ECON 184

Poverty, Inequality and Race in South Africa.

Contents

1 Inequality **3**

2 Poverty **8**

2.1 Poverty measures 9

2.2 Examples from SSA 15

2.3 Poverty dynamics 21

3 The case of South Africa **29**

3.1 A very brief history 30

3.2 Measuring poverty in South Africa (Woolard and Leibbrandt, 1999) 31

1 Inequality

- I will show very briefly some indicators of inequality.
- For a comprehensive explanation about these measures and other please read D. Ray's chapter and the slides posted on the course website.

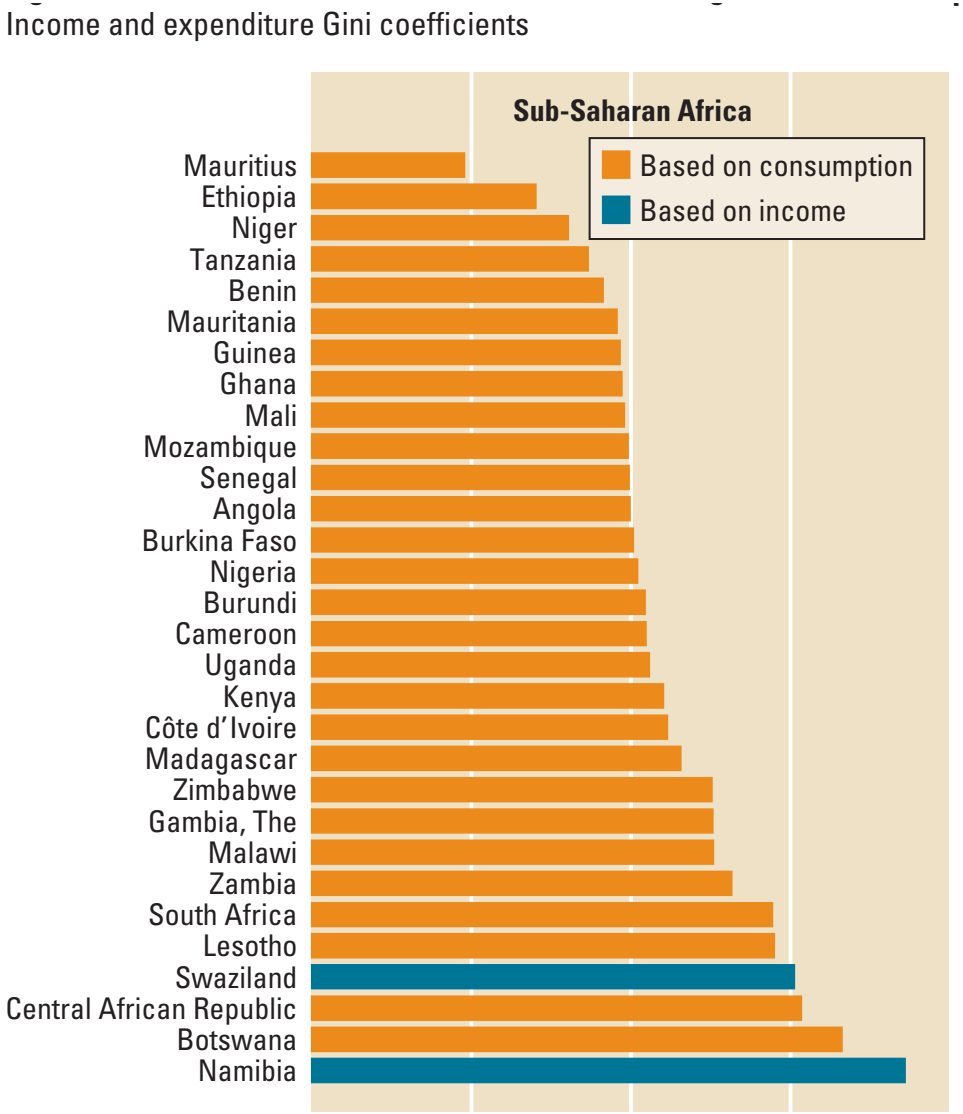
- Inequality in SSA is the highest, except for LA.

Table 1
Decadal medians of Gini coefficients for the income distribution, by Region 1960–1990

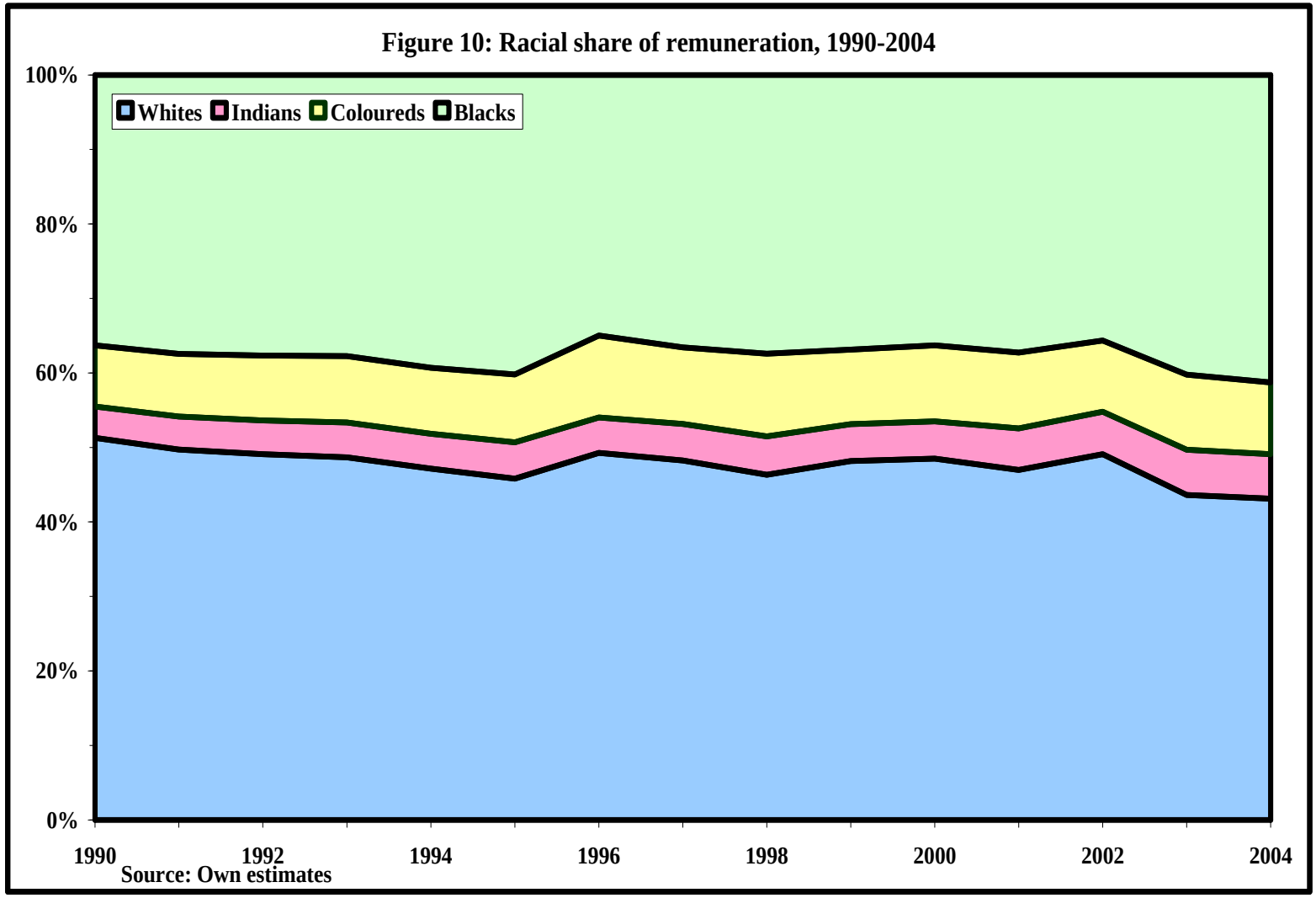
	1960s	1970s	1980s	1990s
Eastern Europe	22.76	21.77	24.93	28.60
South Asia	31.67	32.32	32.22	31.59
OECD and high income	32.86	33.04	32.20	33.20
East Asia and Pacific	34.57	34.40	34.42	34.80
Middle East and North Africa	41.88	43.63	40.80	39.72
Sub-Saharan Africa	49.90	48.50	39.63	42.30
Latin America	53.00	49.86	51.00	50.00

Regions are ordered by increasing inequality in the 1990s.
Source: Deininger and Squire (1996).

- Inequality within SSA (WDR 2006).



- In South Africa whites' share remains big but decreasing



2 Poverty

2.1 Poverty measures

Concepts

- Poverty line: a critical threshold below which individuals are declared to be poor.
- The threshold could refer to income, consumption or *access* to goods and services.
- Nutrition-based lines: the amount of money needed to guarantee minimum consumption of calories.

- Key issues
  1. Overall consumption or item-by-item consumption (e.g., enough for for food but not for clothing.)
  2. Absolute vs. relative: how can we compare different needs in different countries?
  3. Households vs individuals. Consumption is observed at the household level and we usually don't know how it is distributed.
- why do we need a poverty line?
- Say poverty line is \$1 per day. How different are individuals with \$1.01 and those with 99 cents?
- Read the articles by A. Deaton (2006) and Woolard and Leibbrandt (1999).

Measures

- Let denote y income (or expenditure), m the average income, p the poverty line.
- If $y_i < p$, then individual i is poor.
- Consider a country with N individuals.
- The first measure is to count how many poor are in a country: how many indiv. earn less than p.
- However, we want to account for the total number of people living in this country.
- Hence, the **Poverty Head-count** (PHC) is $PHC = \sum_{i=1}^{N} \frac{\mathbf{1}(y_i<p)}{N}$, $\mathbf{1}(A) = 1$ if A is true and 0 otherwise.

- PHC is a widely used.
- However, there are some problems.
  1. Consider two countries with the same PHC and with $p = 100$. In one country all the poor earn \$99 each and in the second they all earn \$50 each. Can we still say that both countries are equally poor?
  2. Consider this poverty alleviation policy. Let's tax the very poor and give the revenues to the ones just below the poverty line so they can escape poverty.
- The main problem with PCH is that it does not account for the *extent* of the poverty.

- To solve this problem we can use the **Income Gap** (IG).
- It measures the average gap in poverty $(p - y_i)$ relative to the poverty line
  $IG = \frac{1}{N} \sum_{i=1}^{N} (\frac{p-y_i}{p}) \mathbf{1}(y_i < p)$
- This measure it's also used but it's less popular.
- Problems
  1. Consider two countries with the same IG and with $p = 100$. In one country all the poor earn \$40 each and in the second half the poor earn \$20 and the other half makes \$60. Can we still say that both countries are equally poor?.
  2. Consider a transfer from the very poor to the less poor such that they escape poverty. Will IG be the same after the transfer?
  3. Consider the same transfer but now the less poor do not escape poverty, will IG be the same?

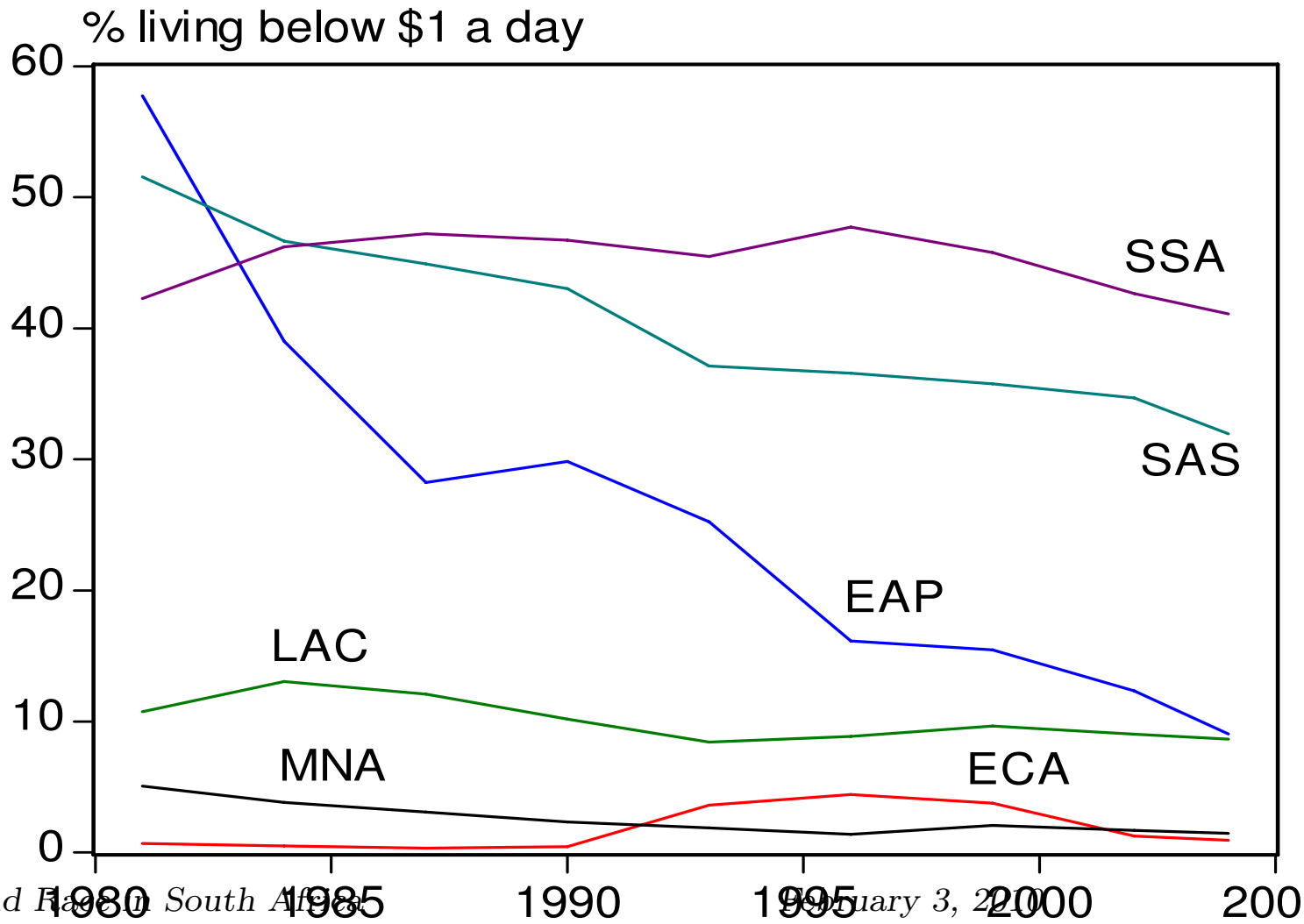
- To solve this problems Foster, Greer and Thorbecke proposed what is now known as the FGT index
  $P_\alpha = \frac{1}{N}\sum_{i=1}^{N}(\frac{p-y_i}{p})^\alpha \mathbf{1}(y_i < p)$
- The parameter α could take different values.
- When $\alpha = 0$ then $P_0 = PHC$.
- When $\alpha = 1$ then $P_1 = IG$.
- An interesting case is when $\alpha = 2$. Thus P_2 takes into account the distribution among the poor.
- P_2 then solves all the problems described above.
- However, P_2 is not very commonly used.

2.2 Examples from SSA

- SSA is the region with the highest PHC.

Figure 2: Poverty measures by region 1981-2004

(a) Headcount index



- Its levels are going back to 1981.

Table 1: Poverty measures for $1 a day

(a) Percentage of population

Region	1981	1984	1987	1990	1993	1996	1999	2002	2004
East-Asia and Pacific (EAP)	57.73	39.02	28.23	29.84	25.23	16.14	15.46	12.33	9.05
Of which China	63.76	41.02	28.64	32.98	28.36	17.37	17.77	13.79	9.90
Eastern-Europe+Central Asia (ECA)	0.70	0.51	0.35	0.46	3.60	4.42	3.78	1.27	0.94
Latin America+Caribbean (LAC)	10.77	13.07	12.09	10.19	8.42	8.87	9.66	9.09	8.64
Middle East+North Africa (MNA)	5.08	3.82	3.09	2.33	1.87	1.69	2.08	1.69	1.47
South Asia (SAS)	49.57	45.43	45.11	43.04	36.87	36.06	34.92	33.56	30.84
Of which India	51.75	47.94	46.15	44.31	41.82	39.94	37.66	36.03	34.33
Sub-Saharan Africa (SSA)	42.26	46.20	47.22	46.73	45.47	47.72	45.77	42.63	41.10
Total	**40.14**	**32.72**	**28.72**	**28.66**	**25.56**	**22.66**	**22.10**	**20.13**	**18.09**
Total excl.China	31.35	29.69	28.75	27.14	24.58	24.45	23.54	22.19	20.70

- Comparing different measures.

Table 3.3 Poverty in 21 African Countries Using National Poverty Lines, 1990s

Indicator	*Rural*	*Urban*	*Overall*
Headcount ratio (percent)	56	43	52
Poverty gap (percent)	23	16	22
Squared poverty gap (percent)	13	8	12
Mean expenditure (dollars a person per year)	409	959	551
Mean poverty line (dollars a person per year)	325	558	

Source: Ali 1999.

- ...and an example from Ivory Coast (1985-1988)

Table 3.3. Measures of individual poverty, Côte d'Ivoire,
(bootstrapped standard errors in brackets)

Year	*Headcount ratio,* P_0	*Poverty-gap ratio,* P_1	*FGT index,* P_2
1985	0.300 (.030)	0.098 (.013)	0.045 (.007)
1986	0.300 (.019)	0.082 (.007)	0.032 (.043)
1987	0.348 (.025)	0.101 (.013)	0.043 (.008)
1988	0.459 (.030)	0.142 (.016)	0.063 (.010)

Table 3.4 Consumption Poverty in Various African Countries

Country, years	Headcount ratio		Squared poverty gap		Change in per capita consumption (percent)
	First year	Second year	First year	Second year	
Ethiopia					
Rural, 1989 and 1995	61.3	45.9	17.4	9.9	8.2
Urban, 1994 and 1997	40.9	38.7	8.3	7.8	5.1
Ghana, 1987 and 1996	31.9	27.4			2.5
Rural	37.5	30.2			
Urban	19.0	20.6			
Mauritania, 1992 and 1996	59.5	41.3	17.5	7.5	11.5
Rural	72.1	58.9	27.4	11.9	
Urban	43.5	19.0	9.7	2.1	
Nigeria, 1992 and 1996	42.8	65.6	14.2	25.1	–16.3
Rural	45.1	67.8	15.9	25.6	
Urban	29.6	57.5	12.4	24.9	
Uganda, 1992 and 1997	55.6	44.0	9.9	5.9	22.4
Rural	59.4	48.2	10.9	6.56	
Urban	29.4	16.3	3.5	1.65	
Zambia, 1991 and 1996	57.0	60.0	25.5	16.6	–1.4
Rural	79.6	74.9	39.1	23.2	
Urban	31.0	34.0	9.7	5.4	
Zimbabwe, 1991 and 1996	37.5	47.2	7.2	9.3	–1.8
Rural	51.5	62.8	10.2	13.0	
Urban	6.2	14.9	0.5	1.4	

Note: Headcount ratio and squared poverty gap are based on national (nutritionally based) poverty lines. Comparisons between countries are not valid. Ethiopia data are based on small samples. Nigeria data are provisional.

Source: World Bank data.

2.3 Poverty dynamics

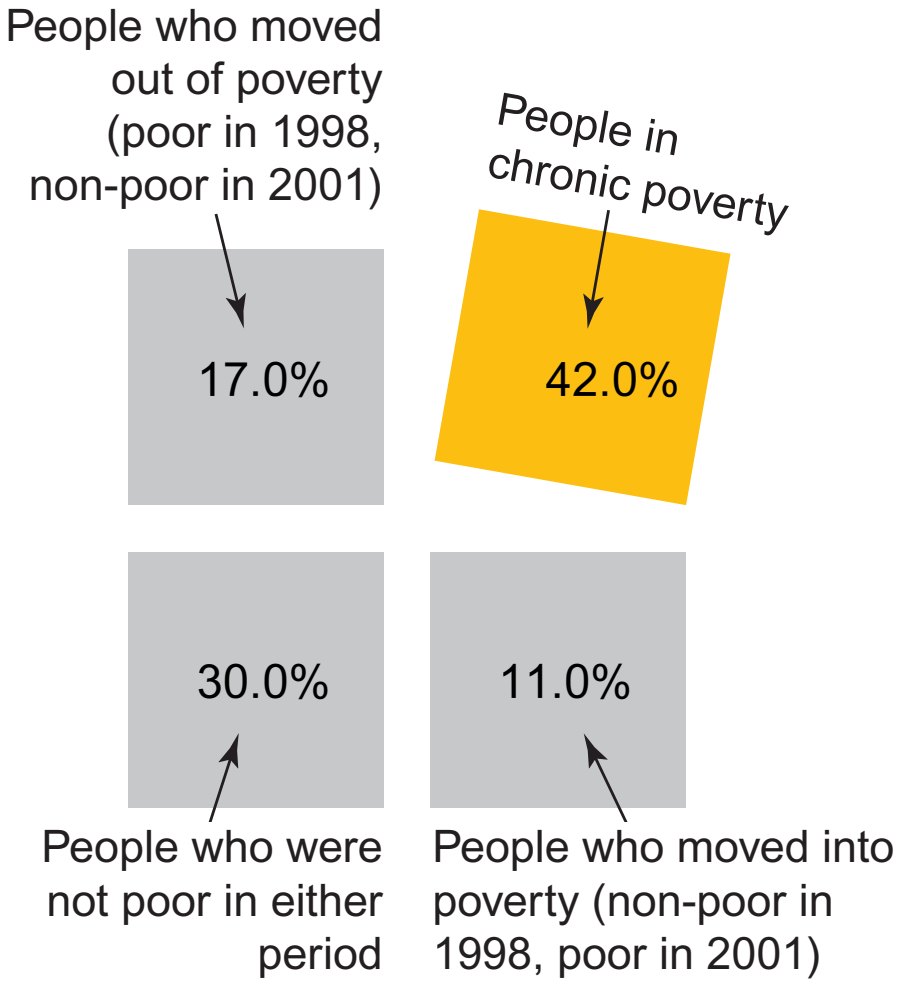
- Consider the example from Ivory Coast.
- Are the poor in 1988 the same from 1985?
- With FGT measures we have a good snapshot, but we have no clue about dynamics.
- With new micro datasets we are now able to follow household over time.
- This allows us to talk about poverty dynamics.

Measurements

- One measure of poverty dynamics is to compute the proportion of household who cannot escape poverty (= chronic poverty).
- We can also find what are the characteristics of those experiencing chronic poverty (see handout for South Africa and Uganda).

Key to tables:

(The sample figures are taken from 11.1a – Rural chronic poverty in Nicaragua)



Examples from SSA

Figure 6.1 Chronic poverty in sub-Saharan Africa

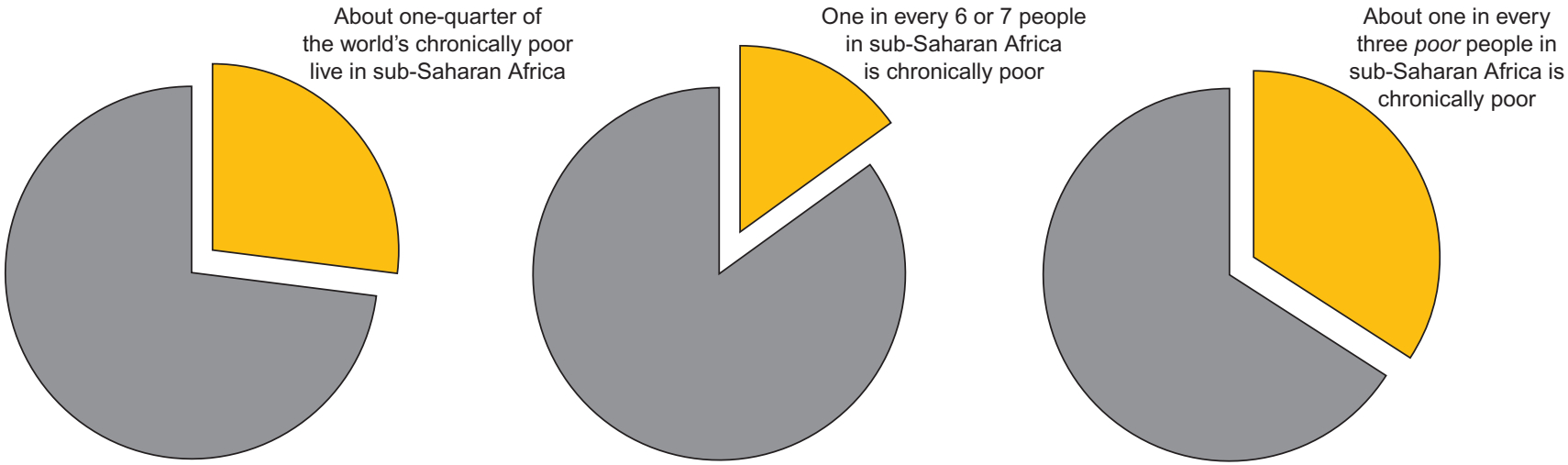


Table 11.1b Chronic Poverty in Kwa-Zulu Natal, South Africa 1993–1998

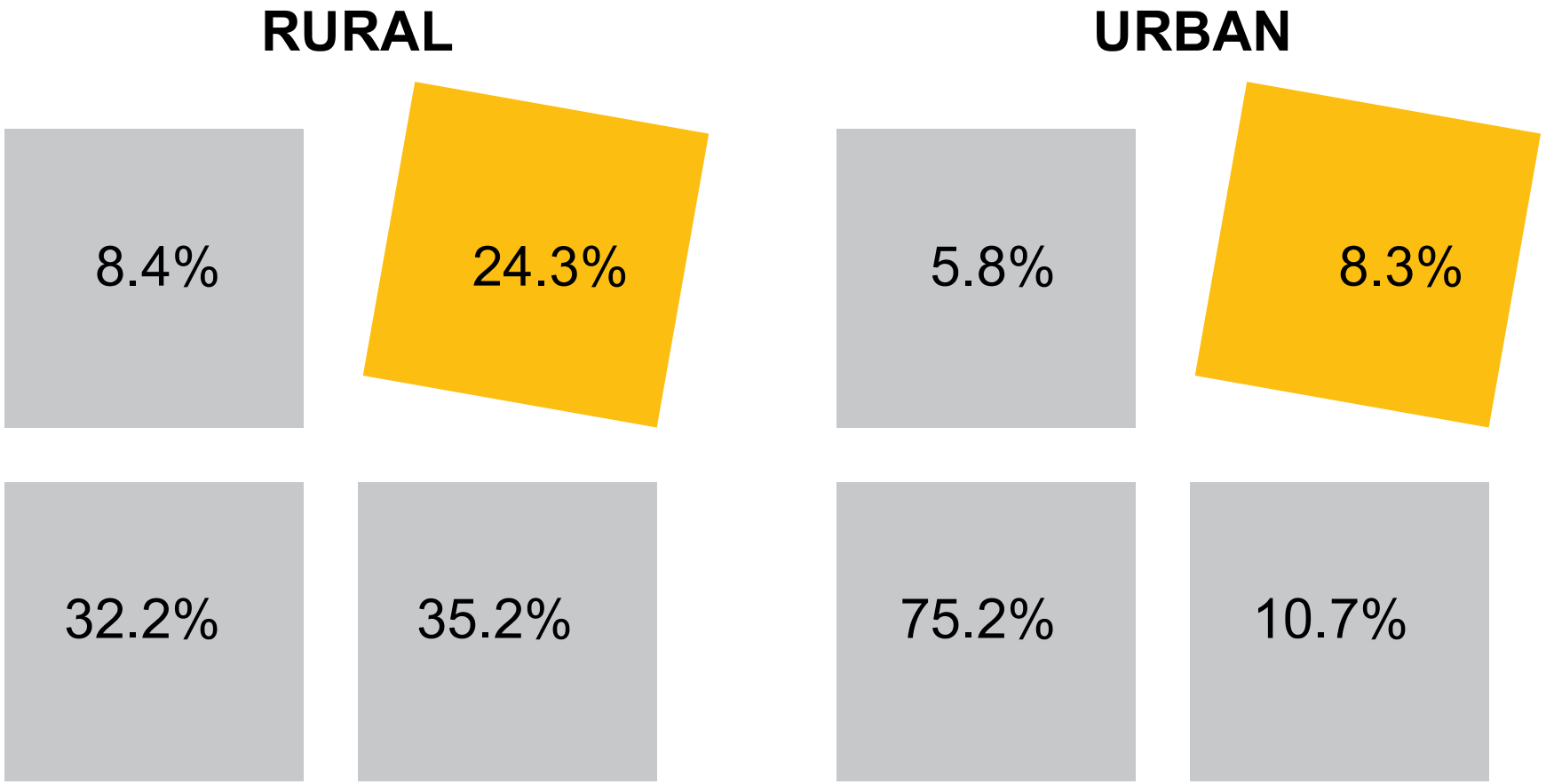


Table 11.1c Chronic Poverty in Uganda, 1992–1999

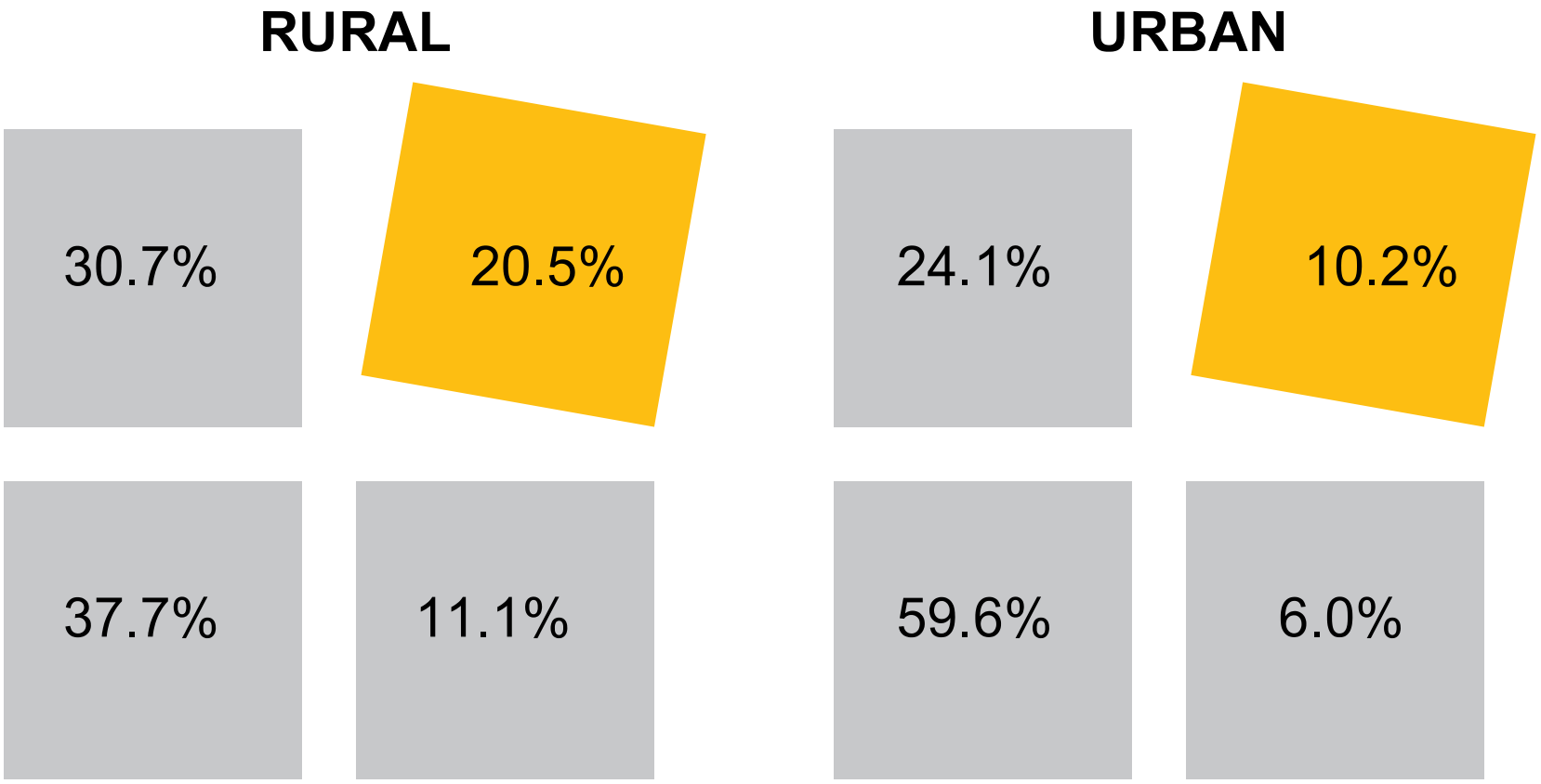


Table 11.1j Chronic Poverty in Urban Ethiopia, 1994–1997

3 The case of South Africa

3.1 A very brief history

- In 1948 the National Party instituted a policy of apartheid.
- This implied a separation by race imposed by the white minority (9.6% today).
- Nelson Mandela is released in 1990 and the first multi-racial elections are held in 1994.
- The post-apartheid South Africa implemented several changes:
  - Labour Relations Act (1995).
  - Basic Condition of Employment (1997).
  - Skills Development Act and Employment Equity Act (affirmative action) both in 1998.
  - An extensive range of social programs: Old Age Pension, Child Support Grant, etc.
  - But also land reform.

3.2 Measuring poverty in South Africa (Woolard and Leibbrandt, 1999)

- How to measure well-being?
  - Per capita consumption.
  - Household consumption.
  - Per capita income.
  - Per capita food consumption.
  - Per capita caloric intake.
  - Budget share of food expenditure (food ratio).
  - Average educational level

- How similar are those indicators?

Table 1 Incidence of poverty amongst selected groups, by poverty measure (1993 data)*

	% Africans in poverty	% coloureds in poverty	Incidence of rural poverty	Incidence of urban poverty	Incidence of poverty amongst female headed households
Per capita consumption	51.4	25.3	60.5	20.3	53.4
Total household consumption	51.8	21.1	58.2	22.5	52.1
Per capita income	51.6	19.2	59.5	21.3	52.4
Per capita food expenditure	49.6	35.2	56.3	24.4	49.9
Per capita caloric intake	42.5	57.2	42.4	38.0	44.2
Food ratio	50.9	20.5	57.8	22.0	51.9
Avg. adult education	49.9	27.8	56.5	24.1	43.8

Source: Saldru, 1993.

* assuming that the poorest 40% of households are poor.

- Does income poverty correlates with other measures?

Table 3 Correlation of alternative definitions of poverty with the per capita consumption definition (1993 data)

Definition	Percentage of population "correctly" identified		
	Poor	Non-poor	Total
Household consumption	70.5	80.3	76.4
Per capita income	77.0	84.7	81.6
Per capita food expenditure	85.8	90.5	88.6
Per capita caloric intake	62.3	74.8	69.8
Food ratio	65.8	77.2	72.6
Adult school attainment	60.5	73.7	68.4

Source: Saldru, 1993.

Alternative definitions of PVT lines

Table 5 Comparison of Selected Poverty Lines for South Africa - 1993

Types of Poverty Lines	Rands per month cut-off	Percentage of individuals below the poverty line
1. Population cut-off at 40th percentile of households ranked by adult equivalent expenditure	R301.70 per adult equivalent	52.8
2. Population cut-off at 50% of national per capita expenditure	R201.80 per capita	46.9
3. Amount of money required to achieve a per capita caloric intake of 8500 kJ per day[1]	R149.50 per capita	40.4
4. Minimum and supplemental living levels per capita set by the Bureau of Market Research, University of South Africa[2]		
Supplemental Living Level (SLL)	R220.10 per capita	56.7
Minimum Living Level (MLL)	R164.20 per capita	44.7
5. Per adult equivalent household subsistence level (HSL) set by The Institute for Development Planning Research, University of Port Elizabeth[3]	R251.10 per adult equivalent	45.7
6. International poverty line of US$1 (1985 prices) per capita per day[4]	R105.00 per capita	25.6

Source: Saldru, 1993

Notes:

1. Derived through regression analysis, using the Food Energy Intake Method (Ravallion, 1998) which relates food expenditure per adult equivalent (X) and energy intake per adult equivalent (C) by means of a function of the form $\ln X = a+bC + \mu$.

Equivalence of scales

- Larger families are more likely to have more income and more consumption.
- To account for that, we can use per capita measures.
- But the consumption of 3 people is not 3 times the consumption of one (economies of scale).
- Examples?

- Also, in the absence of fixed costs, children my need less consumption compared to an adult.
- We can then convert children's consumption into an *adult equivalent* measure (E)

$$E = (A + \alpha K)^{\theta} \tag{1}$$

- A = number of adults and K = number of children.
- α = children in adult equivalence.
- θ = scale.
- But what are the "correct" values for α and θ?
- . . . and how sensitive are the results w.r.t. to α and θ?

- Equivalence of scales

Equivalence scale	% of households identified as poor under both scales
α=0.5, θ=0.6	96.1
α=0.5, θ=0.75	98.2
α=0.75, θ=0.6	95.6
α=0.75,θ=0.75	97.1
α=0.75, θ=0.9	95.9
α=1, θ=0.6	94.9
α=1, θ=0.75	95.1
α=1, θ=0.9	93.6

Source: IES & OHS, SSA 1995.

Table 9 Incidence of poverty among selected groups, using a variety of equivalence scales

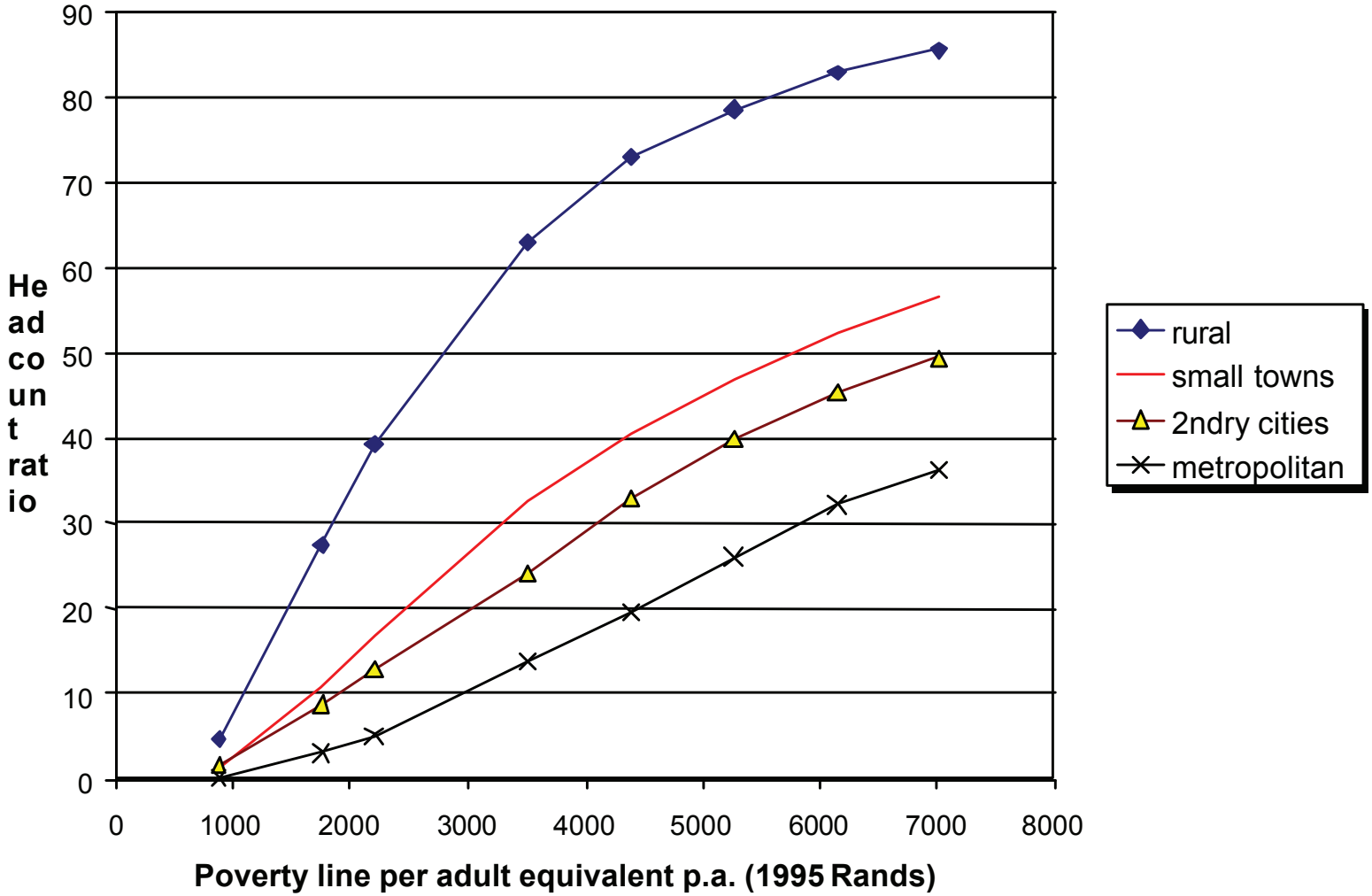
	% Africans in poverty	% coloureds in poverty	% of rural residents in poverty	% of urban residents in poverty	% of female headed hh in poverty	% of elderly in poverty	% of children in poverty	Adult equivalent poverty line (annual)	Annual transfer required to eliminate poverty
α=0.5, θ=0.6	51.1	29.8	58.4	24.6	52.5	41.3	45.5	R5089	R14.1 bn
α=0.5, θ=0.75	51.1	29.6	58.4	24.5	52.3	40.0	45.7	R4069	R14.2 bn
α=0.5, θ=0.9	51.0	29.8	58.2	24.5	52.0	38.9	45.9	R3238	R14.4 bn
α=0.75, θ=0.6	51.0	29.9	58.5	24.4	52.9	40.1	46.6	R4740	R14.1 bn
α=0.75,θ=0.75	51.1	29.5	58.6	24.2	52.7	38.5	47.0	R3719	R14.1 bn
α=0.75, θ=0.9	51.0	29.5	58.5	24.1	52.6	37.3	47.4	R2911	R14.5 bn
α=1, θ=0.6	51.0	29.6	58.7	24.1	53.1	39.1	47.3	R4471	R14.2 bn
α=1, θ=0.75	51.0	29.5	58.7	24.0	52.9	37.6	48.0	R3455	R14.4 bn
α=1, θ=0.9	51.0	29.5	58.6	23.9	52.9	36.1	48.6	R2665	R15.0 bn

Source: IES & OHS, SSA 1995.

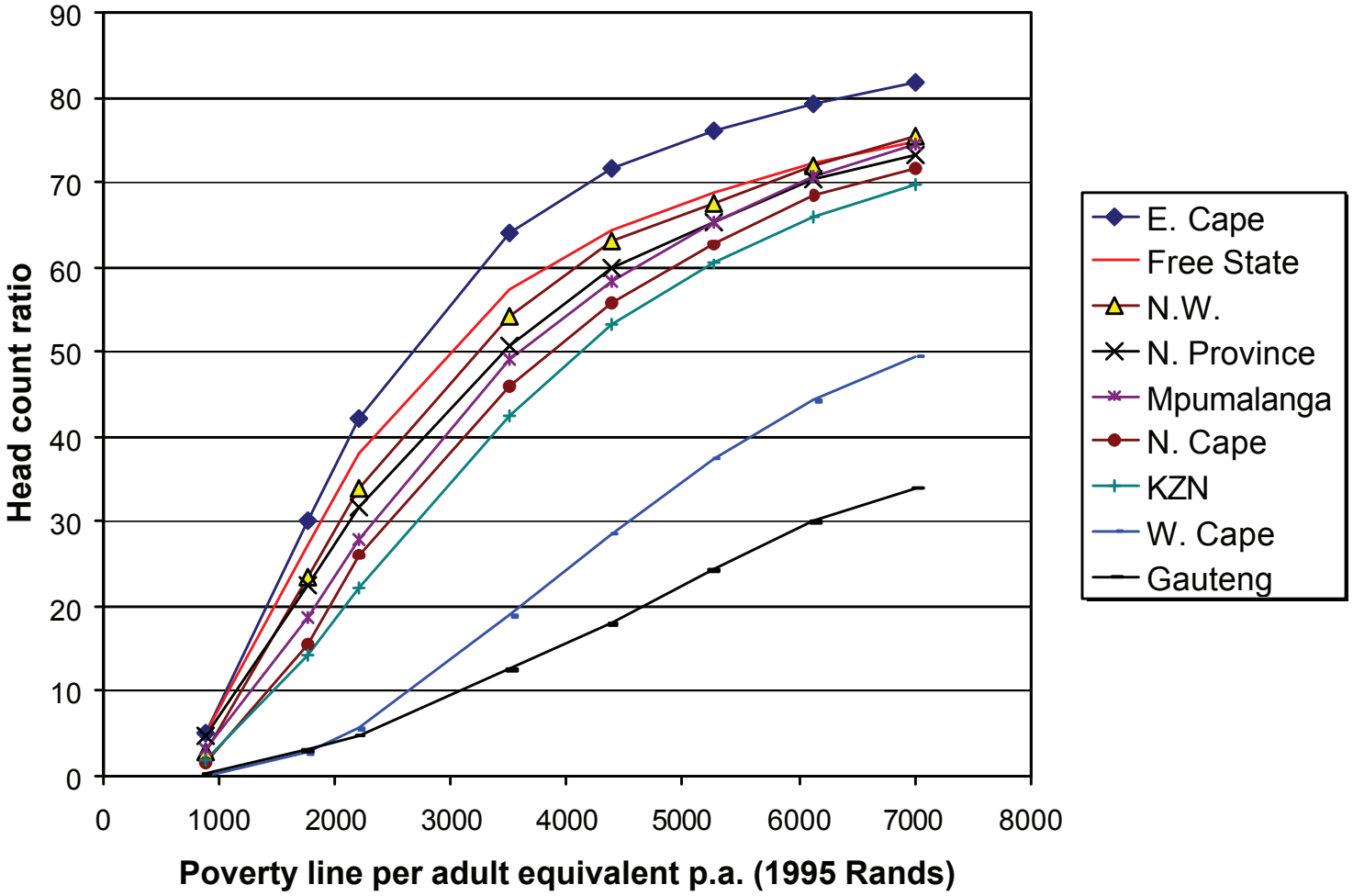
Robustness of the poverty line

- So far we have a a measure of well-being, measures of equivalent scales and a poverty line.
- We also know the results are robust to the first two.
- item What about the poverty line?
- Does the ordering (which groups exhibits more poverty) varies by the line?
- How did the authors test for this?

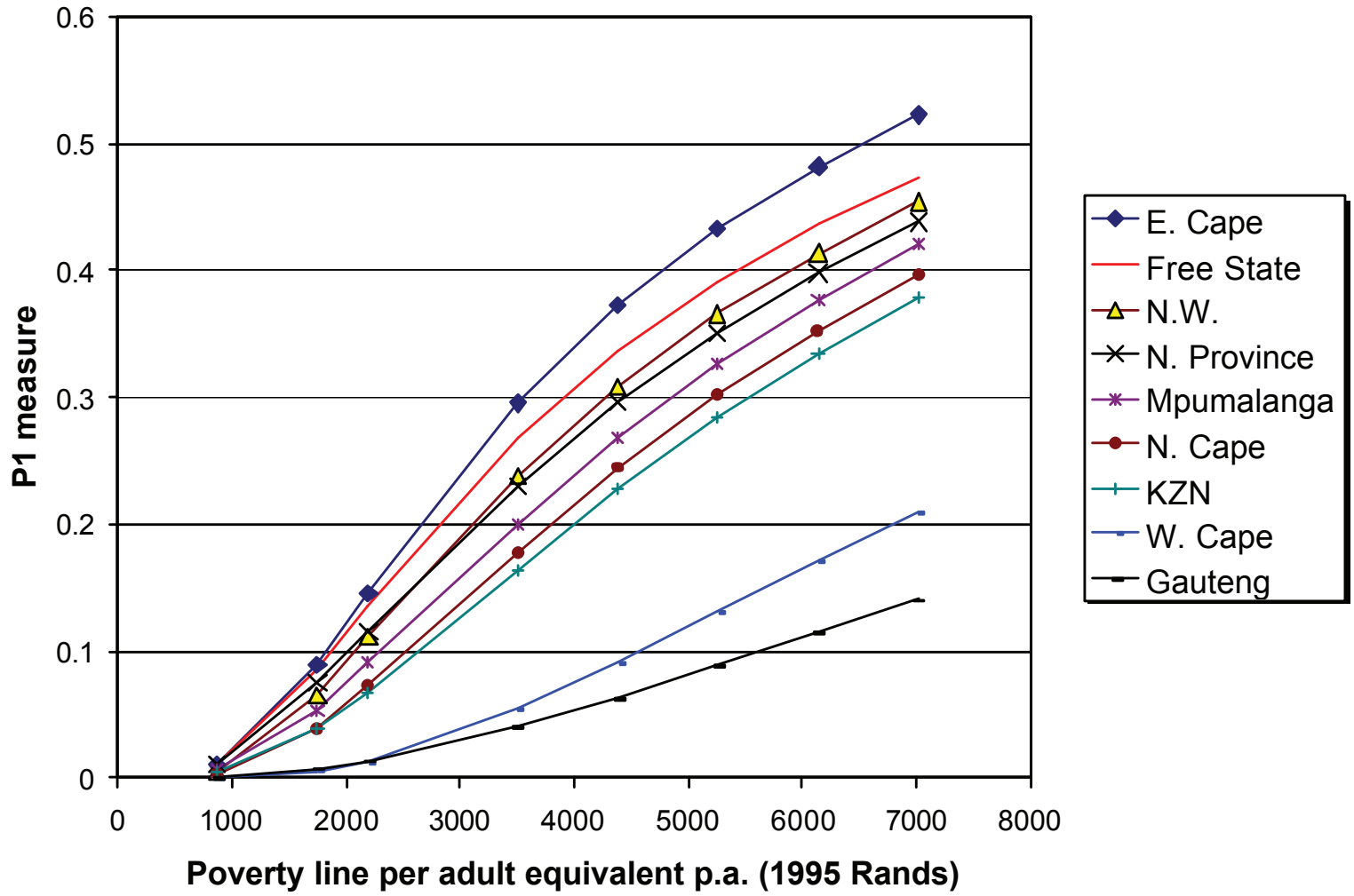
- Incidence of poverty (PHC) by area



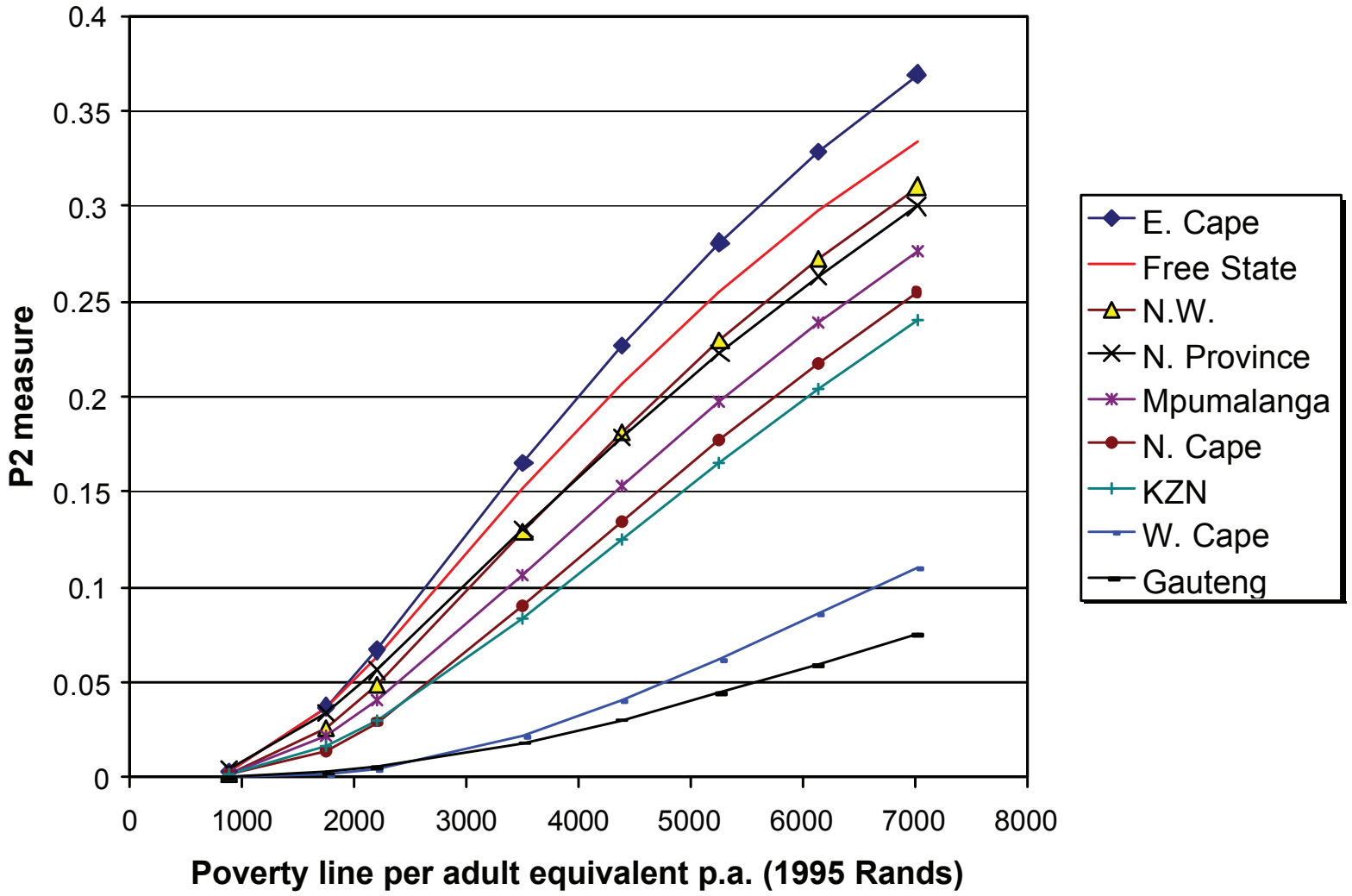
- Incidence (PHC) by province



- Depth (IG) by province

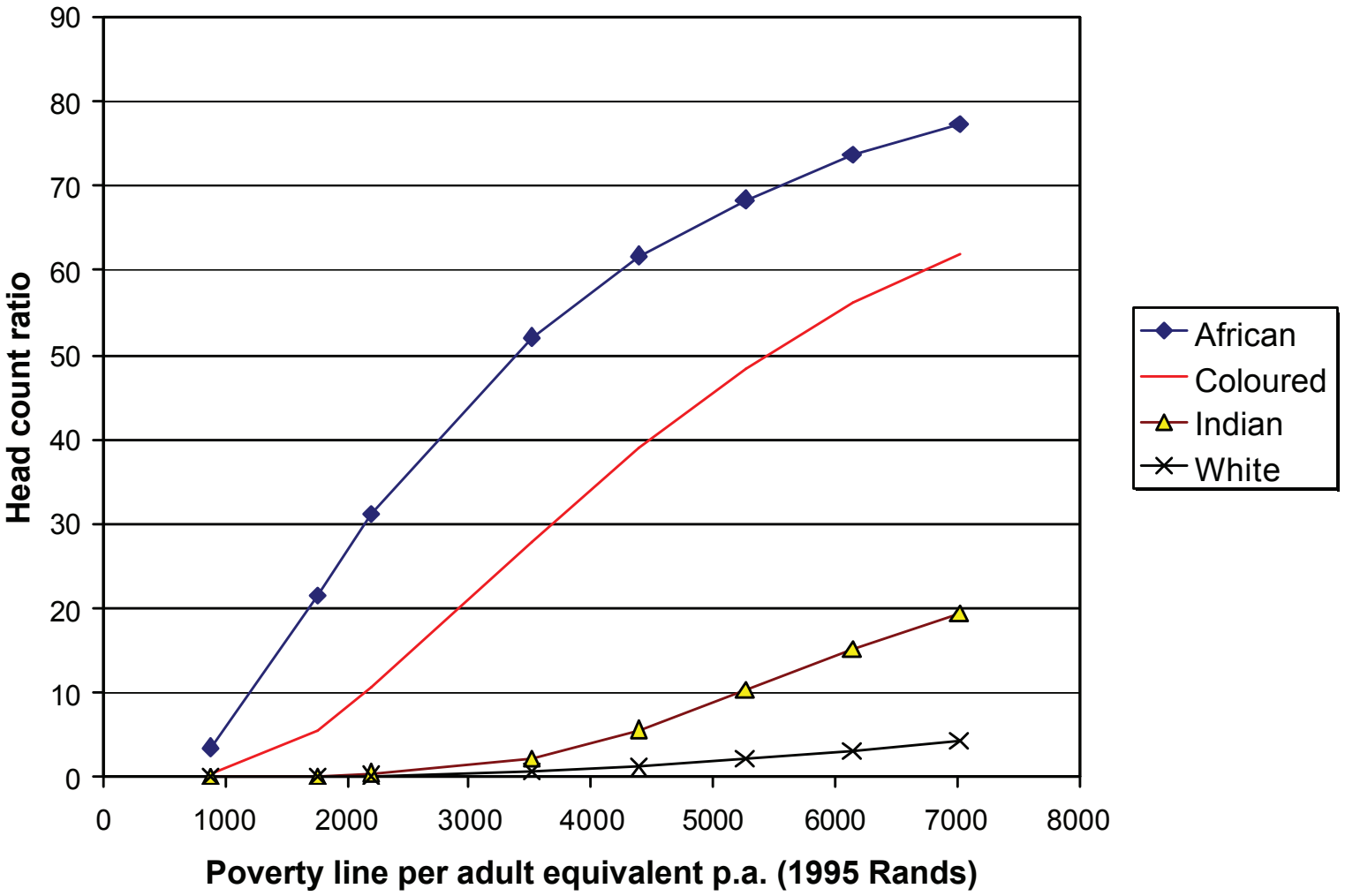


- Severity (P_2) by province

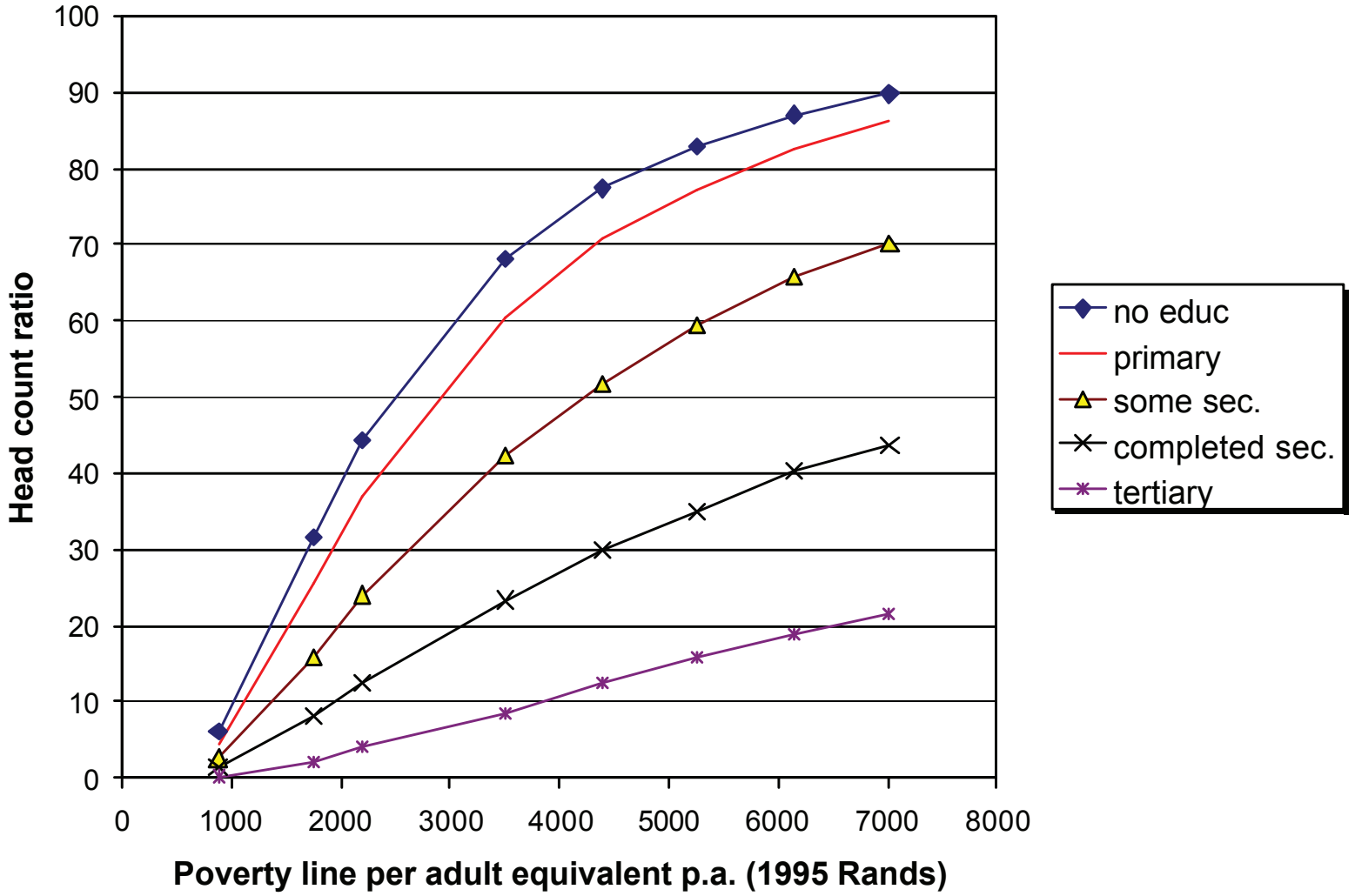


- Incidence of poverty (PHC) by race

Figure 5 Incidence of poverty by race

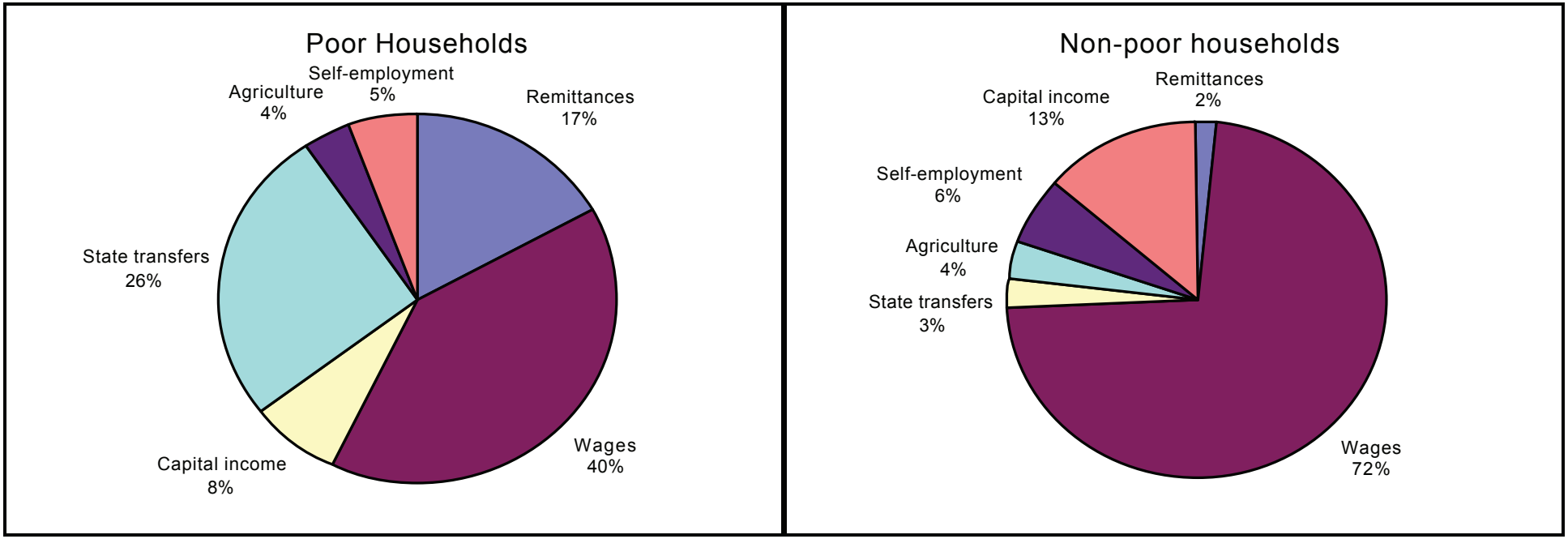


- Incidence of poverty (PHC) by education level



- Income sources

Figure 8 Sources of income among poor and non-poor households.



Source: Saldru, 1993

Sources

- Lorenz curves come from Debraj Ray (1998) textbook.
- Inequality in South Africa: van der Berg et al (2005) "Trends in poverty and inequality since the political transition."
- Inequality in SSA (tables 6 and 7) from by Tsikata, Y. (2001) "Globalisation, Poverty and Inequality in Sub-Saharan Africa: A Political Economy Appraisal."
- Inequality in SSA (table 3.1) Okojie, C. and A. Shimeles (2006) "Inequality in sub-Saharan Africa: a synthesis of recent research on the levels, trends, effects and determinants of inequality in its different dimensions".
- Recent trends in PHC: Chen, S. and M. Ravallion (2007) "Absolute Poverty Measures for the Developing World, 1981-2004" World Bank.

- FGT in Africa: Can Africa Claim the 21st Century? The World Bank Washington, D.C.
- FGT in Ivory Coast: Deaton (1997) The Analysis of Household Surveys.
- Poverty dynamics: Chronic poverty centre.