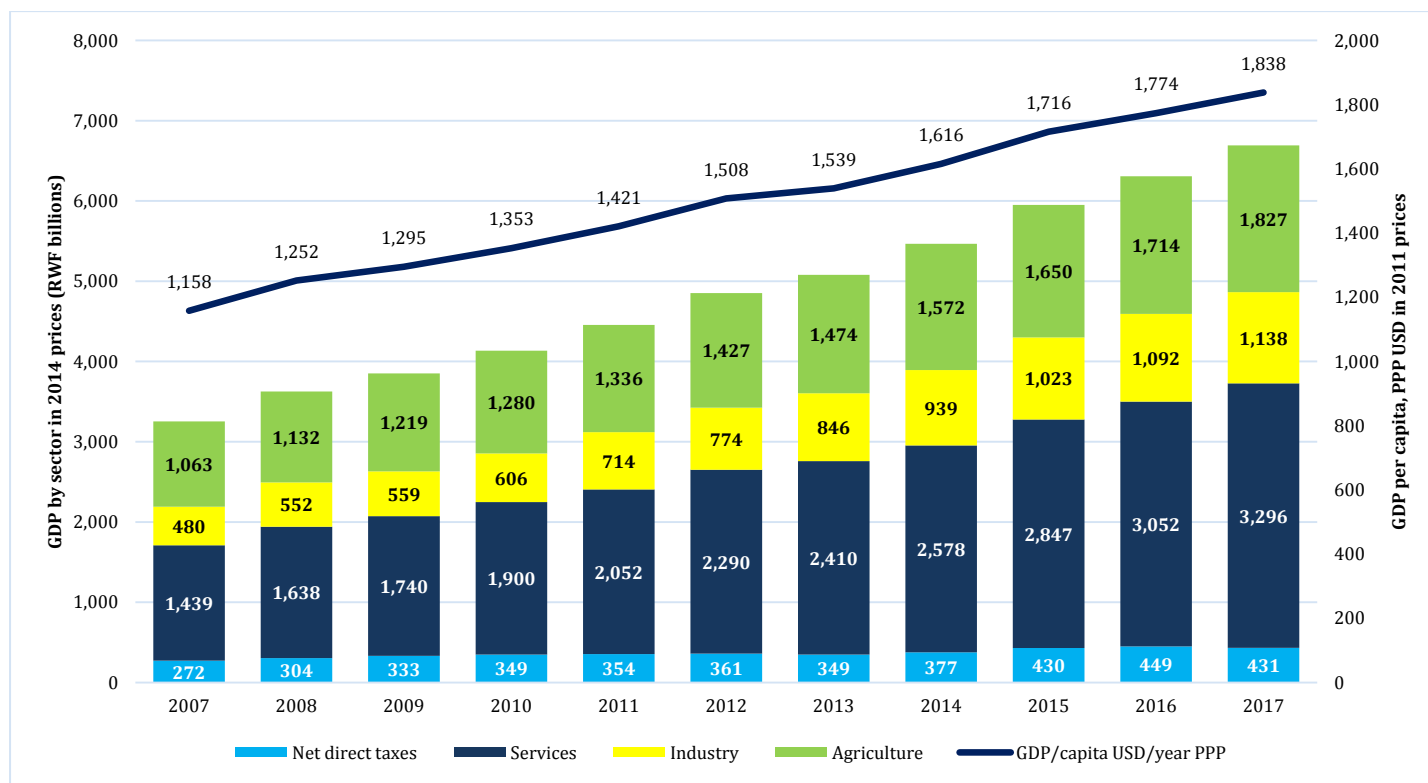
Source: NISR, 2017 National Accounts.

The line at the top of Figure 1 shows GDP per capita in constant (2011) US dollars in purchasing power parity (PPP) terms, which adjusts properly for differences in the cost of living across countries. Growth has been relatively steady, with GDP per capita rising uninterruptedly from USD 1,158 in 2007 to USD 1,838 by 2017.

The other function of Figure 1 is to show the sources of GDP. The top part of the bars (in green) represents agricultural GDP, the middle segments (in yellow) refer to industry, and the large pieces near the bottom (in grey) measure services. While all sectors of the economy have grown, it is worth noting that over the past ten years, agricultural GDP rose at a slower pace than industry or services. This is relevant because the poor in Rwanda depend disproportionately heavily on agriculture, and are tied to a relatively slow-growing part of the economy.

The evolution of GDP is disaggregated in a different way in Figure 2. This breakdown is based on the macroeconomic identity that identifies the components of final spending as follows:

GDP ≡ private consumer spending + investment + government spending on goods and services + exports of goods and services – imports of goods and services.

In a more condensed notation, this is often written as GDP ≡ C + I + G + X – IM.

Figure 2. GDP in constant prices of 2014 by major category of expenditure
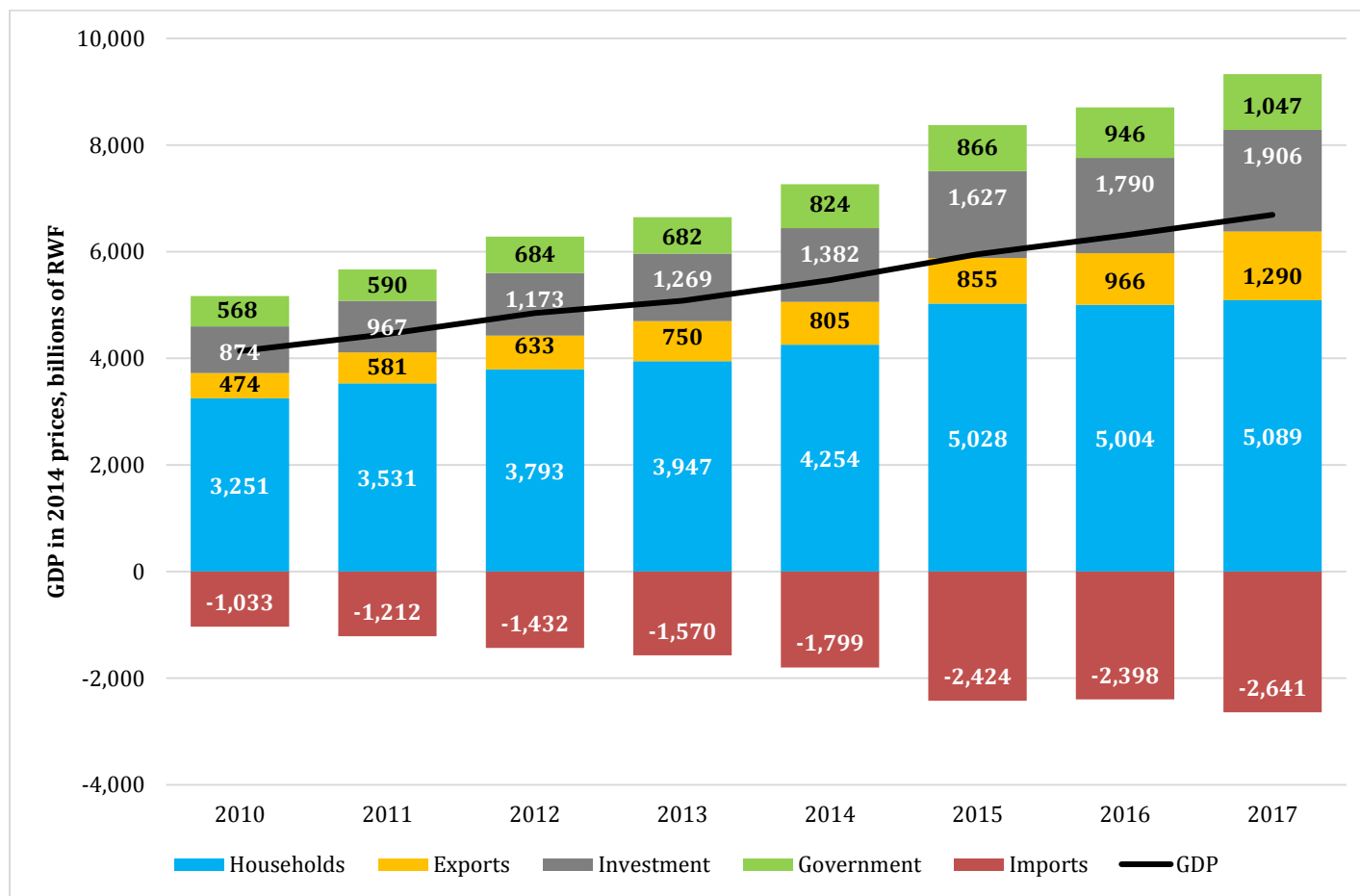
Source: NISR, 2017 National Accounts.

The most important single component of GDP is typically private consumer spending (including consumption of home-produced items), and this is true in Rwanda too, where it is shown by the blue segments of the bars in Figure 2. Although GDP grow solidly in 2016 and 2017 – this is given by the black line – total consumer spending (in 2014 prices) did not rise during this time, when the growth of GDP was fueled by higher investment, government spending, and net exports.

2.2. Prices

The survey data that we use were collected from November 2016 to October 2017, and have to be expressed in the prices of January 2014, which is the benchmark period for which the poverty line was set. This requires an adjustment for inflation, and for differences in prices across the five provinces.

The adjustment is needed because Rwanda has experienced some inflation over the last several years, as shown in Figure 3. The heavy black line shows the evolution of the consumer price index (CPI), which was approximately 20% higher during the period of the EICV5 survey (undertaken during the period marked by the right-hand pair of parallel lines) than the EICV4 survey (left-hand pair of parallel lines).

Also shown in Figure 3 are the prices indexes for food (solid blue line) and vegetables (dashed line). The latter is important, because it includes the staple foods such as Irish potatoes, sweet potatoes, and beans, on which poor people rely heavily. During the period of EICV5, the price of food in general, and vegetables in particular, was unusually high; this limited the reduction in poverty that might otherwise have been expected to occur between 2014 and 2017.

Figure 3. Price indexes, January 2010 – March 2018.
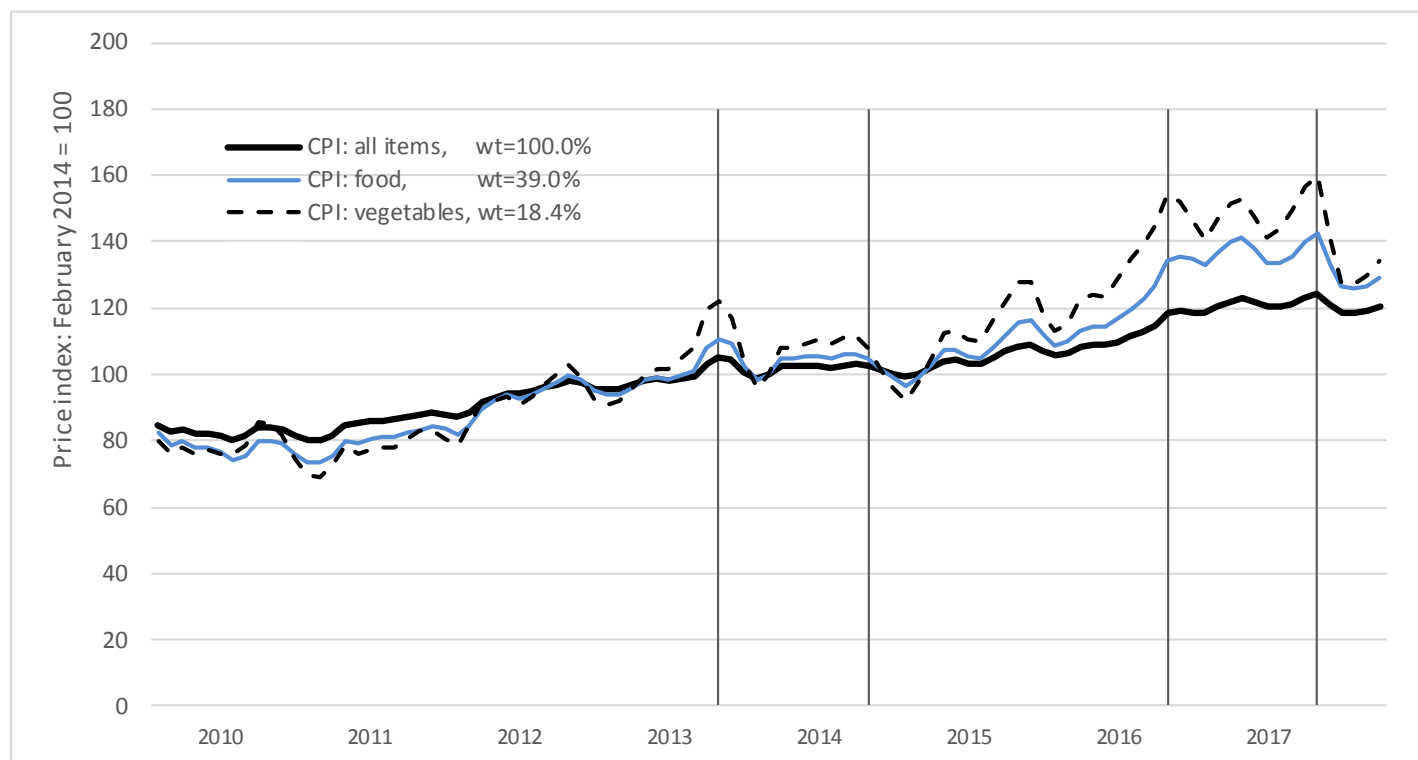
Source: NISR, 2018 CPI.   Note: Vertical lines mark period of EICV4 (October 2013 – October 2014) and EICV5 (October 2016 – October 2017).

2.3.   Sources of earnings

Earnings in Rwanda come from work in agriculture (as a farmer or farm laborer), in independent non-farm work, or from a wage or salary. The structure of earnings evolved somewhat between 2014 and 2017 as Table 5 shows. Somewhat fewer people reported that their primary job was farming in 2017 (53.3% vs. 59.7%) or in Independent non-farm work (8.9% vs. 9.2%), while more relied on non-farm wages (21.1% vs. 18.5%) or paid farm laboring (15.6% instead of 11.7%). The proportion of adults saying that they mainly worked as unpaid family workers remained the same at 1%.

Table 5. Occupational structure of working population by main job

	Wage Farm		Wage Non-farm		Independent Farmer		Independent Non-farm		Unpaid non-farm and other	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
Rwanda										
Overall	**11.7**	**15.6**	**18.5**	**21.1**	**59.7**	**53.3**	**9.2**	**8.9**	**0.9**	**1.0**
Areas										
Urban	4.3	5.7	52.5	55.1	18.9	16.4	21.8	20.1	2.6	2.8
Rural	13.2	17.9	11.8	13.5	67.8	61.6	6.7	6.5	0.5	0.6
Province										
Kigali city	3.0	4.8	55.0	59.3	16.8	12.6	23.0	20.6	2.2	2.7
Southern	12.0	14.5	13.7	14.9	67.2	64.4	6.5	5.6	0.7	0.6
Western	13.4	18.1	16.0	15.8	60.5	55.8	9.1	9.3	1.0	1.0
Northern	13.5	16.0	14.2	15.2	65.4	61.2	6.6	7.1	0.2	0.5
Eastern	12.6	20.5	12.0	13.6	67.3	58.8	7.3	6.4	0.8	0.6

Source: NISR, EICV4 and EICV5. Note: Uses household (sampling) weights

Reliance on farm wage work rose by a third in rural areas, and was especially striking in Eastern Province. Compared to their rural peers, urban households are far more dependent on non-farm wage work (55% vs. 14%) and independent non-farm work (20% vs. 7%). These patterns and trends are typical of a country that is developing rapidly.

Chapter 3: Methodology

3.1.   The survey

The data reported here come from the EICV5 survey. This is the fifth integrated living standards survey to be undertaken in Rwanda, and is very similar in style and coverage to its predecessor (EICV4), which was undertaken in 2014.

The EICV5 survey was undertaken between October 2016 and October 2017, and used a questionnaire that covered a wide range of topics. Enumerators visited households on several occasions to collect the data – 8 visits spaced 2 days apart in rural areas, 11 visits spaced 3 days apart in urban areas – and entered the information directly onto tablet computers. Inbuilt algorithms helped check for outliers, and allowed the enumerators to verify potentially suspect information in the course of subsequent visits.

As with its predecessors, EICV5 used a stratified multi-stage sample design. In 27 of the country's 30 districts, 40 sample clusters were chosen, and 12 households interviewed in each cluster; in the remaining three districts (in Kigali City), 60 clusters were chosen, and 9 households interviewed per cluster. The clusters (villages or neighborhoods) within each district were chosen randomly, with probabilities proportional to the number of households enumerated in the 2012 Rwanda Census. Within each cluster, households were chosen randomly. Since some households in effect represent more households (in populous districts) than others (districts with small populations), it is necessary to apply sampling weights.

3.2.   Measuring wellbeing

The measure of wellbeing used here, and in previous studies of poverty in Rwanda, is real consumption per adult equivalent. For each household, total consumption is obtained by adding up a large number of items. These include:

1   Spending on food items. For commonly-consumed items, households are visited multiple times and asked to estimate the amount they spent since the previous visit. They are also asked about consumption over the previous month for items purchased less frequently.
2   Auto-consumption of food. This covers the estimated value of food produced and consumed at home.
3   Non-food items, purchased over the past year, month, or home-produced, depending on the item.

4   The use value of durable assets such as phones and bicycles. This applies standard depreciation and capital costs to the reported value of the assets.

5   Spending on education.

6   Spending on housing (for renters), or estimated rent (for owners).

7   In-kind wages that represent consumption (such as meals provided by an employer)

8   In-kind remittances received (such as food).

The questionnaire specifies a long list of items, and asks about the quantity and value consumed. A few extra items were added to this list for the EICV5 round, but spending on these items was not included in the totals reported here, to ensure comparability with the EICV4 and earlier surveys. The biggest single omission from spending is (home-produced) firewood, whose (implicit) cost can be as much as a third of the cost of food. While this understates household spending in an absolute sense – and may make Rwanda look poorer than it actually is, in international comparisons – it does not affect the poverty rate calculations, since the poverty line also excludes any measure of the cost of firewood. However this and other issues might be considered in the future.

Following standard practice, the measure of consumption does not include purchases of large durable goods, or exceptional items such as weddings or funerals, or non-consumption purchases such as farm inputs (Deaton et al. 2002).

Household consumption spending is divided by the number of adult equivalents in the household. Here too, we continue to use the practice of previous surveys. The adult equivalence scale used here is shown in Table 6.

Table 6. Adult Equivalence Scale

Age range	Male	Female		Age range	Male	Female
< 1 year	0.41	0.41		16-19 years	1.02	1.05
1-3 years	0.56	0.56		20-39 years	1.00	1.00
4-6 years	0.76	0.76		40-49 years	0.95	0.95
7-9 years	0.91	0.91		50-59 years	0.90	0.90
10-12 years	0.97	1.08		60-69 years	0.90	0.80
13-15 years	0.97	1.13		70 years and over	0.70	0.70

The idea behind the scale is that the cost of feeding, clothing, and sheltering an individual will vary by age and gender. Thus, an adult aged 20-39 carries a weight of 1, but a child aged 4-6 is considered to be equivalent to 0.76 of an adult. The adult equivalent scales used by different statistics offices vary widely; we have chosen to continue to use the same scale as in the past, in order to maintain comparability with previous survey results.

3.3. Deflating

Prices vary over time and space, and so it is necessary to deflate spending per adult equivalent to a single point in time, in order to compare it with a poverty line. In the analysis of the EICV4 survey, the reference point was established in January 2014, and we continue to use this for the EICV5 data. Since the results are sensitive to the way in which deflation is done, we need to describe the process in more detail.

For each month of the EICV5 survey (October 2016 to October 2017), and for each of the country's five provinces, we establish price indexes for food, and for non-food items. We use these indexes to deflate each household's spending to the base period, which is January 2014.

The raw data consist of monthly information on 6,770 prices, for urban and rural areas of each province for several hundred products, collected by the Price Statistics Division of the NISR. These are aggregated to give prices for the 120 food and 121 non-food items listed explicitly in the EICV5 questionnaire. The weights that we use to create the food and non-food price indexes are based on the pattern of consumption of these items by the poorest 40% of households surveyed by the EICV5, and generate end-weighted (Paasche) poor-person price indexes.[1] These items represent 73.2% of household consumption, and the same indexes – for food and non-food combined – are assumed to apply to the cost of the remaining items (such as education, health care, the services of durable goods, and rent) for which price data are not available. This procedure mirrors the one used for the EICV4 survey, which is acknowledged by the World Bank as being an appropriate method to use (Fatima and Yoshida 2018).

3.4. Poverty line

The main poverty line is set at RWF 159,375 per adult equivalent per year in the prices of January 2014. This is the same poverty line that was used to measure poverty in 2014 using the EICV4 data, and a detailed discussion of how the line was chosen may be found in the EICV4 Poverty Profile report.

The establishment of the poverty line follows a cost-of-basic-needs approach, which establishes a level of consumption that allows basic nutritional requirements, as well as essential non-food requirements, to be met. In 2014, a task-force established that the cost of providing 2,500 Kcals per adult equivalent per year would be RWF 105,064 (in January 2014 prices), with a diet largely based on roots and tubers. Given that households whose food consumption was within (plus or minus)10% of the food requirement spent about 66% of their income on food,

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[1] At this step, the "poorest 40%" are chosen based on the nominal level of consumption per adult equivalent.

the cost of food was grossed up to RWF 159,375 to establish the standard poverty line. The benchmark of RWF 105,064 was taken to represent the threshold of extreme poverty.

Given information on consumption per adult equivalent, and a poverty line, the simplest measure of poverty is the headcount poverty rate, which is the percentage of people living in households whose consumption per adult equivalent is below the poverty line.

The headcount poverty rate does not take into account the extent to which people fall below the poverty line, and so it is fairly common also to report the poverty depth index, which measures, for the whole sample, the average amount by which consumption falls short of the poverty line, as a fraction of the poverty line. It may be thought of as the amount that would be needed, as a proportion of the poverty line, to bring all the poor just out of poverty, if the subsidies were perfectly targeted.

Chapter 4: Trends in consumption & social economic indicators

Before looking at poverty rates, it is useful to look at the underlying trends in the underlying measures of welfare, starting with consumption per adult equivalent, and then moving on to a variety of other indicators related to education, sanitation, health, housing, energy use, and assets. A more detailed discussion can be found in a series of companion "thematic" reports.

4.1. Consumption

The principal indicator of welfare used in this report is annual consumption per adult equivalent ("real consumption"), expressed in the prices of January 2014. As shown in Table 7, median real consumption rose by 2.1% between 2014 and 2017, from RWF 187,000 to RWF 191,000. At the same time, mean real consumption for the country as a whole was slightly lower in 2017 (RWF 279,000) than in 2014 (RWF 282,000), although higher than in 2011 (RWF 265,000). The combination of a higher median and lower mean implies that the upper tail of the distribution shrunk, so the distribution of real consumption became more equal.

The national performance hides some important patterns: in all except for the top quintile, real consumption was higher in 2017 than in 2014, but the sharp drop in the reported real consumption of those in the top 20% of the consumption distribution outweighed the gains in the other quintiles.

Geographically, there was a clear rebound in real consumption in the City of Kigali between 2014 and 2017, almost no change in the Northern Province, and reductions elsewhere.

Table 7. Consumption per adult equivalent, RWF '000, 2011-2017

	EICV3	EICV4	EICV5	% change, 2014-2017
	Thousands of RWF per year			
Area of residence				
Urban	646	607	570	-6.2
Rural	198	217	216	-0.6
Province				
Kigali City	588	528	597	12.2
Southern	218	264	230	-13.7 *
Western	245	246	219	-11.7
Northern	223	229	230	0.4
Eastern	239	259	242	-6.8
Quintiles				
Q1: poor	76	85	86	0.6
Q2	123	138	140	1.4 *
Q3: middle	171	188	192	2.1 *
Q4	247	270	279	3.4 *
Q5: rich	710	734	699	-4.9
Total (mean)	265	282	279	-1.2
Total (median)	169	187	191	2.1
No. of observations	14,308	14,419	14,580	

Source: NISR, EICV3, EICV4 and EICV5. Note: * denotes change is significant at the 10% level or better.

4.2.   Other living standards indicators

Wellbeing has many dimensions in addition to real consumption. While we do not try to aggregate these other dimensions into a single index in this report, we do present some of the most important measures in the following six tables. A companion report (EICV5 Multidimensional Poverty Index) provides more details on non-monetary poverty.

Table 8 sets out three measures of educational attainment. By 2017, 86.5% of young adults (aged 15-24) were literate, just slightly above the 86.2% rate observed in 2014. It remains the case that one in seven young adults is not literate. Literacy is higher in urban areas compared to rural areas, and literacy increases with level of quintile. The fall in the literacy rate in Kigali between 2014 and 2017 might be attributed to the effect of in-migration.

Between 2014 and 2017 school attendance rates stagnated everywhere, at both the primary and secondary level. The net attendance rate measures the proportion of children in the theoretical age group who are attending the school (primary or secondary) in a given year that is appropriate for their age. Secondary school attendance rates

are more than twice as high in urban as in rural areas, and are almost five times higher for children in the richest than in the poorest quintile, a gap that widened slightly between 2014 and 2017.

Access to clean water and good sanitation are significant components of wellbeing, and some relevant statistics are shown in Table 9. Almost seven in eight Rwandans have access to improved water – whether piped, or from a tube well, a protected well or spring, or rainwater – a figure that rose somewhat between 2014 and 2017. Just 9% of homes have water piped into the home: the proportion is under 6% on average in the provinces, 35% in Kigali, and under 2% for the poorest 60% of the population. The proportion of homes reporting piped water in the City of Kigali fell between 2014 and 2017 (from 38.8% to 34.7%), probably because new homes were established faster than the number of new direct water connections.

An estimated 87.3% of Rwandans have access to improved sanitation, up from 85.0% in 2014. The proportion of poor households with access to better sanitation rose relatively quickly, closing the gap between them and rich households.

Table 8. Educational attainment

	Literacy rate, aged 15-24		Net attendance rate: primary		Net attendance rate: secondary	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
Rwanda	**86.2**	**86.5**	**87.9**	**87.6**	**22.9**	**23.2**
Provinces						
Kigali City	93.8	91.6	90.6	88.6	36.9	39.2
Southern	85.0	85.6	86.6	88.4	19.9	19.8
Western	85.3	84.4	87.2	88.2	19.9	21.6
Northern	87.2	87.7	91.7	91.2	24.2	24.6
Eastern	83.4	84.9	86.5	84.1	21.3	19.0
Area						
Urban	92.6	92.0	91.3	87.3	38.9	39.5
Rural	84.5	84.9	87.4	87.7	19.2	19.5
Quintile						
Q1: poor	77.4	77.2	82.4	80.7	10.6	8.8
Q2	85.2	83.4	87.4	87.8	16.7	15.8
Q3: middle	86.2	86.8	89.9	89.7	20.4	21.4
Q4	87.8	88.7	91.1	91.5	26.3	28.2
Q5: rich	91.1	92.5	92.2	92.8	39.8	42.6

Source: NISR, EICV4 and EICV5.

Table 9. Water and Sanitation

	Improved water		Water piped to home		Improved sanitation	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
	Percentage of individuals who live in a dwelling with:					
Rwanda	**84.8**	**87.1**	**8.3**	**9.0**	**85.0**	**87.3**
Provinces						
Kigali City	85.5	95.4	38.8	34.7	93.7	95.1
Southern	85.2	87.8	4.2	4.4	71.4	76.5
Western	84.9	86.6	5.3	5.9	87.7	89.6
Northern	90.5	87.6	3.6	5.9	88.0	87.6
Eastern	80.8	82.2	4.5	4.5	89.0	91.0
Area						
Urban	90.5	95.8	40.7	39.5	94.3	93.9
Rural	83.7	85.2	1.8	2.4	83.1	85.9
Quintile						
Q1: poor	81.2	82.2	0.3	0.2	75.1	78.3
Q2	82.0	85.0	0.9	1.2	79.5	83.1
Q3: middle	84.6	87.5	1.6	1.9	86.0	88.3
Q4	85.7	87.4	6.5	6.4	88.9	91.3
Q5: rich	90.6	93.1	32.2	35.2	95.4	95.5

Sources: NISR: EICV4 and EICV5. Note: Computed using population weights

By any standard, good health is an essential component of wellbeing, and Table 10 documents the evolution of some relevant measures. Of those who reported falling ill, 56.9% said they got medical attention in 2017, up from 55.9% in 2014. The proportion of people covered by health insurance rose by four percentage points to 74%, with gains in almost all areas and across all income groups. The time required to get to a health center from one's home fell significantly, from 56 to 50 minutes, with especially large reductions in rural areas and for poor households.

Table 10. Health

	Mean time (minutes) to health centre		% with health insurance		Made medical consultation	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
Rwanda	**56.5**	**49.9**	**70.0**	**73.9**	**55.9**	**56.9**
Provinces						
Kigali City	42.5	31.4	69.7	76.8	58.0	59.2
Southern	57.6	56.2	66.4	68.9	54.4	55.6
Western	57.1	53.6	64.8	72.2	44.2	49.1
Northern	56.9	43.1	76.0	83.8	60.0	58.1
Eastern	60.0	55.1	74.1	72.5	65.1	62.8
Area						
Urban	31.2	33.0	73.8	79.5	62.1	59.7
Rural	61.2	53.5	69.2	72.7	54.8	56.4
Quintile						
Q1	63.4	55.5	56.7	60.7	43.0	47.5
Q2	60.5	54.4	64.0	67.0	51.8	52.7
Q3	59.2	52.2	68.6	73.6	54.8	56.3
Q4	55.2	50.2	75.9	80.2	61.6	62.6
Q5	43.2	40.3	83.8	87.3	67.8	66.1

Source: NISR, EICV4 and EICV5.

Most households cook with wood, but the proportion of people who live in households that use charcoal or cleaner fuels (such as gas or electricity) rose from 13.9% in 2014 to 16.0% in 2017, with the largest gains in the City of Kigali and among better-off households. There was a dramatic change in the proportion of people living in households getting electricity either from the national grid or from solar panels, up from 22% in 2014 to 36% in 2017. Most of the increase represents an expansion of the use of solar panels, with especially large gains in rural areas, and in the Southern and Western provinces. Despite the changes, a large gap remains between those in poor households (10% have electricity) and those in the top quintile (where 76% have electricity). Table 11 also shows that fewer people are remote: 93.1% are within 20 minutes of an all-weather road, compared to 87.7% in 2014. Most of the improvement was experienced by poor households, and in every consumption group at least 90% of individuals are "near" an all-weather road.

Table 11. Energy sources and remoteness

	Electricity from grid or solar panels		Charcoal or better		Road < 20 minutes away	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
	Percentage of individuals					
Rwanda	**21.7**	**35.5**	**13.9**	**16.0**	**87.7**	**93.1**
Provinces						
Kigali City	73.6	79.6	70.3	73.5	97.9	98.7
Southern	11.5	24.8	5.1	5.4	88.9	93.4
Western	19.1	34.6	10.8	11.3	79.0	86.7
Northern	12.7	24.8	4.8	6.6	84.6	88.5
Eastern	16.7	29.7	6.2	5.8	91.9	98.7
Area						
Urban	72.3	75.5	65.8	68.0	98.0	97.7
Rural	11.7	26.8	3.6	4.8	85.6	92.2
Quintile						
Q1: poor	4.0	10.2	1.7	1.3	83.4	91.0
Q2	8.6	19.2	4.1	4.1	84.7	90.6
Q3: middle	12.8	28.8	6.5	7.5	87.3	92.6
Q4	24.0	43.7	14.4	14.4	88.4	94.5
Q5: rich	59.4	75.6	43.1	52.9	94.8	97.1

Sources: NISR: EICV4 and EICV5. Note: Computed using population weights

The quality of dwellings continues to improve. Three relevant measures are summarized in Table 12. By 2017, 66% of people lived in a house with a corrugated iron roof (or better, such as tiles), up from 61% in 2014. Such roofs are almost universal in the city of Kigali and in the Eastern province, but are gaining ground elsewhere, and among all sectors of the population. Modern floors – mainly cement, but also tiles and bricks – are also becoming more common, and are used by 28% of the population, compared to 24% in 2014. Again, the progress is occurring across the board – in all regions, and across all income groups. The final columns of table 12 show that umudugudu settlement continues to expand, and now covers 61% of the population, which is substantially higher than the 50% coverage in 2014.

Table 12. Quality of dwelling

	Corrugated iron roof		Modern floor		Umudugudu	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
	Percentage of individuals who live in a house with:					
Rwanda	**61.1**	**66.4**	**23.5**	**28.4**	**50.0**	**60.6**
Provinces						
Kigali City	98.8	98.8	68.8	73.4	2.8	4.9
Southern	18.4	26.1	19.9	23.6	51.8	57.2
Western	48.7	52.4	15.5	19.5	43.2	60.1
Northern	57.8	68.0	14.7	19.5	42.9	69.3
Eastern	95.8	98.0	19.9	23.0	78.6	87.7
Area						
Urban	88.2	90.6	68.1	71.9	18.7	28.6
Rural	55.7	61.2	14.6	19.0	56.3	67.5
Quintile						
Q1: poor	55.7	57.5	4.3	6.1	52.8	67.1
Q2	53.9	57.8	7.8	12.5	53.4	63.9
Q3: middle	57.0	61.3	13.5	19.0	53.5	65.0
Q4	62.0	70.7	27.1	32.9	50.3	62.3
Q5: rich	76.9	84.8	64.9	71.7	40.2	44.5

Sources: NISR: EICV4 and EICV5. Note: Computed using population weights

The last set of complementary information on living standards is summarized in Table 13, and details the proportion of people living in households owning a phone, TV, or computer. Phone ownership continues to rise, but slowly, and while over 90% of high-income individuals live in households that have a phone, the figure for those in the lowest quintile is 48%. Television ownership has risen only slightly, with all of the increase occurring in rural areas. And only one person in thirty lives in a household that owns a computer, which is a modest increase over the situation observed in 2014. Computer ownership is almost entirely concentrated among households in the richest quintile of the population.

Table 13. Assets owned

	Own a phone		Own a TV		Own a computer	
	EICV4	EICV5	EICV4	EICV5	EICV4	EICV5
	Percentage of individuals in households that:					
Rwanda	68.0	71.0	10.9	11.6	2.7	3.3
Provinces						
Kigali City	91.7	90.8	49.0	42.7	13.9	14.6
Southern	58.7	63.0	5.3	6.3	1.3	1.7
Western	63.4	69.5	7.4	7.9	1.4	1.2
Northern	66.3	70.5	4.7	6.9	1.3	2.4
Eastern	71.4	69.7	6.6	6.6	1.1	1.5
Area						
Urban	90.1	90.6	46.0	40.7	13.1	13.9
Rural	63.6	66.8	3.9	5.3	0.6	1.1
Quintile						
Q1: poor	42.2	48.4	0.4	0.4	0.0	0.0
Q2	58.8	61.1	1.2	1.9	0.0	0.2
Q3: middle	68.2	71.0	2.6	2.9	0.2	0.3
Q4	79.2	81.5	9.7	10.1	0.7	1.0
Q5: rich	91.8	93.0	40.8	42.9	12.6	15.2

Sources: NISR: EICV4 and EICV5. Note: Computed using population weights

Chapter 5: Poverty Levels and Trends

The current chapter discuss the measurement of monetary poverty. The concept is straightforward: a person is poor if their level of consumption per adult equivalent falls below the poverty line.

As discussed in Section 3.4 above, the main poverty line is set at RWF 159,375 per adult equivalent per year in the prices of January 2014. This is the same poverty line that was used to measure poverty in 2014 using the EICV4 data, and a detailed discussion of how the line was chosen may be found in the EICV4 poverty profile report.

Extreme poverty is measured using a poverty line of RWF 105,064 per adult equivalent per year, again in the prices of January 2014. This is the cost of buying enough food to provide an adequate number of calories, with a diet that reflects the observed behavior of poor households, but it does not make any allowance for non-food spending.

5.1. Essential poverty data

The key finding from the EICV5 survey is that the headcount poverty rate – which measures the percentage of people who are poor – was 38.2% in 2017. This is slightly lower than the poverty rate of 39.1% observed in 2014, however, the difference between the poverty rates of 2014 and 2017 is statistically insignificant. The trend of poverty, though the five EICV surveys that have been undertaken since 2001, is shown in Figure 4.

Figure 4. Headcount poverty rate (%) over time: EICV1 - EICV5
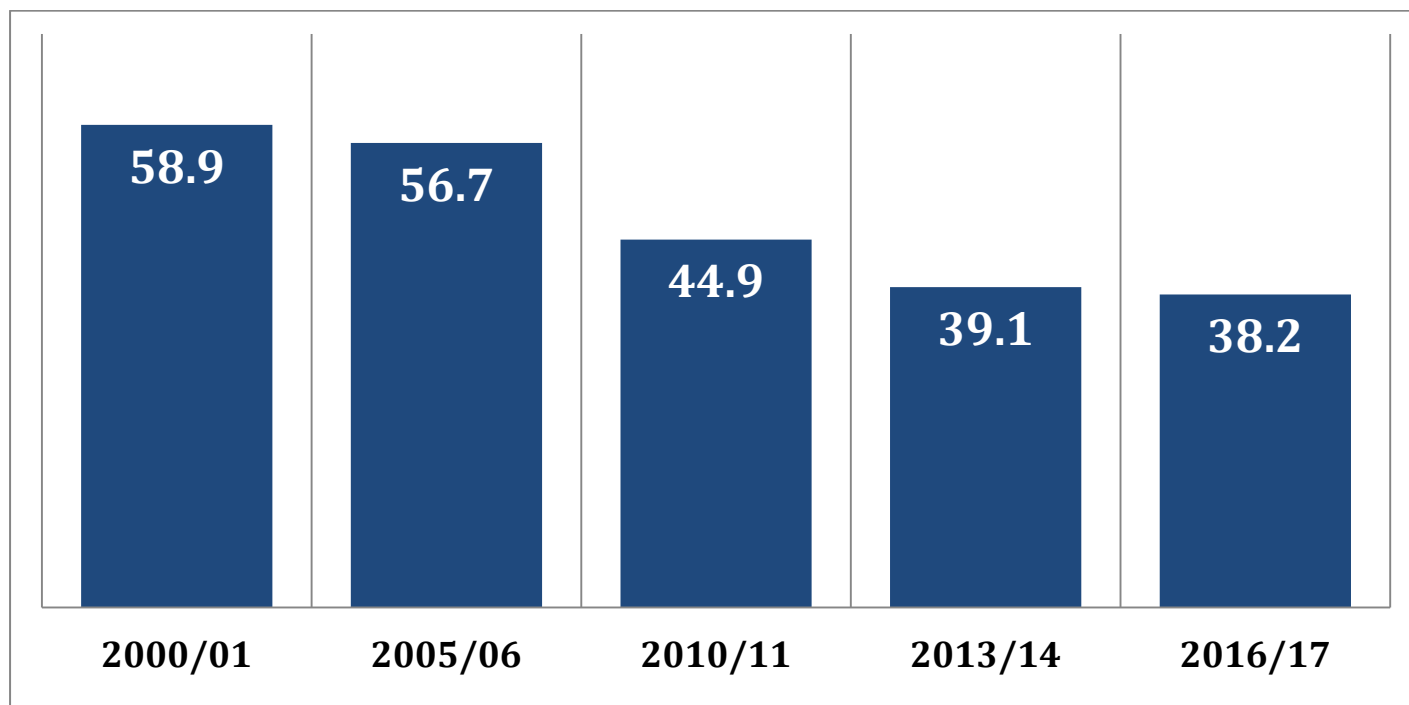
Sources: NISR, EICV1, EICV2, EICV3, EICV4 and EICV5

The poverty gap measure measures the average (over the whole population) of the amount by which consumption per adult equivalent falls below the poverty line, as a proportion of the poverty line. This measure stood at 0,117 in 2017, down (but not significantly) from 0.120 in 2014, but significantly below the value of 0.148 observed in 2011.

Further details about poverty rates are shown in Table 16, where we see that that the extreme poverty rate fell from 16.3% in 2014 to 16.0% in 2017.

The changes in the poverty rates between 2014 and 2017 – a drop of 0.9 percentage points in total poverty and of 0.4 percentage points in extreme poverty – are not statistically significant. This may be seen in the relatively large standard errors associated with these reductions.

5.2.   Poverty Transitions

In addition to the 14,580 households interviewed as part of the EICV5 cross-section, a further 2,427 households were interviewed, using the same questionnaire, as part of a panel study. The panel households were first identified randomly as part of the EICV3 survey; under EICV4, those households were re-interviewed, including the "splits" that occurred when a member of one of the original households left to establish a new household; and in 2017, the original households and all the subsequent splits were interviewed again. These EICV5 panel data are distinct for the EICV5 cross-section data, and when suitably weighted, allow us to verify the change in poverty over time, as well as to examine how individuals move out of and into poverty.

For 2011, the poverty rates for the cross-section and panel data were almost identical, as Table 14 shows. For both sources, the poverty rate fell significantly by 2014. The reduction in the headcount poverty rate between 2014 and 2017 was 0.9 percentage points according to the cross-section data, and 1.4 percentage points based on the panel data. The differences are well within the margin of sampling error, and both show only a modest (and not statistically significant) reduction in poverty during the latter period.

Table 14. Poverty Rates from Cross-Section and Panel Survey Data

	EICV3: 2010/11	EICV4: 2013/14	EICV5: 2016/17
Headcount Poverty rate			
Cross-section data	44.9*	39.1*	38.2
Panel data	44.8	38.1	36.7
Poverty Gap rate			
Cross-section data	14.8*	12.0*	11.7
Panel data	15.1	11.7	10.8
Sample size			
Cross-section data	14,308*	14,419*	14,580
Panel data	1,996	2,432	2,427

Sources: NISR: EICV3, EICV4 and EICV5. Note: * includes panel sample.

The panel data allow us to identify who transitions into and out of poverty, and the relevant information is shown in Table 15. Almost a quarter of people were poor both in 2014 and 2017, and a half were poor in neither period. An estimated 13.4% moved out of poverty, while 11.7% fell into poverty, during this period, implying that somewhat fewer people were poor in 2017 than in 2014.

Table 15. Transition Matrix of Movements into and out of Poverty

		EICV5: 2016/17	
		Poor	Not poor
EICV4: 2013/14	Poor	24.6	13.4
	Not poor	11.7	50.2

Source: NISR, EICV4 and EICV5 panel surveys.

Note: Matrix uses EICV4 population weights, so total poverty rates correspond to the EICV4 rates shown in Table 10 (up to a rounding error).

The panel data set is a rich source of information on how the economic and social experience of households changes over time, and is analyzed in much greater detail in the companion *Rwanda Panel Report 2010/11 – 2016/17*.

5.3. Geographic Pattern of Poverty

Geographically, the poverty rate fell substantially in the city of Kigali, and somewhat in Northern Province, but rose in the Southern and Western provinces, as Table 16 shows.

Table 16. Poverty Headcount Rates by Province

	Total Poverty				Extreme Poverty		
	2014 (EICV4)	2017 (EICV5)	Change % points		2014 (EICV4)	2017 (EICV5)	Change % points
	Percentages						
Nationally							
Rwanda	**39.1**	**38.2**	**-0.9**		**16.3**	**16.0**	**-0.4**
Standard error	*0.62*	*0.61*	*0.87*		*0.47*	*0.45*	*0.64*
Area of Residence							
Urban	15.9	15.8	0.0		5.5	5.9	0.4
Rural	43.7	43.1	-0.7		18.5	18.1	-0.4
Province							
Kigali City	20.9	13.9	-6.9 *		9.4	4.2	-5.2 *
Southern	38.4	41.4	3.1		12.9	16.9	4.0 *
Western	45.2	47.1	1.9		21.5	21.6	0.1
Northern	45.9	42.3	-3.6		20.1	17.4	-2.8
Eastern	38.0	37.4	-0.6		15.5	15.3	-0.2

Sources: NISR, EICV4 and EICV5

Note: * indicates change in poverty rate is statistically significant at 10% level of significance. Totals may not add up exactly due to rounding errors. Based on responses from 14,149 households for EICV4 and 14,580 households for EICV5.

Another way of presenting these numbers is by asking where the country's poor people are located. Table 17 shows that while 18% of the population lives in urban areas, only 7% of the poor are in towns and cities, with the remaining 93% in rural areas. The city of Kigali has 13% of the population but only 5% of the poor.

Table 17. Poverty by Geographic Domain

	Distribution of the poor				Distribution of the population		
	2014 (EICV4)	2017 (EICV5)	Change % points		2014 (EICV4)	2017 (EICV5)	Change % points
				Percentages			
Nationally							
Rwanda	100	100	0.0		100	100	0.0
Area of Residence							
Urban	6.8	7.4	0.8		16.7	17.8	1.1
Rural	93.2	92.6	-0.8		83.3	82.2	-1.1
Province							
Kigali City	5.9	4.8	-1.1		11.1	13.2	2.1
Southern	22.9	25.1	2.2		23.3	23.2	-0.1
Western	27.0	28.1	1.1		23.3	22.8	-0.5
Northern	18.6	17.3	-1.3		15.9	15.6	-0.3
Eastern	25.6	24.7	-0.9		26.4	25.3	-1.1

Sources: NISR, EICV4 and EICV5

Poverty rates and the distribution of the poor are very important for targeting purposes. A government intervention that helps the rural population would help 93% of the poor; on the other hand, 57% of the benefits would go to the non-poor, since the rural poverty rate is 43%.

Another useful way to look at this is to note that of the national poverty rate of 38.2%, just 2.8 percentage points are attributable to urban poverty, while the remaining 35.4 percentage points are due to rural poverty, as Table 18 clearly shows.

Table 18. Contribution to poverty of urban and rural areas

	Poverty rate	Population share	Absolute contribution	Relative contribution
	(1)	(2)	(3)	(4)
Urban	15.8	17.8	2.8	7.4
Rural	43.1	82.2	35.4	92.6
All Rwanda	38.2	100.0	38.2	100.0

Source: NISR, EICV5. Note: Figures in column (3) result from multiplying columns (1) and (2).

5.4. Poverty by Geographical location

The geographic dimension of poverty is evident in the maps shown in Figure 5 and Figure 6. The first of these maps shows the total poverty rate by district, while the second shows the extreme poverty rate. Areas with low poverty are shown in light red, while those with high poverty are displayed in dark red. The low poverty rates in the city of Kigali and Rwamagana district are evident, as are the relatively high poverty rates in Nyamasheke district as well as in Nyaruguru and Gisagara districts.

Figure 5. Poverty rates by district, 2017
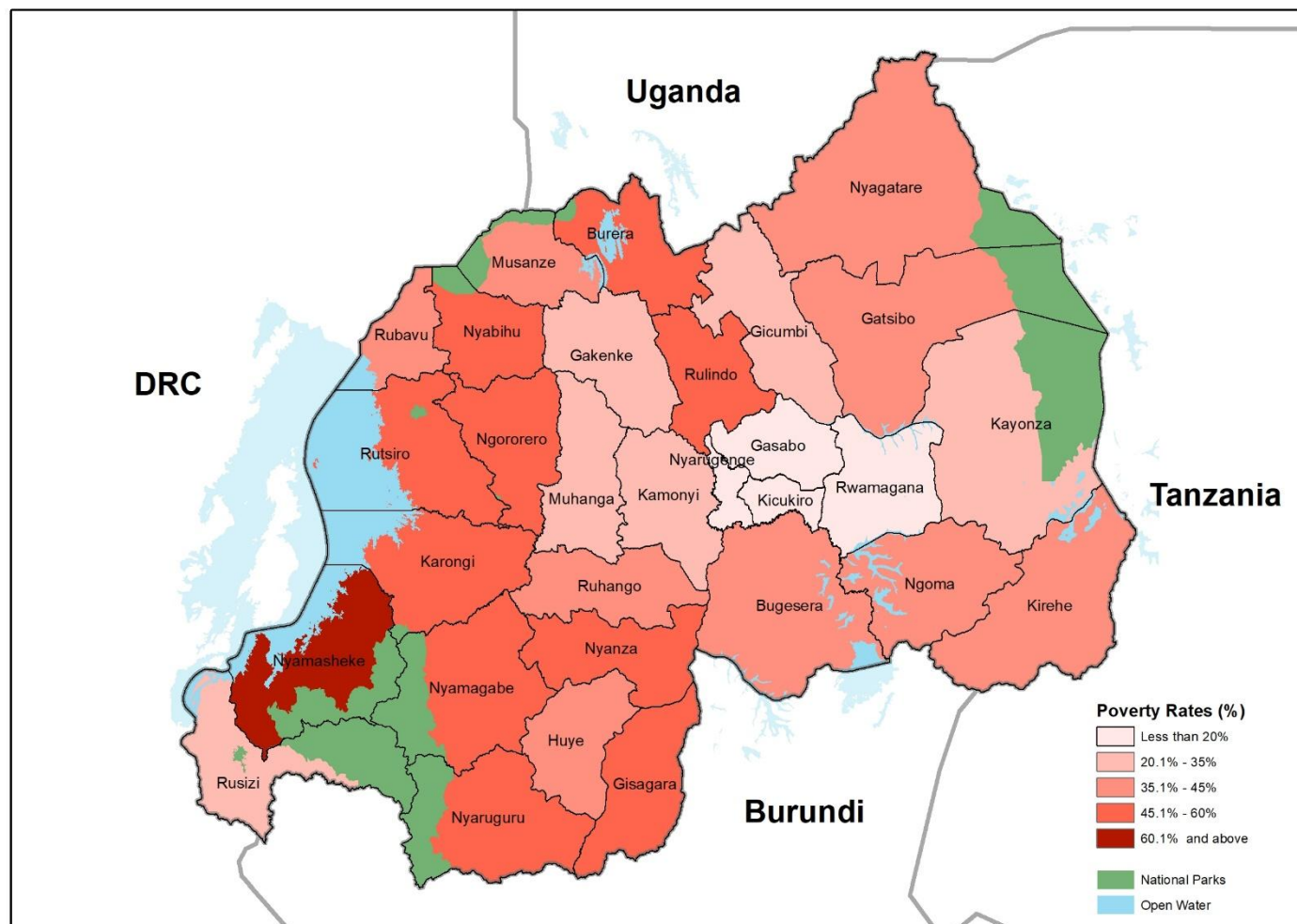
Source: NISR, EICV5

Figure 6. Extreme poverty rates by district, 2017
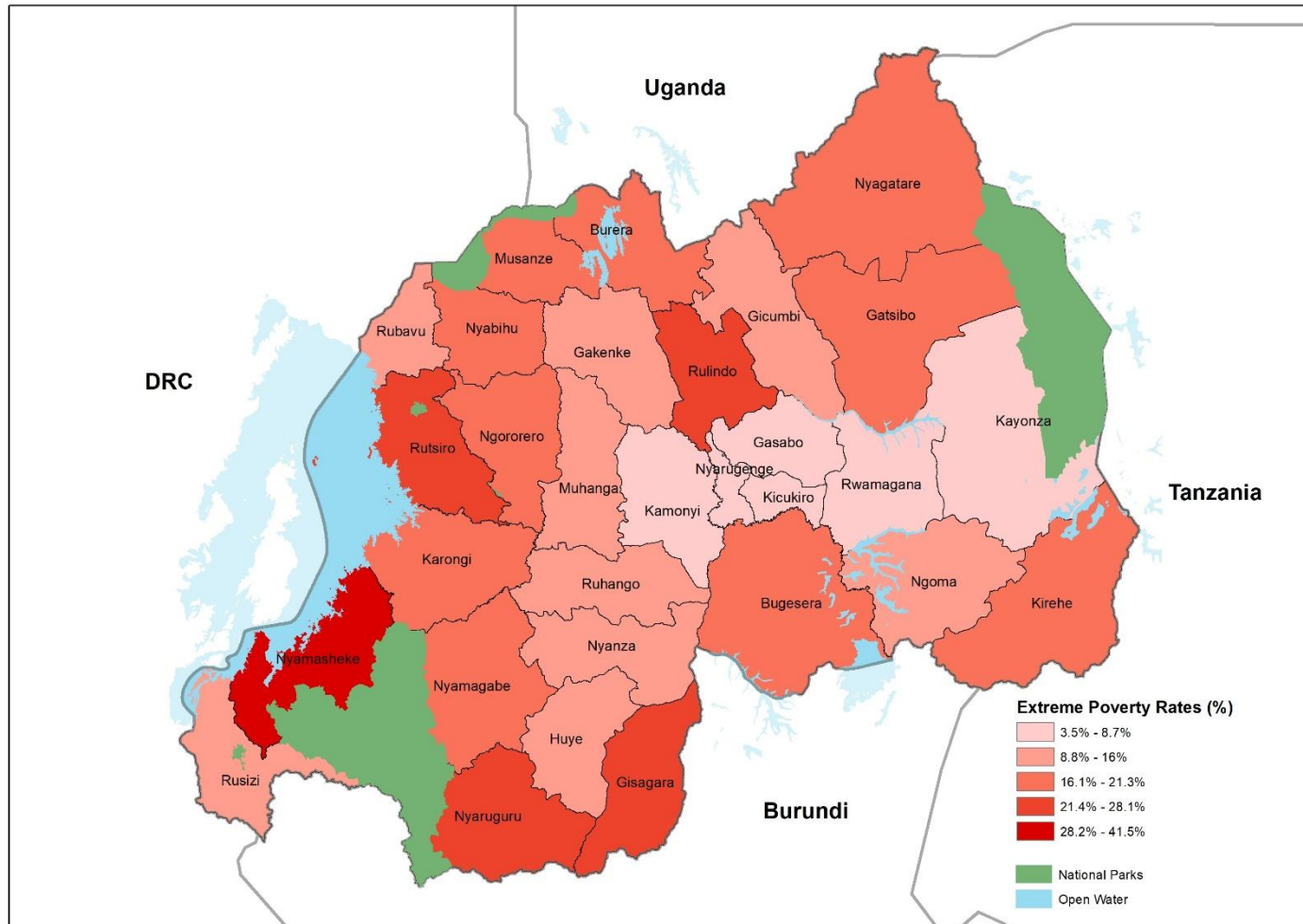
Source: NISR, EICV5

Figure 7 and Figure 8 provide information on the reliability of the poverty measures. The length of horizontal bars measures the percentage of the population that is poor; the top (light red) bars refer to 2017, and the dark red bars to 2014. The small lines at the end of the bars show the 95% confidence intervals of the poverty rates; while sampling error inevitably implies some uncertainty about the true poverty rate, we are 95% confident that the

poverty rate lies within the bars. When the small bars of two consecutive years overlap, we cannot be confident that there has been a change in the poverty rate between the two periods.

Nationally poverty clearly fell between 2011 and 2014, but as noted above, the reduction between 2014 and 2017 is not statistically significant, as is clear from Figure 7. The poverty rate in urban areas has not changed much since 2011, but in rural areas it clearly fell between 2011 and 2014, without falling further since then. At the provincial level, there are no statistically significant changes in poverty between 2014 and 2017 – it is a relatively short interval in which to observe such changes – but the EICV5 data confirm the reductions in poverty rates in the city of Kigali and all the provinces except Western Province, where the changes fall within the margin of sampling error.

A similar exercise is done in Figure 8, this time for the country's thirty districts. Because the sample sizes are relatively small at the district level, the confidence interval bands are relatively wide, and so it is difficult to determine whether there has been statistically significant change over time. However, it is clear that the poverty rate in some districts, most notably Kicukiro, Nyarungenge, and Gasabo, is relatively low (below 15%), while in some it is very high, reaching close to 70% in Nyamasheke.

Figure 7. Confidence Intervals for Poverty Rates, National, Urban/Rural, and Provincial
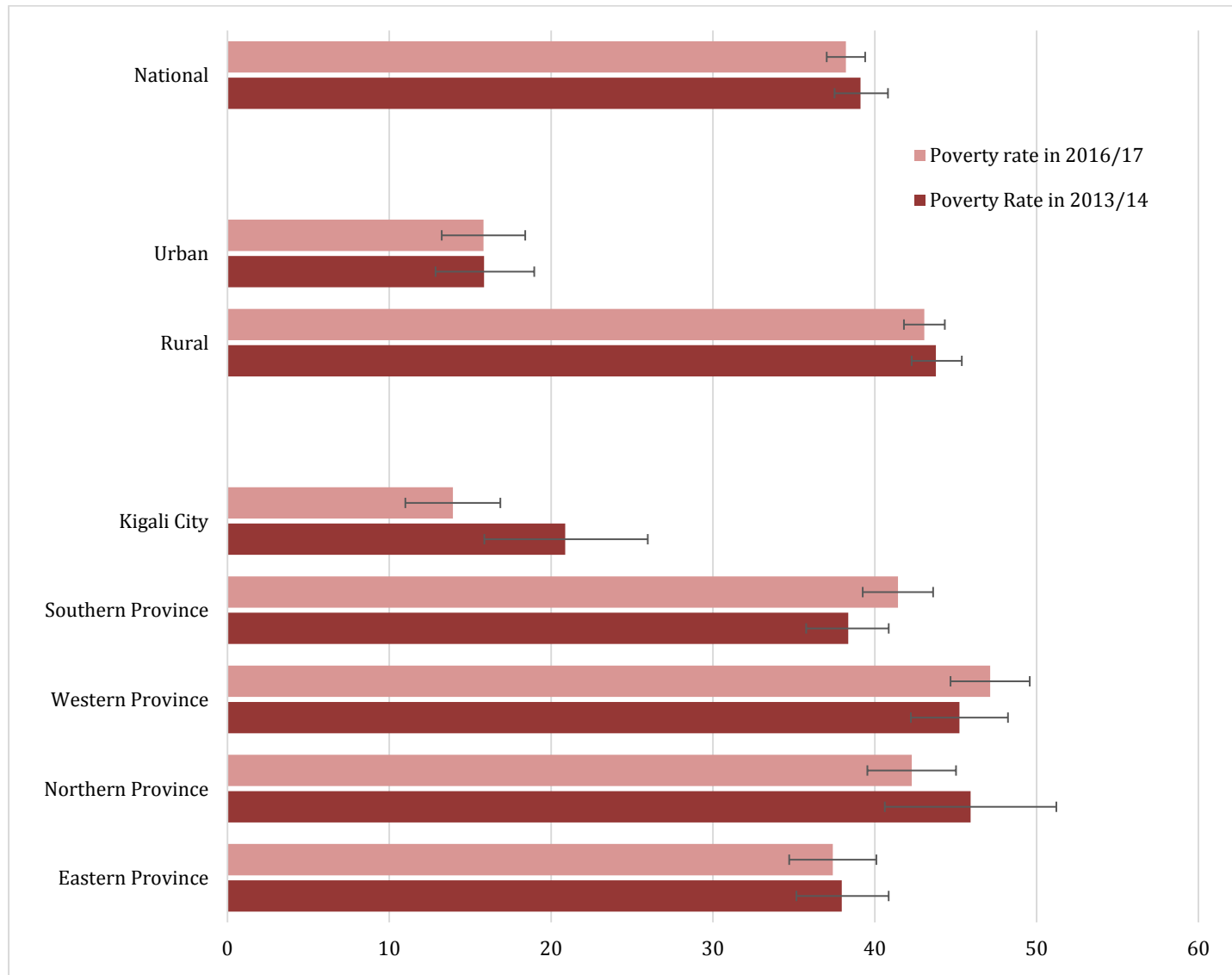
Sources: NISR, EICV4 and EICV5

Figure 8. Confidence Intervals for Poverty Rates at the District Level
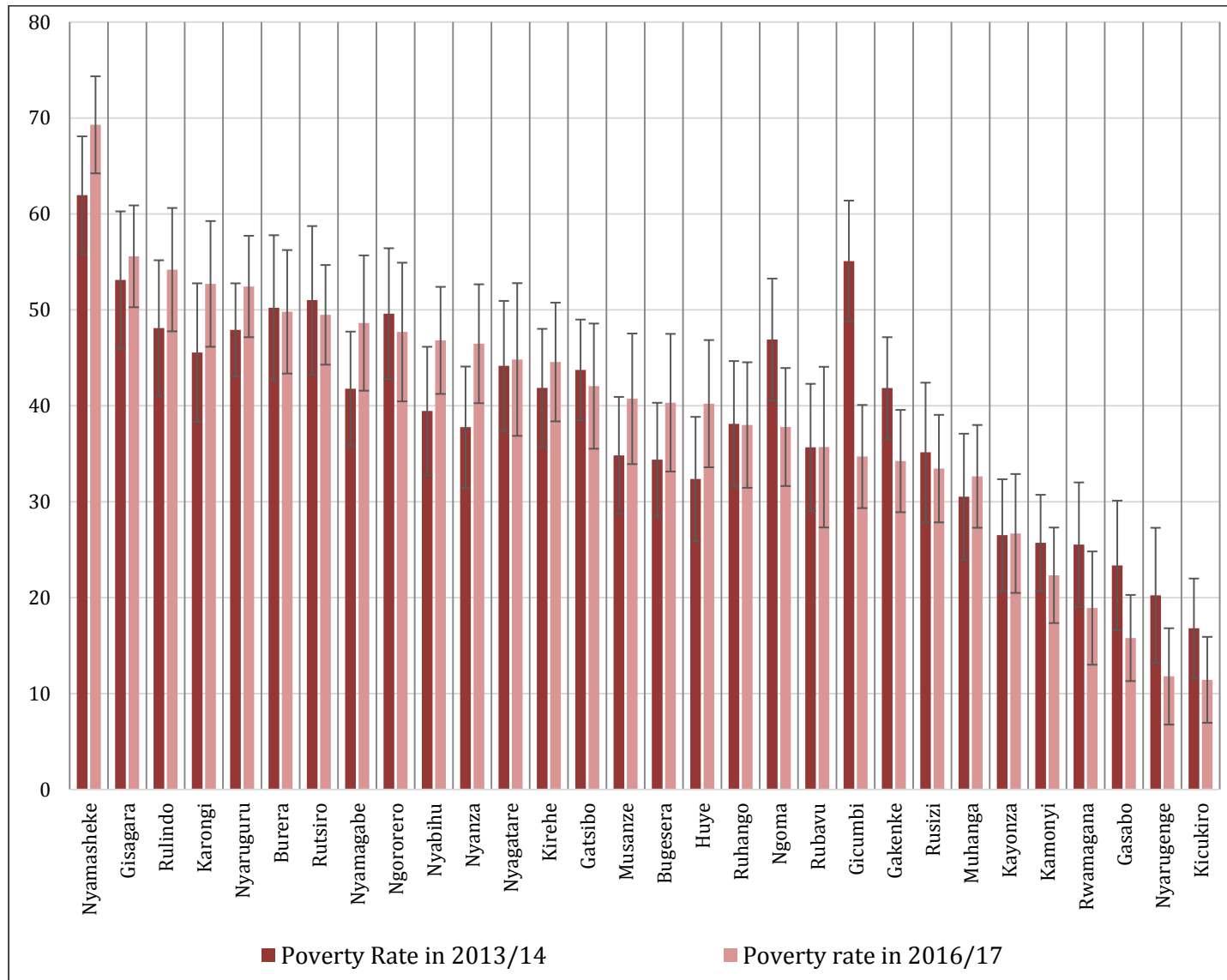
Sources: NISR, EICV4 and EICV5

5.5. Dominance analysis

It has been observed that between 2014 and 2017 there was a modest – but not statistically significant – reduction in the poverty rate, whether one uses the standard poverty line, or the extreme poverty line. It is important to note that the trends in poverty we are observing do not depend on the set poverty line.

To examine this, poverty incidence curves for 2014 and 2017 were used. The curves are constructed as follows: On the horizontal axis, put the level of real consumption per adult equivalent. Then on the vertical axis graph the percentage of people who are at or below each level of real consumption. For instance, in Figure 9, about 15% of people consume less than RWF 100,000 per year; and about 50% consume less than RWF 200,000 per year. Technically speaking, this is a cumulative density function of real consumption.

The graph allows one to see what percentage of people are poor, for any given level of real consumption. The extreme and standard poverty lines are shown in Figure 9 as vertical lines, and we can read from the graph that these give poverty rates of 16.0% and 38.2% respectively.

There are two curves in Figure 9: the solid curve refers to 2017 (i.e. EICV5), and the dashed curve to 2014 (EICV4). One can see that the curve for 2017 is (just) below that of 2014, which means that for any poverty line that might be chosen on the horizontal axis, the poverty rate in 2017 was lower than in 2014. This is a case of first order stochastic dominance. Appendix 1 graphs a poverty deficit curve, which shows that there is second-order stochastic dominance too: at any reasonable poverty line, the observed poverty gap rate was lower in 2017 than in 2014, although the difference is not statistically significant.

Figure 10 shows the poverty incidence curves separately for urban and rural areas. Whether poverty has risen or fallen in urban areas depends on what poverty line is used: using a poverty line of RWF 75,000 per adult equivalent, poverty has risen, as the dashed line is below the solid line, so fewer people were poor by this standard in 2014 than in 2017. If one were to use a poverty line of RWF 175,000, then one would conclude that urban poverty fell between 2014 and 2017, because the solid line is below the dashed line. However, the changes between 2014 and 2017 are not large enough to be statistically significant, and the main lessons from the incidence curves is that this conclusion holds for any reasonable poverty line.

Figure 9. Poverty Incidence Curve for Rwanda, 2013/14 (EICV4) and 2016/17 (EICV5)
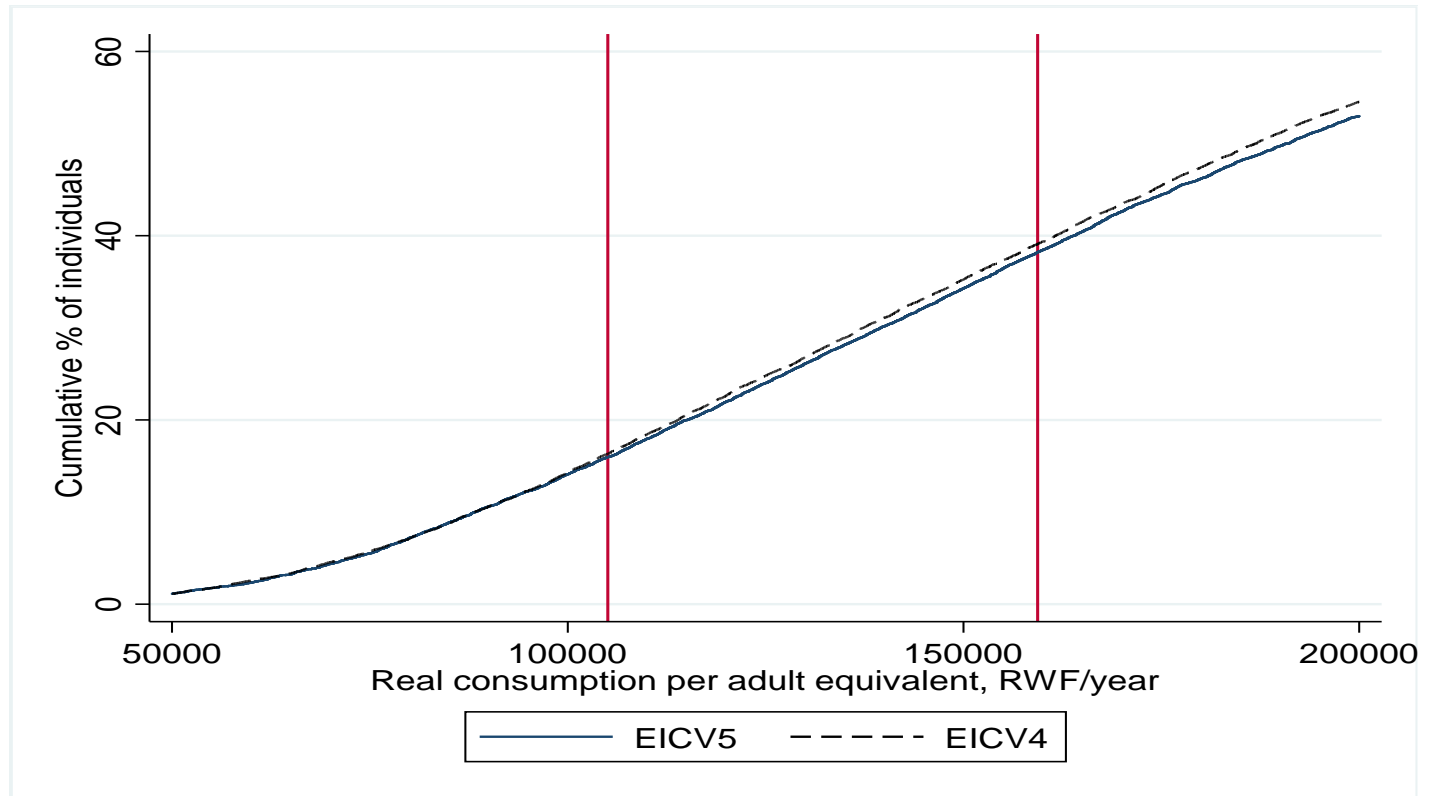
Sources: NISR, EICV4 and EICV5

Figure 10. Poverty Incidence Curves for Urban Areas (left) and Rural Areas (right), 2013/14 (EICV4) and 2016/17 (EICV5)
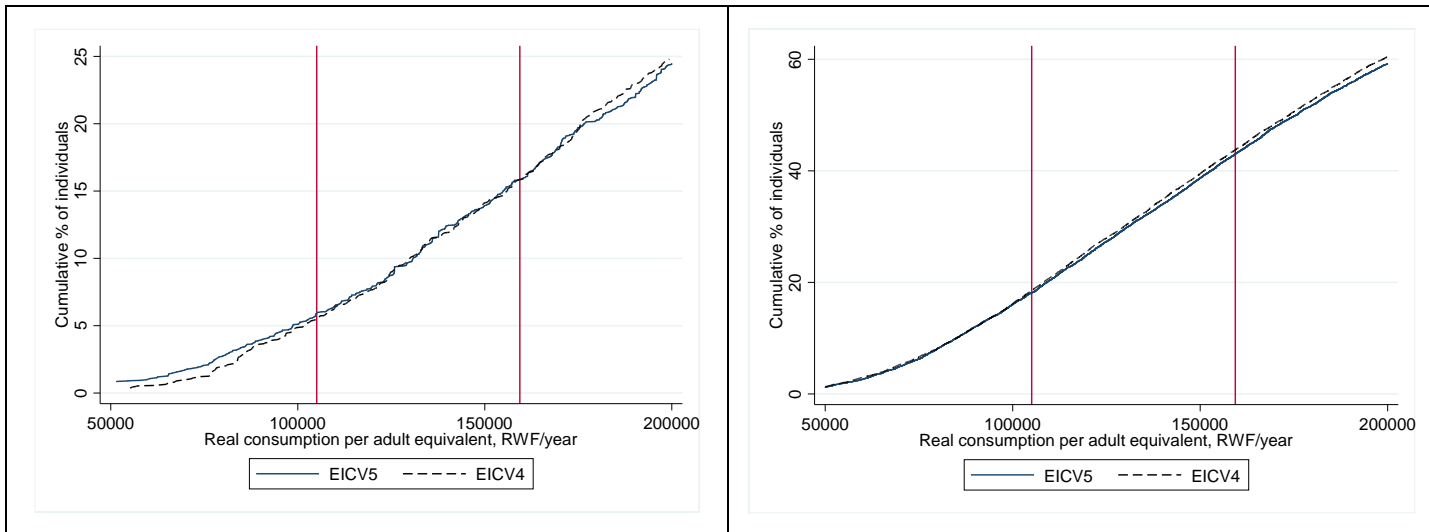
Sources: NISR, EICV4 and EICV5.   Note: Vertical scale is more condensed for the right-hand panel.

Chapter 6: Inequality

Although the main focus of this report is on the measurement of poverty, it is also possible to measure the extent of economic inequality using data from the EICV surveys.

One of the most popular measures of inequality is the Gini coefficient, which varies from 0 (perfect equality) to 1 (complete inequality). The top row in Table 19 shows that the Gini coefficient for consumption per adult equivalent fell from 0.447 in 2014 to 0.429 in 2017, meaning that there was a reduction in inequality; the drop is almost, but not quite, statistically significant at the 90% level of significance, as may be seen from the fact that the confidence intervals shown in the second row of Table 19 do not quite intersect. Although real consumption did not rise much (see section 2.1 above), inequality fell because the real consumption of those in the top quintile fell, while it rose in the other quintiles, in effect shrinking the gap between rich and poor.

Economic inequality may occur because there is a gap between real consumption in rural and urban areas (the "urban-rural divide"), and because there is inequality within urban and within rural areas. When inequality changes nationwide, it is useful to know how much of the change is because of a greater urban-rural gap ("between" inequality), and how much is because inequality has changed within the urban or rural areas ("within" inequality).

The decomposition of changes in inequality into within and between effects can be done exactly using Theil's T statistic.[2]. This is a measure of inequality that, like the Gini coefficient, ranges from 0 (perfect equality) to 1 (complete inequality). Table 19 shows that between 2014 and 2017, Theil's T fell from 0.442 to 0.374, confirming the reduction in inequality discussed earlier. Over this period, inequality within urban areas decreased (0.533 to 0.417), as did rural inequality (0.225 to 0.198). About a quarter of all inequality is simply due to the urban-rural gap, but this gap shrank somewhat between 2014 and 2017: of the 0.068 reduction in Theil's T, 0.010 was due to a smaller urban-rural divide, and 0.058 because of lower inequality within urban and rural areas. It would appear that rural areas were not being left behind by the country's economic development over the past few years.

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[2] The Gini coefficient can be decomposed to show the effects of changes in income, but does not allow an exact decomposition of the geographic effects on consumption inequality.

Table 19. Decomposition of inequality (expenditure per adult equivalent) by area, 2014-2017

	2014	2017	Change
Gini coefficient			
Estimate	0.447	0.429	-0.018
95% confidence interval	0.436-0.459	0.420-0.438	
Theil's T [= GE(1)]			
All Rwanda	0.442	0.374	-0.068
Urban	0.533	0.417	-0.116
Rural	0.225	0.198	-0.027
Decomposition:			
"within" inequality	0.335	0.277	-0.058
"between" inequality	0.107	0.097	-0.010
Memo: "between" inequality as % of total inequality	24%	26%	

Sources: NISR, EICV4 and EICV5, using real consumption per adult equivalent as the measure of welfare

Chapter7: Factors affecting changes in poverty

7.1. Growth in real consumption

As shown above, between 2014 and 2017, real consumption shrank for those in the top quintile while rising for all other groups. A good way to show this effect visually, and in more detail, is with a growth incidence curve, given in Figure 11 for the whole country. This shows the growth of real consumption by centile – i.e. for each one percent of the distribution. So, for instance, real consumption for those in the 17th percentile in 2017 was about 1% higher than for those in the 17th percentile in 2014.

The growth incidence curve in Figure 11 starts low, slopes gently upwards, and then plunges at the very top of the distribution. The very modest increase in real consumption at the bottom of the distribution help explain why poverty fell so little between 2014 and 2017. The consumption gains were greater in the mid-to-upper range, while falling sharply at the very top.

Figure 12 and Figure 13 present growth incidence curves separately for urban and rural areas. The patterns are not the same: in urban areas, there were substantial gains in real consumption for those in the middle of the distribution, but an apparent substantial drop in consumption for those in the top fifth and bottom tenth of the distribution. In rural areas, the growth in real consumption was more evenly distributed across centiles, with the exception of a drop at the very top of the distribution.

Figure 11. Growth incidence curve, Rwanda, 2017
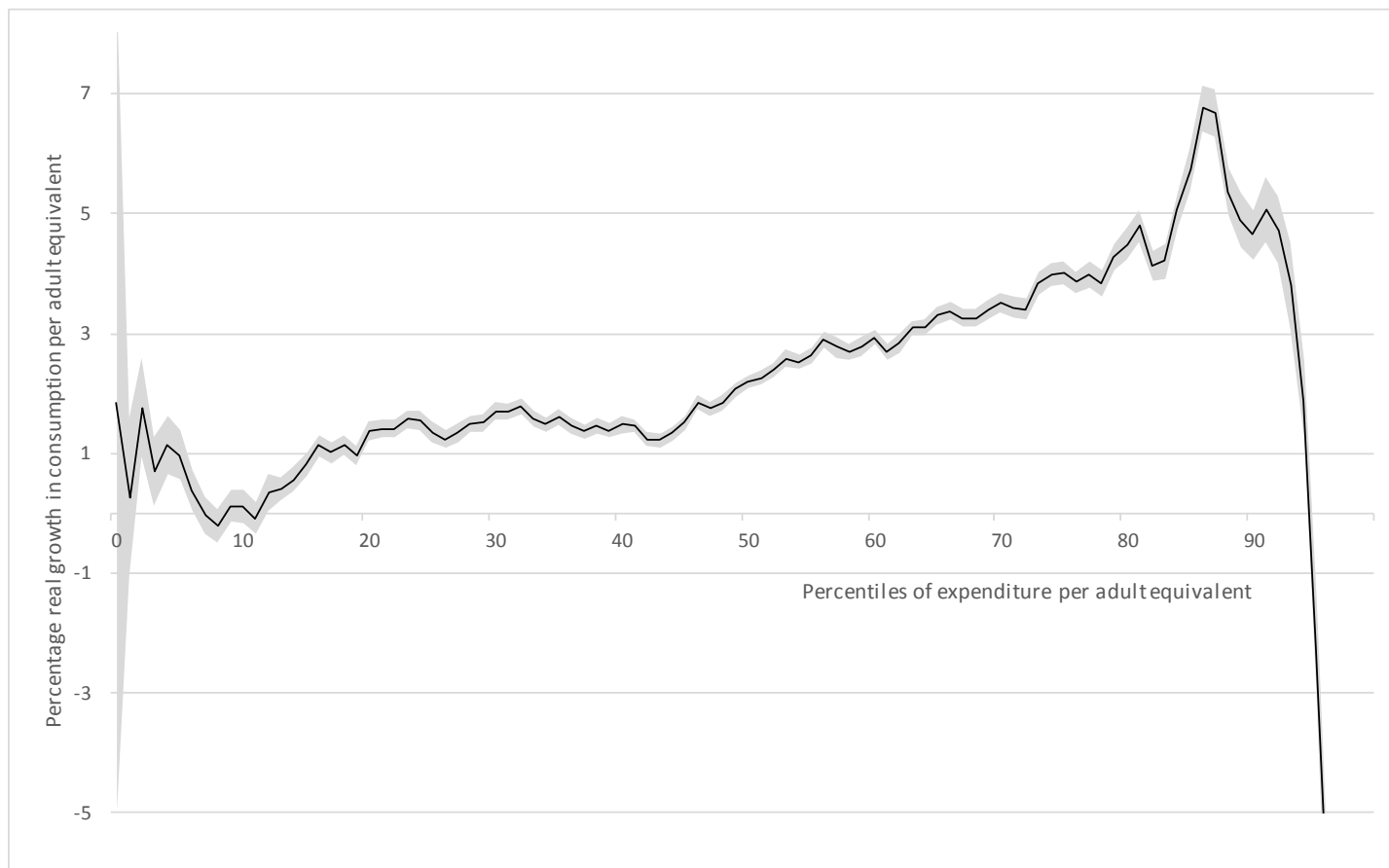
Sources: NISR, EICV5

Figure 12. Growth incidence curve, rural areas, 2017
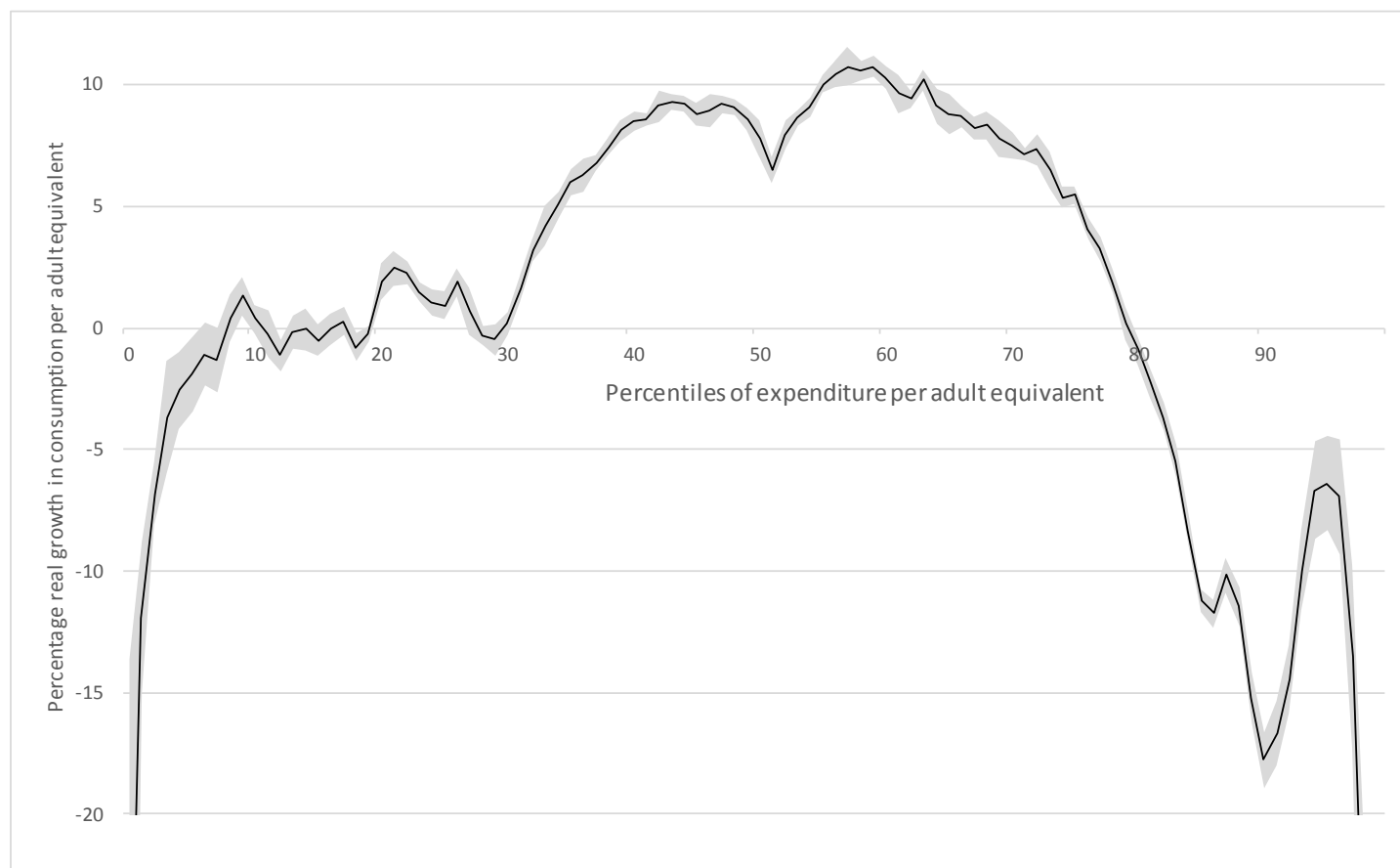
Sources: NISR, EICV5

Figure 13. Growth incidence curve, urban areas, 2017
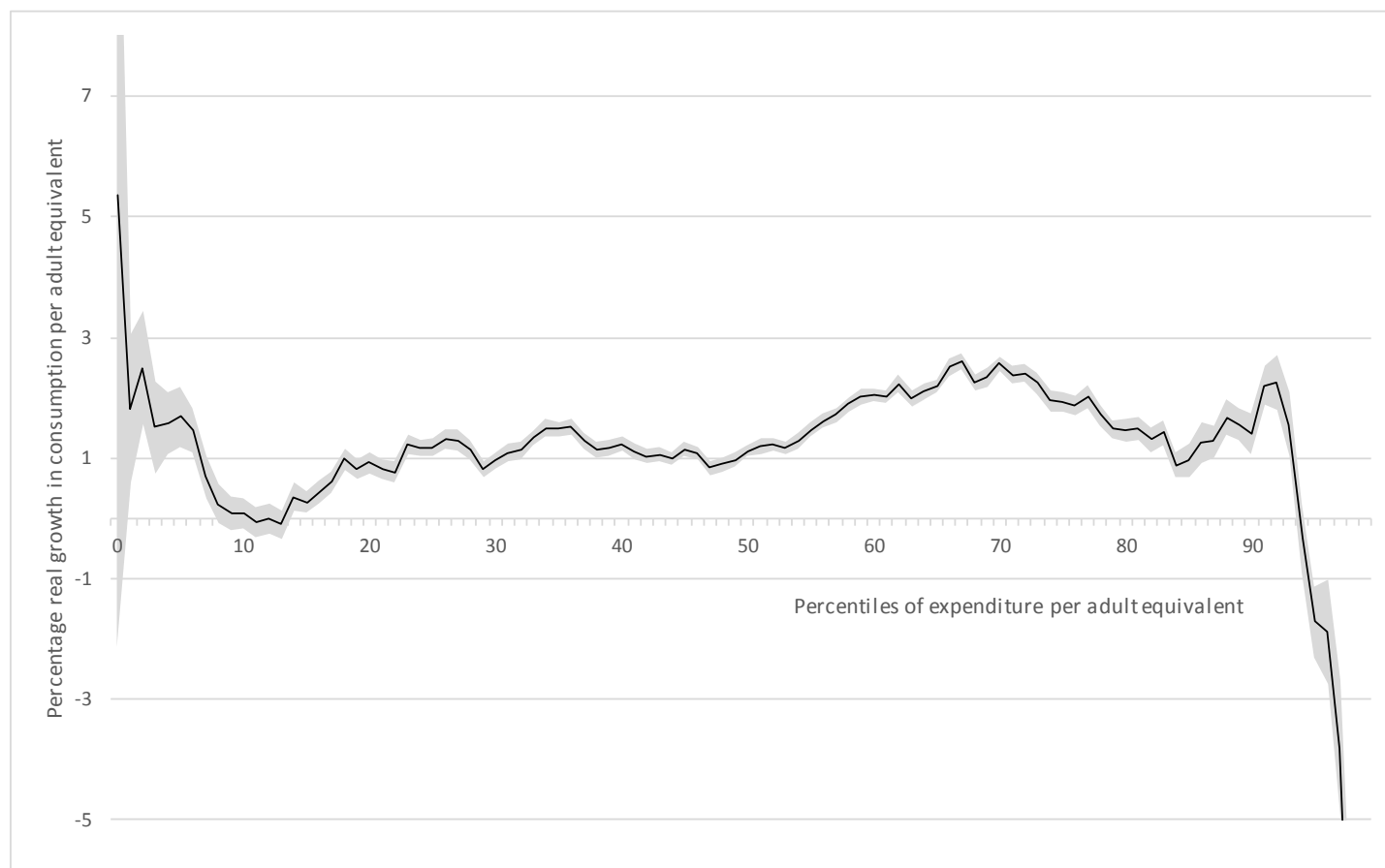
Sources: NISR, EICV5

7.2.   Decomposition: Growth vs. redistribution

The poverty rate could fall if consumption levels rise for a given distribution of consumption; or if the distribution becomes more equal, even if consumption levels remain unchanged; or through some combination of the two. We are interested here in determining how much of the observed reduction in the poverty rate between 2014 and 2017 is attributable to growth in real consumption, and how much to changes in its distribution.

The growth effect is measured by taking the distribution from 2014, raising everyone's consumption by the average growth rate between 2014 and 2017, recomputing the poverty rate, and comparing it with that of 2014. The distributional effect takes the distribution from 2017, reduces consumption by the average growth between 2014 and 2017, and compares the result with the poverty rate of 2014. The method typically leaves a small residual "interaction" effect. Further details may be found in Haughton and Khandker (2009, pp. 165-166).

The results of this exercise are shown in Table 20. As shown above, the poverty rate fell from 39.1% go 38.2%, or by a non-significant 0.9 percentage points. If there had only been growth (and no change in distribution), the poverty rate would have risen to 39.8%, since on average real consumption fell between 2014 and 2017 (Table 5). If there had been no growth, but only the change in distribution, the poverty rate would have fallen to 37.5%. Between 2014 and 2017 the growth and redistribution impacts worked in opposite directions, so the reduction in poverty due to lessened inequality was offset to some extent by an increase in poverty attributable to the decline in average consumption per adult equivalent. This is also true if we consider urban and rural areas separately.

Table 20. Decomposition of Poverty into Growth and Redistribution Components

	Poverty rate		Change in poverty			
	2014 (EICV4)	2017 (EICV5)	Actual	due to:		
				Growth	Redistribution	Interaction
	% of population			*% change*		
Rwanda overall	39.1	38.2	-0.90	0.73	-1.65	0.03
			100.0	-80.9	184.1	-3.2
Area breakdown:						
Urban	15.9	15.8	-0.04	2.25	-1.94	0.35
Rural	43.8	43.1	-0.71	0.40	-1.23	0.11

Sources: NISR, EICV4 and EICV5

7.3. Decomposition of poverty changes by place of residence

The national poverty rate can fall because poverty rates fall everywhere, and/or because people move from poorer to richer parts of the country. In this section we decompose the change in poverty into the part due to reductions in poverty within urban and rural areas (the intra-sectoral effect) and the part due to shifts in population from rural to urban areas (the population-shift effect).

The results of this shift-share exercise are shown in Table 21, for the changes in total poverty, and in extreme poverty. In both cases, the results are similar: two thirds of the reduction in poverty between 2014 and 2017 was due to falling poverty rates within areas, and one third was due to the movement of people from the rural areas

(which are relatively poor) to urban areas (which are relatively better off). All of the reduction in intra-sectoral poverty was due to the reduction of poverty within rural areas, as the bottom panel of Table 21 shows.

Table 21. Urban-Rural Contributions to Poverty Reduction 2014-2017

	Total poverty		Extreme poverty	
	Absolute change	Percentage change	Absolute change	Percentage change
Change in headcount poverty	-0.90	100.00	-0.37	100.00
of which				
Intra-sectoral effect	-0.60	66.9	-0.24	63.9
Population-shift effect	-0.30	33.9	-0.14	38.4
Interaction effect	0.01	-0.8	0.01	-2.4
Intra-sectoral effects				
Urban	-0.01	0.7	0.07	-19.4
Rural	-0.59	66.2	-0.31	83.3

Sources: NISR, EICV4 and EICV5

Not all of the population movement in Rwanda is from rural to urban areas, and so in Table 22 we present the results of a similar analysis at the provincial level. Here we find that almost half of the reduction in poverty was due to the movement of people from one province to another, and only about a third to the reduction of poverty within a given province. The interaction effect, which is a sort of residual, is relatively large in this case, representing the combined effect of migration and a reduction in poverty in the areas to which migrants moved.

Table 22. Regional Contributions to Poverty Reduction 2014-2017

	Total poverty		Extreme poverty	
	Absolute change	Percentage change	Absolute change	Percentage change
Change in headcount poverty	**-0.90**	**100.00**	**-0.37**	**100.00**
of which				
Intra-sectoral effect	-0.34	37.5	-0.10	26.6
Population-shift effect	-0.42	46.5	-0.17	45.0
Interaction effect	-0.14	16.0	-0.11	28.4
Intra-sectoral effects				
Kigali City	-0.77	85.84	-0.58	155.59
Southern	0.72	-79.65	0.94	-253.46
Western	0.44	-49.28	0.03	-7.21
Northern	-0.58	64.34	-0.44	119.10
Eastern Province	-0.15	16.26	-0.05	12.61

Sources: NISR, EICV4 and EICV5

7.4. Fast Growth and Slow Poverty Reduction

Between the time of the EICV4 survey in 2014 and the EICV5 survey in 2017, Rwanda's GDP per capita rose (in constant prices) by 14.0%, equivalent to 4.5% annually. Yet the headcount poverty rate only fell from 39.1% to 38.2%, or by 0.9 percentage points.

This is in contrast to the experience between 2011 and 2014, when real GDP per capita rose at the same rate, but the poverty rate dropped from 44.9% to 39.1%, or by 5.8 percentage points.

To put this into international context, it is helpful to calculate the *GDP elasticity of poverty*, defined as the percentage reduction in the poverty rate divided by the percentage change in real GDP per capita. The numbers are shown in Table 23 for Rwanda, and for some other cases. Relative to GDP growth, poverty reduction in Rwanda during 2011-2014 was relatively rapid by international standards, while it was relatively slow between 2014 and 2017. It is also clear that the link between GDP growth and poverty reduction is not stable.

The most compelling explanation for the very modest reduction in poverty between 2014 and 2017 is that the EICV4 survey coincided almost exactly with an unusual spike in the price of food, and especially vegetables, as noted in Section 2.2 above. This reduced the purchasing power of households, as measured by real consumption per adult equivalent

Table 23. GDP Elasticities of Poverty

Country and period	Income elasticity of poverty
Rwanda, 2011 – 2014	-1.01
Rwanda, 2014 – 2017	-0.17
Uganda, 1993 – 2003	-0.8
Uganda, 2003 – 2006	-3.1
Zambia, 1996 – 2004	-0.22
Global experience (Ram 2010)	-0.84
South Asia (Ram 2010)	-0.22
India (Ram 2010)	-0.13
India (Ram 2015), 1990 – 2005	-0.35

Let's undertook the following thought experiment: suppose that the price of food during the time of the EICV5 survey (October 2016 to October 2017) followed its trend level, instead of being well above trend. Then real consumption per adult equivalent would have been higher than what was actually observed, and the poverty rate would have been lower: specifically, the "counterfactual" poverty rate would have been 35.2% rather than the

38.2% actually observed. This would have implied a reduction in the poverty rate between 2014 and 2017 of 3.9 percentage points, and would have yielded an income elasticity of poverty of -0.77. In sum, the food price effect matters.

Figure 14. Quarterly value added in food production in Rwanda in 2014 prices, 2010-2017.
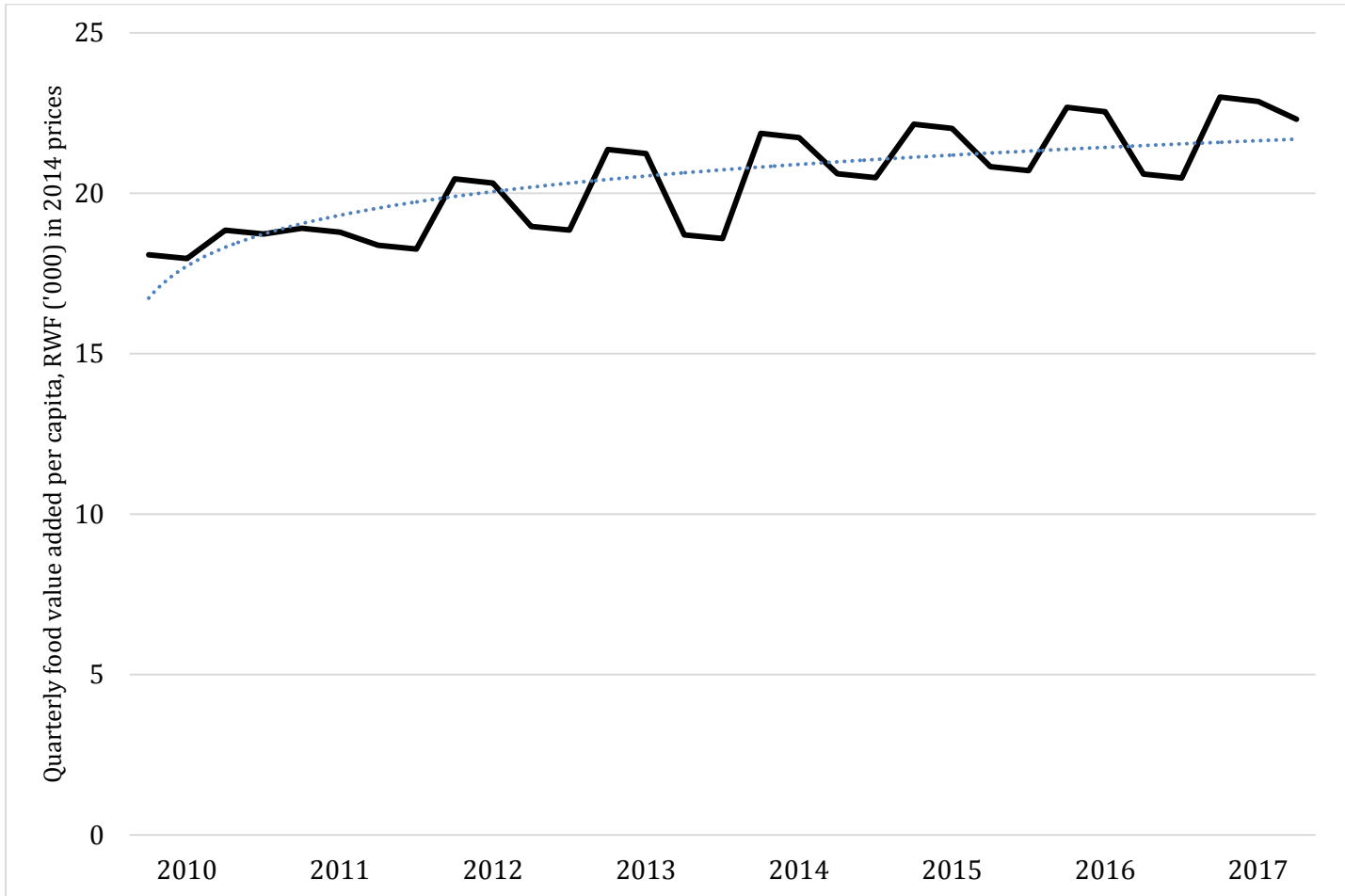
Source: NISR, 2017 National Accounts.

This is only an initial analysis of the situation: Higher food prices do not necessarily lead to a higher poverty rate, if poor people are net sellers of food and are thus able to take advantage of the higher prices. But a growing proportion of poor people are earning income from farm wages rather than directly from farming, and even farmers are often net buyers of food (and sellers of animal products, or crops such as tea or coffee). We thus take this exercise to be suggestive.

This naturally leads to the question of why the price of food was so relatively high in 2016/17. One possibility is that there was a poor harvest, which pushed prices up.

By 2018 the price of food in Rwanda was dipping back to its historical trend, as Figure 3 shows. This may or may not persist, but it is clear that the relative price of food plays a central role in extent to which economic growth gets translated into a lower poverty rate.

7.5.   Effect of 2016 Drought on Agriculture and Crop Harvests

EICV5 data were collected from October 2016 to October 2017, which overlapped with the 2016 drought in Rwanda. This drought resulted in poor crop yields for season A of 2016 (September 2015-January 2016), season B of 2016 (March -July 2016) and part of season A of 2017 (September 2016- January 2017). The drought first affected the Eastern Province for both seasons A and B of 2016. While the Eastern Province was hit by poor rainfall, the Northern and Western Provinces were affected by heavy rains that caused floods and landslides affecting crop production in these provinces. The irregular rainfall pattern was followed by a drought in the last quarter of 2016, which was far below the 35-year average rainfall in most parts of the country, especially in the Eastern and Southern Provinces, (MINAGRI Annual Report Fiscal Year 2015/16 and 2016/17 Fiscal Year Annual Report).

The growth rate of Agricultural sector GDP fell sharply in the second quarter of 2016 and remained below 3 percent through the first quarter of 2017, as Figure 15 shows and Figure 14 confirms. The growth rate of food crops followed a similar trend. The growth rate of the total GDP also followed these trends with a slight lag. All trends started to show a recovery around the second quarter of 2017.

Figure 15. GDP quarterly growth rate vs Agriculture and Food crops growth rates (in constant prices)
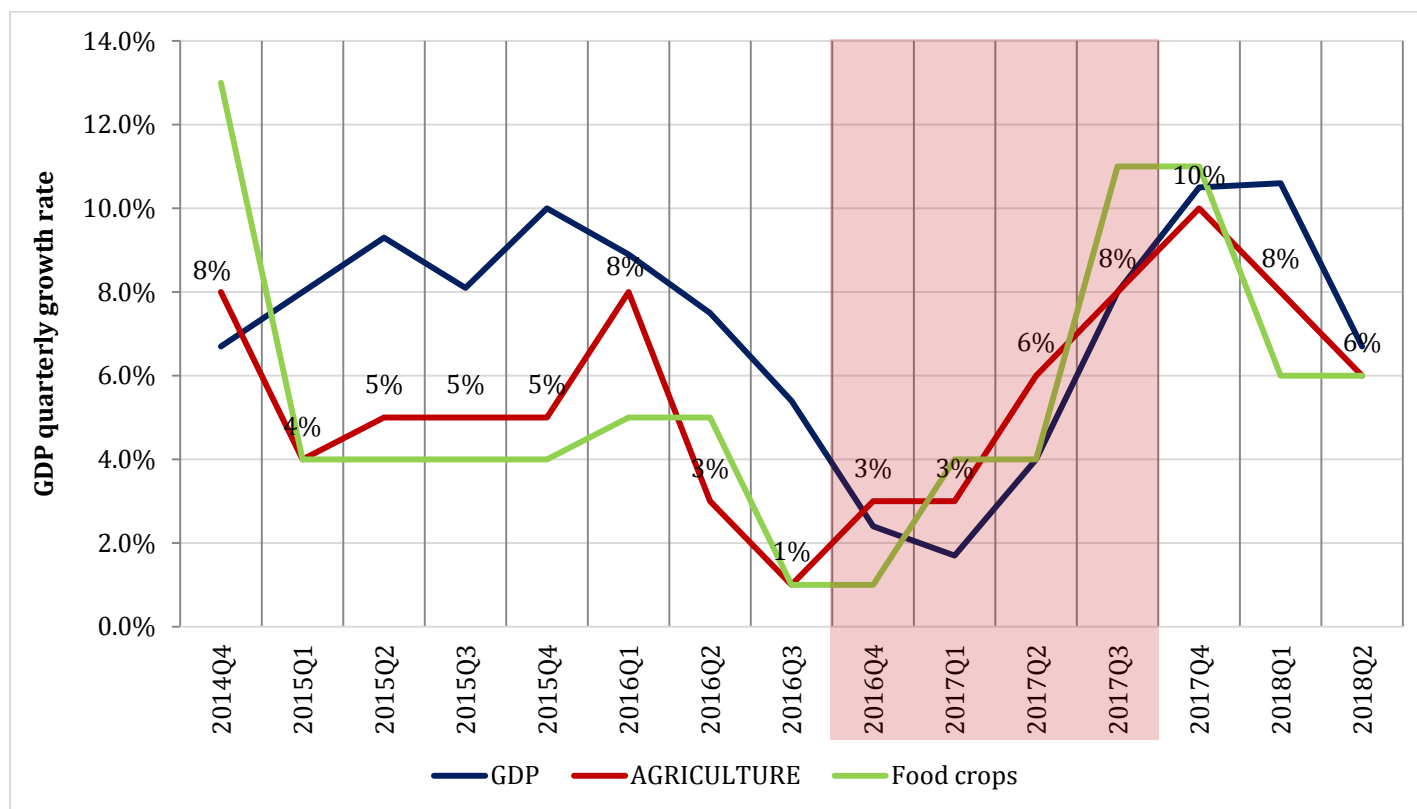
Source: NISR, 2018 National Accounts. Note: Shaded area shows period of EICV5 survey

Frequency of Surveys

Poverty and inequality change relatively slowly over time, and it could be argued that a three-year interval between surveys is too short to pick up changes that are statistically significant. The frequency of living standards surveys varies widely across countries. Here is a sampling:

- Uganda's most recent National Household Survey was undertaken in 2016. It is the sixth in a series of surveys that are undertaken every third or fourth year.

- Kenya's Integrated Household Budget Survey of 2015-16 was undertaken a decade after the previous such survey (2005-06). In the 1990s Kenya undertook more frequent surveys of this nature, but they varied in coverage and content.
- Tanzania's National Panel Survey was undertaken every second year between 2008/09 and 2014/15.
- Indonesia collects data in its SUSENAS surveys annually.
- Thailand implements its Socio-Economic Survey every other year.
- The Vietnam Household Living Standards Survey was undertaken every other year between 2002 and 2012.

The variety of experience makes it difficult to reach any conclusion about the ideal frequency of living standards surveys, and that decision would also depend on how well and how intensively the data that are collected are used by policy makers and others. The next EICV survey is scheduled for 2019/2020.

Chapter 8: Profiles of poverty

Who are the poor, where do they live, and what are their defining characteristics? In this section we create a profile of poverty, where we examine the correlates of poverty. We leave it to the reader to determine the directions in which causality is likely to flow.

8.1. Demographic indicators

According to the EICV5 survey, a quarter of all household heads were female, and this proportion was the same in poor and non-poor households, as the top panel of Table 24 shows. There was no difference between the age of the heads of poor and non-poor households, and little change in this measure between 2014 and 2017. The bottom panel of Table 24 suggests that poor households are relatively less likely to be headed by someone who is very young or very old, but the pattern is not particularly strong.

Table 24. Poverty and Characteristics of the Head of Household

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
Gender						
% heads who are male	71.8	75.9	74.5	74.9	75.1	75.0
% heads who are female	28.2	24.1	25.5	25.1	24.9	25.0
Age						
Average age of head (years)	45.4	44.4	44.7	44.7	44.7	44.7
Age categories (years)						
17-25	4.6	9.3	7.7	4.5	7.8	6.8
26-35	25.2	30.0	28.3	25.6	29.8	28.4
36-45	24.8	18.4	20.6	27.8	20.2	22.7
46-55	22.8	16.3	18.5	20.7	16.1	17.6
56-65	13.1	14.1	13.7	12.9	13.7	13.5
66 and above	9.6	11.9	11.1	8.5	12.3	11.1

Sources: NISR, EICV4 and EICV5

It is clear from Table 25 that poor households are larger than non-poor households. This pattern is observed almost universally. Part of the explanation is essentially mechanical: larger households tend to have a higher proportion of young and old members, so that the earnings of the prime-age members are spread over more people, thereby reducing consumption per adult equivalent. This is clear from the bottom line of Table 25, which shows the dependency ratio, defined as the number of children (under 15) and elderly (over 64) divided by the

number of prime-age adults: in 2017 it was 1.02 for poor households and 0.71 for non-poor households, ratios that are similar (if slightly lower) than those observed in 2014.

Given that poor households are larger, and have more children, than non-poor households, it is not surprising that children are more likely to be living in poverty than adults, and this is confirmed by the information shown in Table 26. There we see that just over 44% of boys and girls were living in poverty in 2017. It follows that if we were to track individuals over time, many would transition out of poverty as they move into adulthood.

Table 25. Household characteristics by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
Average household size: including servants	5.1	4.3	4.6	5.2	4.0	4.4
Average household size: excluding servants	5.1	4.2	4.5	5.2	3.9	4.3
Mean dependency ratio	1.0	0.7	0.8	1.0	0.7	0.8

Sources: NISR, EICV4 and EICV5
Note: Dependency ratio is defined as the number of children (under 15) plus elderly (over 64) divided by the number of prime-age adults (aged 15-64), and excludes domestic workers. The ratios reflect the experience of the typical individual rather than the typical household.

Table 26 also shows that adult women are more likely to be living in poverty (34.8%) than adult males (31.6%). While both rates are lower than those seen in 2014, the reduction in poverty was slightly more rapid for adult males than for adult women.

Table 26. Poverty rate by demographic group

	EICV4	EICV5
	Percentage of individuals	
All individuals	**39.1**	**38.2**
Adult males	33.2	31.6
Adult females	35.9	34.8
Boys (age < 16)	44.7	44.2
Girls (age < 16)	44.6	44.8

Sources: NISR, EICV4 and EICV5

8.2. Education

It has been observed almost everywhere that education can help lift someone out of poverty. It is also the case that children from poor households tend to get less education than their more-affluent peers. Both effects appear to hold true in Rwanda, as Table 27 and Table 28 show.

While 13% of household heads have a secondary education or higher, the figure is 18% for the non-poor and just 2% for the poor; and while 57% of the non-poor have no school diploma, the figure is 79% for the heads of poor households. Between 2014 and 2017 the proportion of those with a humanities diploma, or bachelor's degree or higher, rose from 6% to 8%, while the fraction of those without a diploma fell by just over two percentage points. These reflect the gradual spread of better educational levels.

Table 27. Diploma of head of household, by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
	Percentage of individuals at least 16 years old					
No diploma	78.5	60.0	66.3	79.3	57.0	64.1
Primary completed	19.1	24.5	22.6	18.3	25.0	22.9
Secondary common education	0.7	3.4	2.5	1.2	4.4	3.4
Post-primary certificate	1.2	2.5	2.1	0.8	2.0	1.6
A3, D4, or D5 diploma	0.0	0.7	0.4	0.0	0.2	0.2
Humanities diploma	0.3	4.8	3.2	0.3	6.1	4.2
Bachelor's degree or higher	0.1	4.2	2.8	0.0	5.2	3.6

Sources: NISR, EICV4 and EICV5

Information about who goes, or has gone, to school is summarized in Table 28. The gross attendance rate measures the number of children enrolled at school, as a percentage of the number of children of the right age to attend. The number can exceed 100% because, for example, some teenagers may still be attending primary school, either because they began their primary education late, or have had to repeat one or more years of school. The net attendance rate divides the number of children of the right age (e.g. 7 to 12 for primary school) who are attending school by the number of all children of that age.

Primary school attendance is now almost universal, but the large gap between the gross and net attendance rates suggests that many children are starting their schooling late, or repeating years. In any given year, 75% of primary school students move up to the next grade in the subsequent year (meaning that 25% repeat or drop out), an increase from the 72% rate seen in 2014. These rates are somewhat higher for children from non-poor than from

poor households. On the other hand, while 87% of those aged 15-24 are literate, the remaining 13% are not, either because they did not go to school, or dropped out too early to have acquired literacy skills.

Table 28. Educational characteristics by poverty status, 2014 and 2017

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
% of individuals (6+) who have ever attended school	82.4	88.5	86.1	83.6	89.4	87.2
Gross primary school attendance rate	128.7	138.7	133.9	126.3	136.9	131.9
Net primary school attendance rate	84.7	91.1	88.0	83.9	91.1	87.7
Gross secondary sch. attendance rate	23.3	57.5	43.1	17.3	49.7	36.4
Net secondary sch. attendance rate	13.5	31.5	23.9	11.7	33.0	24.3
Primary school promotion rate	67.4	75.0	71.6	70.3	78.7	74.9
Literacy rate, ages 15-24	81.3	89.8	86.8	80.1	90.4	86.9
Computer literacy, 15-24 years	3.8	15.7	11.5	2.4	15.6	11.1

Sources: NISR, EICV4 and EICV5
Notes: Gross enrolment rate = total enrolled divided by total number of children in the relevant age group (7-12 for primary, 13-18 for secondary). Net enrolment rate = total enrolled and in the relevant age group divided by total number of children in the relevant age group.

Further information on educational attendance is given in Table 29, which breaks down the numbers by gender as well as poverty status. So, for instance, 85% of women (aged six or older) have ever attended school, compared to 90% for men. In all cases there is an achievement gap between those who come from poor households and those who do not. This is particularly clear at the secondary school level; where 12% of poor girls and 11% of poor boys were attending in secondary school (at the appropriate age), compared to 36% for non-poor girls and 30% for non-poor boys.

Girls and young women are more likely than boys and young men to be literate, to be enrolled in school at the appropriate age, and to advance through primary school. On the other hand, computer literacy is slightly higher among young men (aged 15-24) than young women.

Table 29. Educational characteristics by poverty status and gender

	Females			Males		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
% of individuals (6+) who have ever attended school	82.2	86.7	85.0	85.1	92.3	89.7
Gross primary school attendance rate	127.2	134.6	131.1	125.5	139.2	132.7
Net primary school attendance rate	84.7	91.3	88.2	83.0	90.9	87.2
Gross secondary sch. attendance rate	17.5	52.5	38.0	17.0	47.0	34.9
Net secondary sch. attendance rate	12.4	36.3	26.4	11.1	29.8	22.2
Primary school promotion rate	72.8	80.5	77.0	67.7	76.9	72.8
Literacy rate, ages 15-24	82.2	92.4	88.9	77.9	88.3	84.8
Computer literacy, 15-24 years	2.1	14.6	10.2	2.7	16.7	11.9

Sources: NISR, EICV5

Notes: Gross attendance rate = total number of children attending divided by total number of children in the relevant age group (7-12 for primary, 13-18 for secondary). Net attendance rate = total number of children attending and in the relevant age group divided by total number of children in the relevant age group.

8.3.   Health

Some information on health, and health care, is given in Table 30. The proportion of people reporting that they were ill in the past four weeks was 33% in 2017, with slight differences in rates between the poor and non-poor. This rate is substantially higher than the 26% sickness rate reported in 2014.

Given that someone fell ill, 57% got care in 2017, up from 56% in 2014. The improvement in access to care was greater among poor households, although they are still about 11 percentage points less likely to get care (when they fall sick) than the non-poor. These improvements may reflect the expanded coverage of health insurance, up from 70% in 2014 to 74% in 2017, and the reduction in the time that it takes to get to a health center, from 57 minutes in 2014 to 51 minutes in 2017. The improvements were observed for both the poor and non-poor, with comparable gains for the two groups; and as Table 30 shows, there were gains both in urban and rural areas.

Table 30. Health characteristics of individuals by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
All Rwanda						
Average time (minutes) to reach a health centre	62.0	52.8	56.5	54.9	47.8	50.5
Disabled (%)	n.a.	n.a.	n.a.	3.5	3.9	3.7
Has health insurance (%)	60.1	76.6	70.1	63.6	80.5	74.0
Ill in past four weeks (%)	25.5	25.6	25.6	33.4	32.4	32.8
Got care, if ill (%)	47.2	61.4	55.9	49.9	61.4	56.9
Urban areas						
Has health insurance	56.2	78.0	74.5	59.3	83.6	79.7
Ill in past four weeks (%)	23.6	21.5	21.8	28.8	26.5	26.9
Got care, if ill (%)	46.9	65.6	62.4	46.6	62.3	59.6
Rural areas						
Has health insurance	60.4	76.2	69.3	63.9	79.5	72.8
Ill in past four weeks (%)	25.6	26.8	26.3	33.8	34.3	34.1
Got care, if ill (%)	47.2	60.5	54.8	50.1	61.1	56.4

Sources: NISR: EICV4 and EICV5.

8.4.   Housing

An important element of a household's wellbeing is the quality of its housing, and Table 31 provides some information on this. On almost every dimension the poor are not as well housed as the non-poor, and the improvements in their housing, while real, are occurring more slowly than for the non-poor.

The housing features in Table 31 are ranked from the most to the least prevalent (in 2017). More than 90% of all households, poor and non-poor, are within a 20-minute walk of an all-weather road, and this represents a significant improvement relative to 2014. Over 80% of the poor have improved sanitation and use an improved source of drinking water; these proportions are closer to 90% for the non-poor.

For the dwelling itself, 72% of non-poor households have at least a corrugated iron roof, compared to 58% of poor households; and 41% have a modern floor, compare to 9% for poor families. The use of good quality roofing and flooring expanded more rapidly among non-poor than poor households between 2014 and 2017.

There has been a sharp improvement in household access to electricity for lighting, whether from the grid or from solar panels. Overall, the proportion rose from 22% in 2014 to 35% in 2017, but the gap also widened, so that 49% of non-poor households had electricity in 2017 compared to just 14% for the poor.

Table 31. Household housing characteristics by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
Percentage of Individual						
Nearest all-weather road is <20-minute walk	83.9	90.1	87.7	90.8	94.6	93.1
Has improved sanitation	77.2	89.9	85.0	80.6	91.4	87.3
Uses improved source of drinking water	81.6	86.9	84.8	83.5	89.3	87.1
Owner-occupied home	88.2	83.6	85.4	85.8	80.3	82.4
Corrugated iron roof or better	54.6	65.3	61.1	57.6	71.8	66.4
Lives in umudugudu	53.0	48.1	50.0	65.6	57.4	60.6
Modern floor	6.0	34.7	23.5	8.9	40.5	28.4
Electricity from grid is used as main source of lighting	6.1	31.8	21.7	14.2	48.7	35.5
Charcoal or better is main cooking fuel	2.8	21.1	13.9	2.4	24.4	16.0

Sources: NISR: EICV4 and EICV5.

8.5. Asset ownership

While assets generate services – which are taken into account in our measure of consumption – they also provide a cushion in hard times, because they can be sold. Table 32 summarizes some of the most important durable goods that households use.

Overall, 71% of households have a mobile phone; the proportion is 55% for poor households and 81% for the non-poor, and these numbers are about three percentage points higher than in 2014. Households owning radios increased substantially in 2017 relative to 2014 (63% vs. 77%), probably because phones are now serving the function of radios. Bicycle ownership has also declined, from 18% to 15% overall, and from 10% to 9% among poor households. An estimated 18% of non-poor households have a TV, compared to 1% for poor households, numbers that are marginally higher than in 2014.

Another change documented in Table 32 is the rise in internet access at home, up from 9% in 2014 to 17% by 2017. While non-poor households are four times as likely as poor households to have internet service (24% vs. 6%), poor households were almost six times as likely to have internet service in 2017 as in 2014.

Table 32. Household asset ownership by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
	Percentage of individual living in households with:					
Household owns:						
Mobile phone	50.1	79.5	68.0	54.5	81.3	71.0
Radio[3]	48.5	72.4	63.0	62.5	86.2	77.2
Bicycle	9.7	23.0	17.8	8.6	19.5	15.3
TV	0.7	17.4	10.9	1.1	18.1	11.6
Computer	0.0	4.4	2.7	0.1	5.4	3.3
Internet access at home	1.1	14.7	9.4	6.0	24.4	17.4

Sources: NISR, EICV4 and EICV5

8.6. Sources of income

Most households get income from a variety of sources, and this is documented in Table 33. In 2014, 79% of heads of household got at least some income from farming, and by 2017 this had fallen to 76%; the proportion getting income from other Independent non-farm activities also fell, from 24% to 21%. However, more people worked for wages, either on farms (up from 32% of heads in 2014 to 38% in 2017) or in non-farm employment (rose from 38% to 40%). These numbers add up to more than 100%, because most people have multiple occupations.

The pattern of employment differs significantly across households: the poor are more than twice as likely to work as farm laborers, are more likely to be farmers, and are significantly less likely to be self-employed in other activities, than the non-poor. These relative patterns did not change much between 2014 and 2017.

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[3] EICV5 adds a question asking whether a household member owns a mobile phone with a radio. Thus, in the analysis, a household with at least one household member having a mobile phone with radio was considered as owning a radio.

Table 33. Sources of household income by poverty status

	EICV4			EICV5		
	Poor	**Non-poor**	**All**	**Poor**	**Non-poor**	**All**
	Percentage of heads (or households)					
Household head gets income from:						
Wage Farm	51.2	20.2	32.3	58.9	24.6	37.7
Wage Non-farm	34.9	40.0	38.0	37.8	41.6	40.2
Independent Farmer	86.1	75.0	79.3	82.9	71.5	75.9
Independent Non-farm	16.3	30.1	24.7	14.8	24.9	21.1
Financial inclusion:						
Household has at least one savings account	42.2	67.4	57.6	42.5	64.8	56.3
Household participates in VUP program:						
- Direct support	1.2	1.0	1.1	1.2	1.5	1.3
- Public works	2.4	0.9	1.5	3.4	1.1	2.0
- Financial services	1.2	1.6	1.4	1.1	1.1	1.1

Sources: NISR, EICV4 and EICV5

Note: Income sources add up to more than 100% because one person may have more than a single source of income.

An estimated 65% of non-poor households, and 43% of the poor, have a savings account, proportions that have not changed significantly between 2014 and 2017.

The Vision 2020 Umurenge Program (VUP) is designed to help provide a safety net for the poor, by providing direct income support to poor households, public works jobs for able-bodied adult, and business-related loans to households that can make use of them. Altogether, these programs reach 4.4% of the population, up from 4.0% in 2014. Of the three VUP programs, public works reaches the poor most effectively, as the bottom panel of 33 shows. A more detailed analysis of the VUP program is provided in a companion report.

Chapter 9: Vulnerability to shocks

The main focus of this report is on poverty, but this is related to vulnerability, which measures the extent to which households risk falling into poverty, even if they may not be poor currently. The EICV5 questionnaire asked a number of questions about "unusual situations" – essentially shocks – which households faced. As Table 34 shows, 43% of poor, and 34% of non-poor, households reported facing a shock over the previous year. A quarter of those who faced shocks said that it was related to farming, but substantial numbers of households mentioned the problem of high food prices, and issues related to health (including a death in the family).

Table 34. Households reporting shocks ("unusual situation")

	Poor	Non-poor	All
	Percentage of households in category		
Households facing:			
Any form of shock ("unusual situation")	42.7	33.5	36.4
Categories of shock faced			
Related to farming (drought, input prices, etc.)	30.2	22.6	25.0
High food prices	8.7	7.5	7.9
Health (including death)	8.7	6.7	7.3
Other	8.8	7.2	7.7

Sources: NISR, EICV5.

Note: Households may report facing more than one shock.

Many shocks are hard to avoid, so it is often of more interest to ask how households have responded to a shock, which helps one to assess how resilient the household may be. Some relevant information is shown in table 35. For those reporting shocks, more than a third did not detail how they responded;

Table 35. Responses to shocks, for households reporting shocks

	Poor	Non-poor	All
Households responded to shock by:			
Selling assets	22.4	24.9	24
Buying less food	35.8	38.9	37.7
Using savings, and/or borrowing	23.5	30	27.6
Migrating	3.7	1.9	2.6
Begging or doing demeaning work	9.6	5.7	7.2
Other	39.9	28.4	31.9
Total households responding to shock	**100**	**100**	**100**
Memo item			
Households facing shock as % of all households	42.7	33.5	36.4

Sources: NISR, EICV5.

Note: Households may report responding to shock in more than one way

The manner in which a household responds to a shock will depend to some extent on the nature of the shock. In table 36 we focus on the three main shocks reported by households, which refer to farming, to high food prices, and to health.

In response to high food prices, 72% of households report buying less food; the figure is higher for non-poor households (77%) than for poor ones (61%), probably because food is a more compressible expense for the better off. This was not the only response to higher food prices: some households sold assets (17%), dug into their savings or borrowed money (26%), or responded in some other way (19%); some, especially among poor households, turned to begging (5%) or migrated (3%).

The response to a farm shock was somewhat different, with relatively more people buying less food, and fewer borrowing some money. And in response to a health shock, the commonest responses were to sell assets (35%), or use savings or borrow (44%). Households, faced with a shock, clearly respond in a number of ways, but a single cross-section survey such as EICV5 does not allow us to determine whether the effects of shocks are transitory, or have long-term effects.

Table 36. Responses to main specific shocks, for households reporting shocks

	Type of shock:								
	Farm shock			**High food prices**			**Health shock**		
	Poor	Non-poor	All	Poor	Non-poor	All	Poor	Non-poor	All
	Percentage of households who reported shocks								
Households responded to shock by:									
Selling assets	21.2	24.8	23.4	19.2	15.0	16.5	32.7	37.1	35.4
Buying less food	40.2	42.3	41.5	61.0	77.3	71.5	25.7	23.2	24.2
Using savings, and/or borrowing	20.3	28.0	25.1	26.8	24.8	25.5	38.6	47.4	44.1
Migrating	3.6	2.0	2.6	4.5	1.9	2.8	1.6	1.4	1.5
Begging or doing demeaning work	10.4	6.3	7.9	7.3	3.6	4.9	7.2	5.1	5.9
Other	7.1	4.6	5.3	23.6	16.7	18.7	29.6	21.8	24.1

Sources: NISR, EICV5.

Note: Households may report facing more than one shock.

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Appendix 1: Poverty Deficit Curve

Figure 16. Poverty Deficit Curves, EICV4 (2013/14) and EICV5 (2016/17)
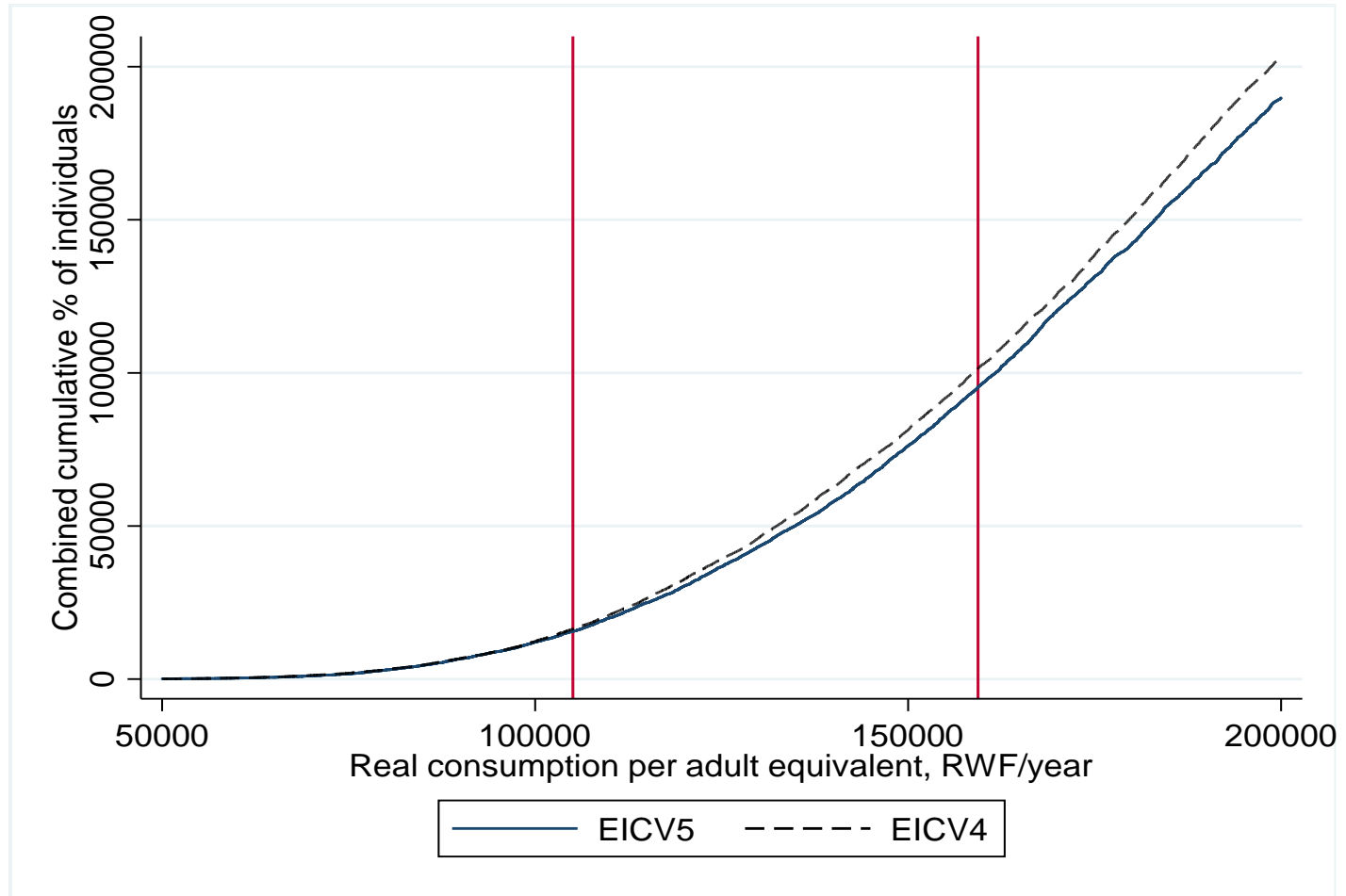
Sources: NISR, EICV4 and EICV5

A poverty deficit curve measures the cumulated area under a poverty incidence curve (see Figure 9). It reflects the cumulative poverty gaps of the population. If one poverty deficit is vertically below another we have second order stochastic dominance, which means that for any reasonable poverty line, the poverty gap measure of poverty is

smaller for the lower line. The poverty deficit curve for EICV5 appears to be below that of EICV4, suggesting that EICV5 stochastically dominates EICV4, so the poverty gap measure was smaller, for any plausible poverty line, in 2017 than in 2014. However, the differences between the curves shown in Figure 15 are very small, and do not appear to be statistically significant.

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