



High inequality in the heart of Africa: the case of Rwanda

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WIDER Inequality Conference, 5-6
September 2014



Inequality in Eastern Africa

◆ Some summary Gini coefficients:

Country	Year	Gini coefficient
Burundi	2006	33.3
Kenya	2006	44.7
Tanzania	2007	35.0
Uganda	2011	43.5
Rwanda	2011	49.0
Ethiopia	2010	29.8
Malawi	2011	45.2
Mozambique	2008	41.4
Rwanda	1985	28.9

Data from WIID, latest issue

Inequality in Eastern Africa

- ◆ Rwanda has highest Gini coefficient in EAC
 - ◆ And high compared to most countries in bigger region
- ◆ Though higher inequality in some Southern African countries (also Central African Republic)
- ◆ And a very low estimate of inequality from 1984 ... though provenance not clear

Structure

- ◆ Introduction to Rwanda
- ◆ Consumption inequality
- ◆ Looking at income data
- ◆ Land?
- ◆ Economic activity and income sources
- ◆ Extending back to 1990?
- ◆ What can we say?

The case of Rwanda

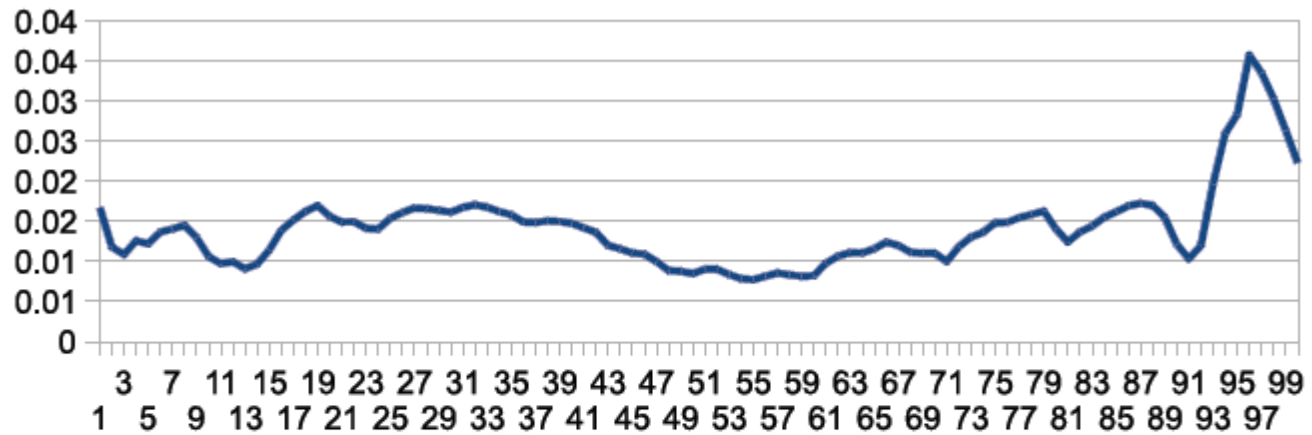
- ◆ Small country with highest population density in Sub-Saharan Africa
- ◆ Dominantly agricultural economy
- ◆ History of conflict culminating in 1994 genocide

- ◆ Good quality survey data from 2000 onwards: source of available estimates of inequality (and poverty)

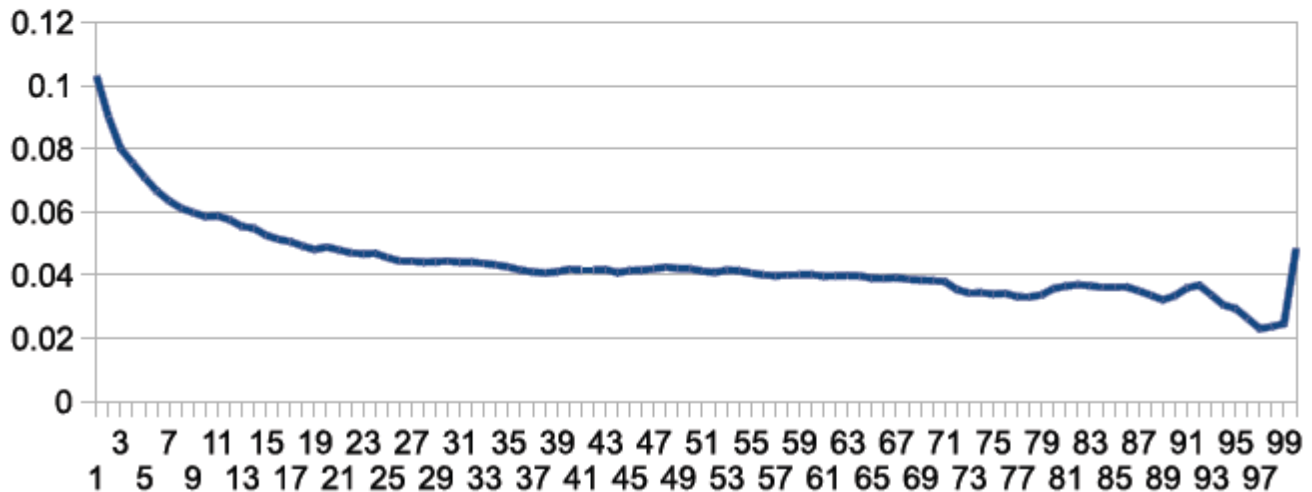
Rwanda: recent economic performance

- ◆ Impressive growth rate of consumption of 4.4% in 2005/6 to 2010/11 (also national accounts)
- ◆ And good recent record of poverty reduction: poverty fell from 58.9% in 2000/01 to 56.7% in 2005/06 to 44.9% in 2010/11
- ◆ These estimates are based on adjusted real household consumption per adult

Growth incidence curve 1999/2001 to 2005/06



Growth incidence curve 2005/06 to 2010/11



Headline consumption inequality numbers (national)

- ◆ Table shows different indices for the three years;
- ◆ High levels
- ◆ All indices increase 2000/1-2005/6 and fall between 2005/6 and 2010/11 (as GICs)

	p90/p10	GE(0)	GE(1)	Gini
2000/1	7.071	0.448	0.619 <i>(0.525 – 0.714)</i>	0.510 <i>(0.488 – 0.532)</i>
2005/6	7.100	0.472	0.653 <i>(0.578 – 0.728)</i>	0.524 <i>(0.506 - 0.542)</i>
2010/11	6.353	0.415	0.568 <i>(0.509 – 0.628)</i>	0.496 <i>(0.509 – 0.628)</i>

Disaggregated Gini coefficients

- ◆ By stratum, province
- ◆ Big urban-rural gap, Kigali vs. rest

	2000/01	2005/06	2010/11
<i>by stratum</i>			
City of Kigali	0.517	0.562	0.558
Other urban	0.513	0.573	0.543
Rural	0.403	0.420	0.402
<i>by province</i>			
Kigali City	0.559	0.586	0.577
Southern Province	0.425	0.446	0.394
Western Province	0.445	0.492	0.415
Northern Province	0.457	0.431	0.464
Eastern Province	0.403	0.436	0.401
National	0.510	0.524	0.497

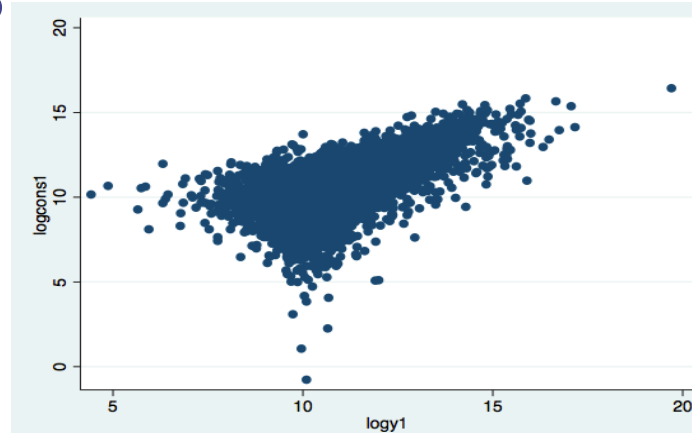
Theil index decomposition

◆ Between stratum inequality accounts for 25-30% of total; yet high urban inequality

	2000/01	2005/06	2010/11
<i>by stratum</i>			
City of Kigali	0.564	0.614	0.617
Other urban	0.504	0.720	0.581
Rural	0.354	0.382	0.334
proportion of b/w stratum variation	0.322	0.260	0.250
<i>by province</i>			
Kigali City	0.650	0.679	0.663
Southern Province	0.408	0.442	0.337
Western Province	0.498	0.599	0.347
Northern Province	0.467	0.392	0.448
Eastern Province	0.323	0.431	0.349
proportion of b/w province variation	0.208	0.193	0.215
...			
proportion of b/w district variation	0.258	0.220	0.246

Income inequality

- ◆ Survey data enables computation of different household income components
- ◆ Important because captures livelihoods
- ◆ Quality of income data seems adequate; underestimation, but decreasing with time
- ◆ Positive correlation association even removing common elements



Some income inequality numbers

◆ Income inequality numbers higher (no surprise)

	Gini			Theil		
	2000/01	2005/06	2010/11	2000/01	2005/06	2010/11
National	0.591	0.577	0.587	0.780	0.901	1.019
<i>by stratum</i>						
Kigali	0.581	0.716	0.687	0.714	1.358	1.243
Other urban	0.583	0.641	0.621	0.649	0.980	0.862
Rural	0.531	0.475	0.488	0.602	0.460	0.657
proportion of between stratum variation				0.192	0.183	0.180
<i>by province</i>						
City of Kigali	0.617	0.705	0.694	0.799	1.343	1.278
Southern	0.559	0.491	0.460	0.695	0.561	0.589
Western	0.555	0.567	0.509	0.733	0.771	0.716
Northern	0.537	0.498	0.552	0.588	0.524	0.768
Eastern	0.536	0.476	0.476	0.563	0.489	0.607
proportion of between province variation				0.120	0.135	0.166

Income inequality

- ◆ Income inequality numbers show no clear trend
- ◆ But do show the same urban-rural gap, and between Kigali and other provinces
- ◆ Consumption inequality data more reliable, but pattern largely confirmed here

How important is land inequality?

- ◆ Survey has self reported information on plot areas ... but plots can be very different
- ◆ Land inequality high (e.g. percentile ratios); and many have very small areas
- ◆ Gini similar trend to consumption inequality; and % with small area linked to quintile

	p90/p10	GE(1)	Gini	% of farming households with less than	
				0.2Ha	0.5Ha
2000/01	51.765	0.682	0.589	0.381	0.570
2005/06	24.000	0.729	0.604	0.285	0.561
2010/11	20.000	0.704	0.574	0.321	0.653

Economic activities

- ◆ Type of activity households able to undertake likely to be strong correlate of inequality
- ◆ Income source data to define economic activity groups: main income source or different diversified patterns
- ◆ Agriculture dominates, except in 5th quintile; non-farm wage work and business much more important in 5th quintile
- ◆ Big increase in agriculture plus farm wage in 2010/11

Economic activities: distribution

◆ Increase in diversification even in Q1;
and small increase in nonfarm wage work

Livelihood status	2000/01		2005/06		2010/11	
	% of Q1	% of Q5	% of Q1	% of Q5	% of Q1	% of Q5
Mainly agriculture	74.3	39.9	76.1	46.3	29.1	18.7
Mainly farm wage	0.9	0.9	1.7	0.2	2.4	0.2
Mainly nonfarm wage	1.3	22.6	2.1	22.7	3.0	23.6
Mainly business	1.3	7.8	0.5	7.9	1.5	13.7
Mainly transfers/rent	6.1	3.4	3.0	3.0	1.3	1.8
Agric/farm wage	3.5	4.0	5.0	1.3	32.9	3.1
Agric/nonfarm wage	1.2	4.1	4.0	7.4	11.5	10.2
Agric/transfers	1.8	1.3	5.7	3.5	4.8	4.6
Agric/business	2.4	3.6	0.9	3.6	4.3	9.3
Other combinations	7.3	12.4	1.0	3.9	9.3	14.8
All	100	100.0	100.0	100.0	100.0	100.0

Economic activities: inequality

◆ High inequality in non-farm activities and transfer recipients; much smaller in agriculture based activities

Livelihood status	Gini		
	2000/01	2005/06	2010/11
Mainly agriculture	0.359	0.392	0.303
Mainly farm wage	0.478	0.365	0.333
Mainly nonfarm wage	0.532	0.562	0.559
Mainly business	0.609	0.563	0.520
Mainly transfers/rent	0.688	0.560	0.561
Agric/farm wage	0.390	0.372	0.321
Agric/nonfarm wage	0.416	0.488	0.370
Agric/transfers	0.400	0.420	0.359
Agric/business	0.354	0.364	0.371
Other combinations	0.538	0.613	0.559
All	0.510	0.524	0.496

Income source by quintile

◆ Table shows income shares from 2010/11; agriculture high except Q5; nonfarm wage important in all, esp. Q5; farm wage in Q1 and public transfers

consumption quintile	agriculture	farm wage	nonfarm wage	nonfarm nonwage	public transfers	private transfers
Lowest	46.0%	17.3%	14.3%	9.5%	8.2%	4.6%
Second	56.0%	10.5%	14.2%	10.8%	2.9%	5.5%
Third	55.4%	6.6%	13.6%	16.5%	2.6%	5.3%
Fourth	46.3%	4.0%	16.3%	24.7%	3.6%	5.1%
Highest	12.1%	0.7%	38.2%	40.4%	1.6%	7.0%
All	27.8%	3.8%	28.7%	31.0%	2.6%	6.3%

Income source decomposition

- ◆ Decomposition of Gini coefficient by income source (here 2005/6, others similar)
- ◆ Agriculture less unequal, lower correlation: smaller contribution to total inequality
- ◆ Nonfarm activities contribute to inequality

Source	Sk	Gk	Rk	Share
Agriculture	0.385	0.578	0.711	0.229
Farm wage	0.013	0.950	0.353	0.006
Nonfarm wage	0.311	0.941	0.928	0.394
Nonfarm nonwage	0.242	0.999	0.945	0.331
Public transfers	0.009	0.993	0.821	0.011
Private transfers	0.041	0.829	0.601	0.029

Income analysis: summary

- ◆ Significantly lower inequality among those in agriculture
- ◆ Impact of land inequality not just seen here
- ◆ Increased diversification over period, including for poorest
- ◆ Fewer nonfarm activities in lower quintiles, but also nature of activity very different
- ◆ Some suggestive evidence that public transfers may reach poor groups

Extending the analysis back to 1990

- ◆ Household surveys started from 2000/01
- ◆ But were a long series of agricultural surveys in Rwanda from 1980s on, one in 1990 collecting information on income and food expenses
- ◆ Methodology is different: but seek to compute measures of income and food expenditure as comparable as possible
- ◆ Rural areas

Inequality back to 1990

- ◆ First look at trends in per capita income and food consumption
- ◆ Income inequality suggests higher inequality from 2000 on, but food consumption does not

	p90/p10	GE(1)	Gini
income			
1990	6.8	0.304	0.414
2000/01	12.5	0.604	0.531
2005/06	9.0	0.455	0.475
2010/11	5.5	0.666	0.492
food consumption			
1990	5.5	0.226	0.365
2000/01	5.7	0.241	0.372
2005/06	5.3	0.286	0.385
2010/11	4.5	0.204	0.341

Inequality back to 1990 (cont)

- ◆ Food consumption might be more accurately measured ... but inequality in nonfood consumption may still have increased
- ◆ Income inequality suggests higher inequality from 2000 on, but food consumption does not

Inequality back to 1990

◆ If we look at disaggregated data (old province structure), food consumption inequality measures much more stable

Province	Theil Index			Gini		
	1990	2000/01	2005/06	1990	2000/01	2005/06
Butare	0.201	0.193	0.199	0.343	0.334	0.343
Byumba	0.176	0.293	0.214	0.333	0.402	0.349
Cyangugu	0.233	0.293	0.278	0.373	0.409	0.394
Gikongoro	0.252	0.202	0.268	0.393	0.344	0.384
Gisenyi	0.317	0.166	0.550	0.400	0.314	0.495
Gitarama	0.149	0.184	0.157	0.301	0.332	0.304
Kibungo	0.206	0.198	0.283	0.353	0.344	0.394
Kibuye	0.143	0.216	0.184	0.287	0.349	0.327
Kigali Ngali	0.148	0.260	0.233	0.295	0.397	0.364
Ruhengeri	0.222	0.258	0.256	0.366	0.376	0.374

Changing income structures back to 1990

- ◆ Table shows distribution by same groups
- ◆ Share of mainly agriculture very similar except same diversification in 2010/11
- ◆ Slow growth in wage and business, esp. in 2010/11

	1990	2000/01	2005/06	2010/11
Mainly agriculture	70.4	78.44	76.95	36.44
Mainly farm wage	0.1	0.48	0.93	1.06
Mainly nonfarm wage	1.3	1.76	2.31	3.73
Mainly business	0.0	1.55	1.18	3.26
Mainly transfers/rent	0.0	2.82	1.85	0.91
Agric/farm wage	8.0	2.74	3.66	19.41
Agric/nonfarm wage	3.0	2.18	5.28	13.35
Agric/transfers	6.1	1.36	4.84	6.43
Agric/business	0.8	3.22	2.25	7.93
Other combinations	10.3	5.44	0.74	7.47
Total	100.0	100	100	100

Income structure decomposition back to 1990

	Source	Sk	Gk	Rk	Share
1990	Agriculture	0.793	0.467	0.913	0.761
	Farm wage	0.029	0.826	-0.034	-0.002
	Nonfarm wage	0.136	0.922	0.808	0.229
	Nonfarm nonwage	0.023	0.956	0.599	0.029
	Transfers	0.023	0.899	0.474	0.022
2000/01	Agriculture	0.667	0.482	0.871	0.505
	Farm wage	0.078	0.955	0.841	0.114
	Nonfarm wage	0.127	0.946	0.860	0.187
	Nonfarm nonwage	0.118	0.972	0.894	0.185
	Transfers	0.047	0.815	0.442	0.031
2005/06	Agriculture	0.763	0.511	0.922	0.696
	Farm wage	0.022	0.935	0.344	0.013
	Nonfarm wage	0.101	0.950	0.807	0.149
	Nonfarm nonwage	0.065	1.023	0.823	0.106
	Transfers	0.047	0.759	0.503	0.034
2010/11	Agriculture	0.431	0.444	0.721	0.275
	Farm wage	0.063	0.727	0.100	0.009
	Nonfarm wage	0.196	0.886	0.802	0.278
	Nonfarm nonwage	0.225	0.943	0.877	0.372
	Transfers	0.085	0.635	0.613	0.066

Income structure decomposition back to 1990

- ◆ Similar to national patterns: agriculture and farm wage generally contribute less to rural food consumption inequality
- ◆ Nonfarm activities tend to increase it
- ◆ Transfers may reduce it (but small)

What can we say?

◆ Lots of numbers, and varying degree of confidence in different sources of data.

Some interim conclusions

1. Inequality in Rwanda is high: not that much less than Brazil now. Consumption, income and land all tell the same story.
2. Rural inequality though may not have changed that much in 20 years

What can we say? (2)

3. Recent consumption and land data suggests a reduction 2005/6-2010/11, but is that real and sustainable? Shape of 2005/6-2010/11 GIC partly explained by agricultural harvests, though transfers and less land inequality may play a part
4. There is a very big urban-rural and Kigali-rest gap, and very high urban inequality. Migration; *umudugudu* policy; Kigali development etc.?

What can we say? (3)

5. Nonfarm activities a big driver of inequality, including within rural; poorer have less good access but also get access to poorer opportunities
6. In 2010/11 more diversification, though may be in part good harvests that year and labour demand.

What can we say? (3)

5. Nonfarm activities a big driver of inequality, including within rural; poorer have less good access but also get access to poorer opportunities
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Thank you!

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