Approaches to Poverty Measurement

C4D2 TRAINING
ROME | CENTER FOR DEVELOPMENT DATA

Designing Household Surveys to Measure Poverty

Perugia, Italy
November 2017

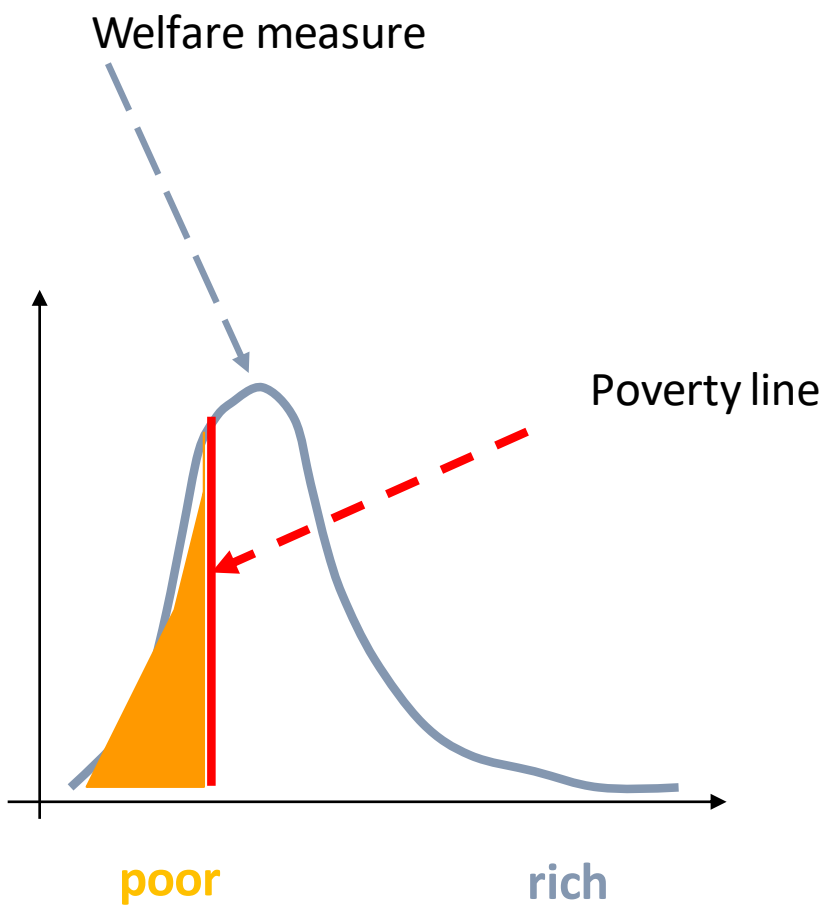
Overview

- A select few definitions of poverty
- A few reasons to measure and monitor poverty
- Different definitions of poverty, a few examples
  - Subjective poverty
  - Absolute poverty
    - **Cost-of-basic-needs poverty lines & Consumption**
    - Assets
    - Multi-dimensional poverty
- Extensions
  - On the usefulness of cardinality, depth and severity
  - Global poverty measurement, absolute and relative

Poverty measurement, overview

How do we measure poverty?

1) A **welfare measure** for individuals, used to derive a distribution of living standards.
2) A **poverty line**, threshold below which individuals are classified as poor.
3) A **poverty measure**, summary statistics of poverty in population.



What is poverty?

Different definitions without a concensus

- …from narrow to broad, from objective to subjective, from measurable to amorphous

Insufficient consumption of small set of common items (eg. Minimum bundle of goods)

Insufficient consumption of large set of measurable items (eg. Basic needs)

Insufficient calories (eg. Food energy intake)

Insufficient resources (eg. Income poor)

Incapable of achieving basic functionings (eg. Social participation)

Deprivation in multiple dimensions of nonmonetary aspects of wellbeing (eg. Multidimensional poverty; education, health, access to infrastructure)

Perceptions of having sufficient resources to participate in society

Poverty attributes

- Different aspect of poverty
  - Objective/Subjective:
    - Objective: Measuring **consumption**, income, outcomes, access
    - Subjective: Typically asking for self assessments
  - Absolute/Relative:
    - Absolute: **Basic needs**
    - Relative: drawing inference from national poverty lines, societal poverty
  - Monetary/Nonmonetary
    - Monetary: **Value of needs in local currency based on market prices**
    - Nonmonetary: MPI (weighted count of deprivations typically based on consultations)

Why measure poverty?

- Identify disadvantaged sub-populations
  - Social assistance to disadvantaged groups; Implication: comparability of demography (eg. Age)
- Monitor progress
  - We tend to only make progress on those things we measure
  - Implication: requires comparability over time (instrument stability, tension: learning/improving)
- Identify disadvantaged sub-national regions
  - Assistance to disadvantaged areas; Implication: comparability over space, stratification
- Identify causal factors of poverty
  - Design improved policy. Poverty takes many forms (eg. Chronic, transitory) and with many associated attributes (eg. low skills, low health; single mothers etc)
  - Implication: requires data on potential confounding factors (education, housing, health, security, access to infrastructure, including both candidates causal factors and hypothesized policy triggers)
- Identify poor individuals
  - Identify recipients of program benefits. (Significantly different task from all other above, why?)

Subjective measures of Poverty

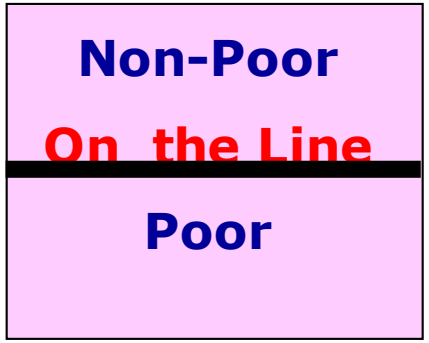
Subjective poverty, typical questions

- The methods are based on the subjective judgment of people on what constitutes a socially acceptable minimum standard of living.
- Some example questions
  - What income/expenditure do you consider to be absolutely minimal, in that you could not make ends meet with any less?
  - Imagine a 6-step ladder where on the bottom, (or the first step), stand the poorest people, and the highest step (or the sixth), stand the rich. On which step are you today?
- The answers will vary from person to person. The answers may be correlated with consumption and income.
  - Is this desirable?

Subjective Poverty, *an example from Philippines*

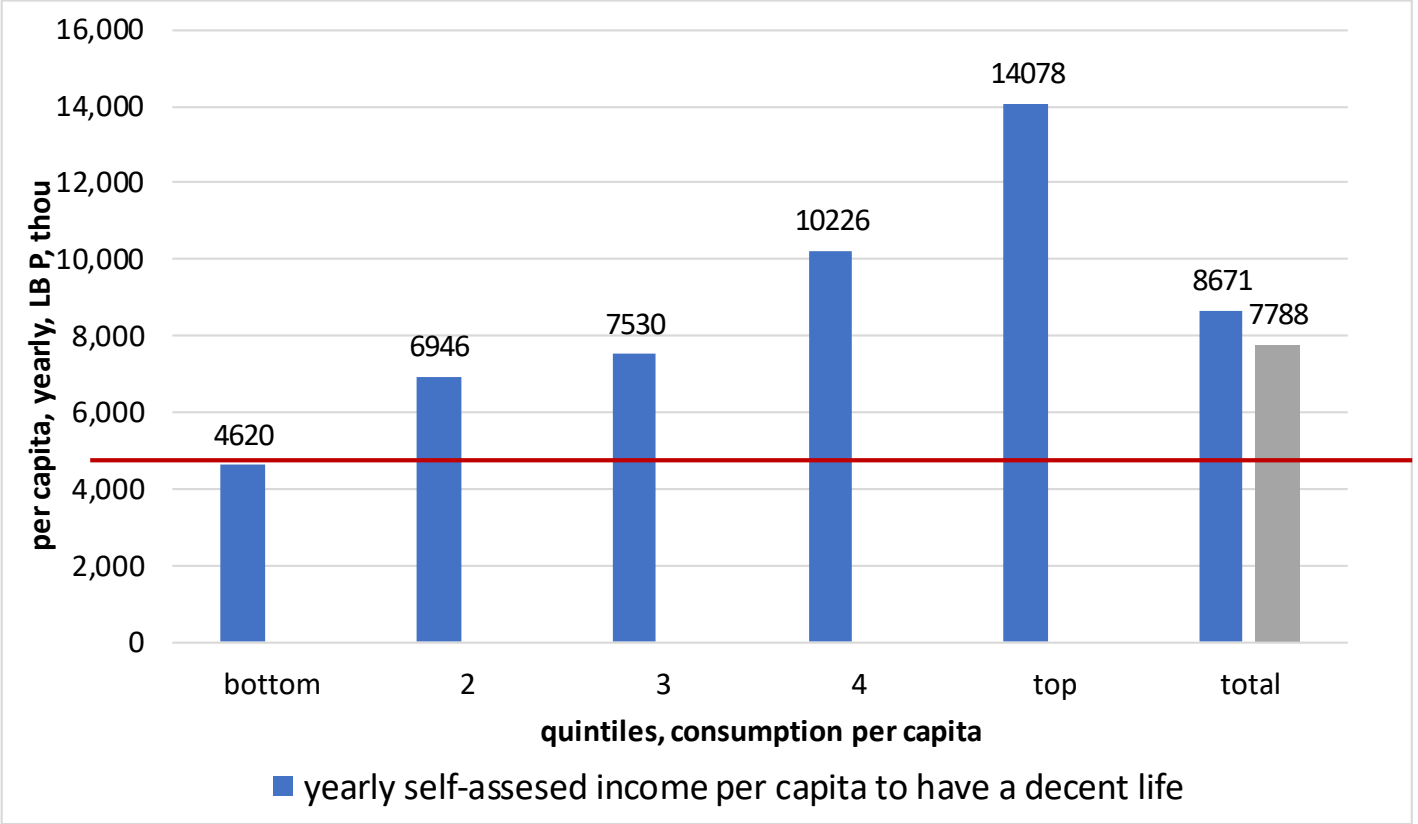
- In the Philippines, Social Weather Stations (SWS), a non-government organization, has collected extensive data on subjective poverty.
  - Collected biannually since 1985, and quarterly since 1992, the SWS surveys poll about 1200 households.
- Respondents are shown a card with a line running across it; below the line is marked "poor" and above it "non-poor";

Question: "Where would you place your family in this card?"



Subjective poverty, *an example from Lebanon*

- *Question*: What is the minimal monthly income that a family similar to yours would need to live a decent life?
- Whether the core indicator or not, good to consider including some subjective assessments of wellbeing as a check on estimated poverty lines.
- Self-assessments increasing in wellbeing; In this case, self-assessment of the poorest quintile aligns with estimated poverty line.



Subjective poverty, *vignettes*

- Develop example family vignettes through consultations and analysis of existing data.
- Vignette 1: Joseph's/Josephine's family has 6 people – 3 adults and 3 children – living in a mud house with the river as the main source of water. One of the children is in primary school. None of the adults are literate. The family has no land and supports itself by engaging in casual agricultural labor for a large landowner. They have one small meal a day and very rarely eat matooke, meat or fish. The family has no furniture and sleeps on the floor.
- …
- Vignette 4: Medard's/Mary's family has 6 people – 3 adults and 3 children – living in a brick and cement house with tap water in the compound. All of the children are in primary school. One adult male is literate. He travels two months of the year to the regional and national capital to engage in trading. The family has a 4-acre banana plantation. The family eats three meals a day which usually include meat or fish. The family has three beds with mattresses, cushioned chairs, a table, radio, clock, second hand motorcycle, two cows and numerous chickens.
- Ask households to place each family on the step ladder, and then ask the respondent to place their family on the ladder.

Subjective poverty, *discussion*

- Can measuring subjective poverty deliver comparisons
  - Over time?
  - Over subgroups of people? (respondent)
  - Over space (subnational areas)?
- Advantages? Disadvantages?

Objective measures of Poverty

Cost of basic needs, and Consumption

Cost of Basic Needs

- History
  - Developed in early-1960's by Mollie Orshansky, a statistician at the US Social Security Administration
    - 1955 data on household consumption showed that households spent 1/3 of their income on food.
    - Calculated the cost of a subsistence diet developed by US Department of Agriculture (EFP, now the Thrifty Food Plan)
    - Poverty threshold = cost of subsistence diet X 3
    - In 1965, poverty line for a family of four = $3500.
    - Updated each year for inflation
- Early on, there were some minor changes, eg. lower thresholds for farm households (home production); but from about 1970, essentially no change.

Cost of Basic Needs (CBN): Poverty line

- Poverty line is the **cost** of a **bundle** of goods deemed to be **sufficient** for basic needs
- This implies two major steps:
  1. **Stipulate** an adequate consumption bundle with both food and nonfood components; and
  2. **Estimate** the cost of the bundle for each component
- Then the CBN poverty line is given by:

$$z^{BN} = z^{F} + z^{NF}$$

  - z^{F} = Food component (linked to caloric requirements)
  - z^{NF} = Nonfood component

Cost of Basic Needs (CBN): Poverty line

Steps to calculate CBN - z^F -food component

1. Pick a nutritional requirement for good health, e.g. 2,300 calories per person per day.
2. Select a "reference" population (e.g. 2-3rd deciles of distribution)
3. Calculate the average price of one calorie for the "reference" population
   - ✓ calculate food expenditures
   - ✓ calculate calories intake of food basket using a food nutrition table
   - ✓ divide expenditures over calories and take the average across reference population to get the cost of one calorie
4. Estimate the costs of meeting food energy requirements by multiplying nutritional requirement by cost per calorie

Cost of Basic Needs (CBN): Poverty line

Nonfood component (z^{NF})

- Poor households also spend money on nonfood (essential for sustaining the minimum living standard)
- What is the minimum requirement of nonfood expenditures? Is there an appropriate fixed bundle of nonfood goods as the food basket?
- Ravallion (1998) proposes a way to estimate this component.

Cost of Basic Needs (CBN): Poverty line

- Nonfood component (z^{NF})
  - Select a group of households whose food expenditure is equal (close) to the Food Poverty Line
  - Estimate average share of nonfood consumption in their total consumption expenditure (s_U)
  - Calculate:

$$z^{BN} = \frac{z^F}{(1 - s_U)}$$

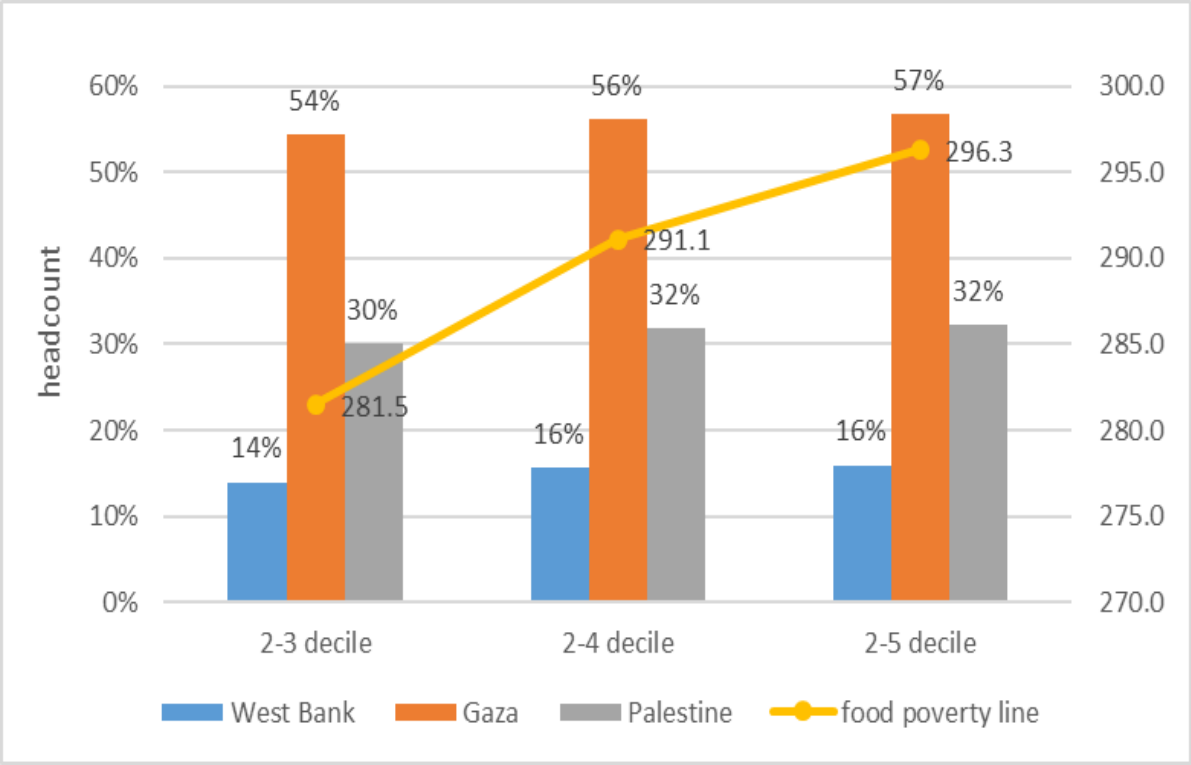
Food poverty line, example from Palestine

- *Total Calories*. Estimate household calorie consumption.
- *Total Cost*. Used spatially adjusted food expenditures to calculate food expenditure for each household.
- *Cost per Calorie*. Ratio gives cost of one calorie for each Hh
- Selected reference population belonging to 2nd - 3rd deciles and got median costs per calories for them.
- Multiplied median cost per calorie by average nutrition requirement per adult using requirements from Jordan weighted by gender and age groups of adult population in Palestine – 2720.
- Food poverty line is expressed in Adult-Equivalent terms (Palestine). Often times expressed in per-capita terms.
- Which is higher? What's the difference?

Age	Male	Female
< 2 years	791	740
2 -5	1618	1480
6 – 9	1924	1689
10	1990	1728
11	2084	1790
12	2199	1858
13	2522	2048
14	2720	2124
15	2917	2262
16	3092	2353
17	3216	2406
18 – 29	3156	2262
30 – 59	3167	2375
60 +	2710	2247
Average: 2006	2340	

Food poverty line, example from Palestine

- We selected reference population from second and third deciles of population.
- Median cost per one calorie for them was .0034
- Multiplied cost by calories requirement for adults 2720 and got the food poverty line=281.5
- Figure shows overall poverty rates and food poverty line for different reference population.



Non-Food Expenditure Adjustment

<u>Method 2: Food share or "Orshansky" method:</u>

The method consists of using the share of food in total expenditure of some group of households (typically those households whose expenditure is close to the food poverty line) to obtain the nonfood allowance.

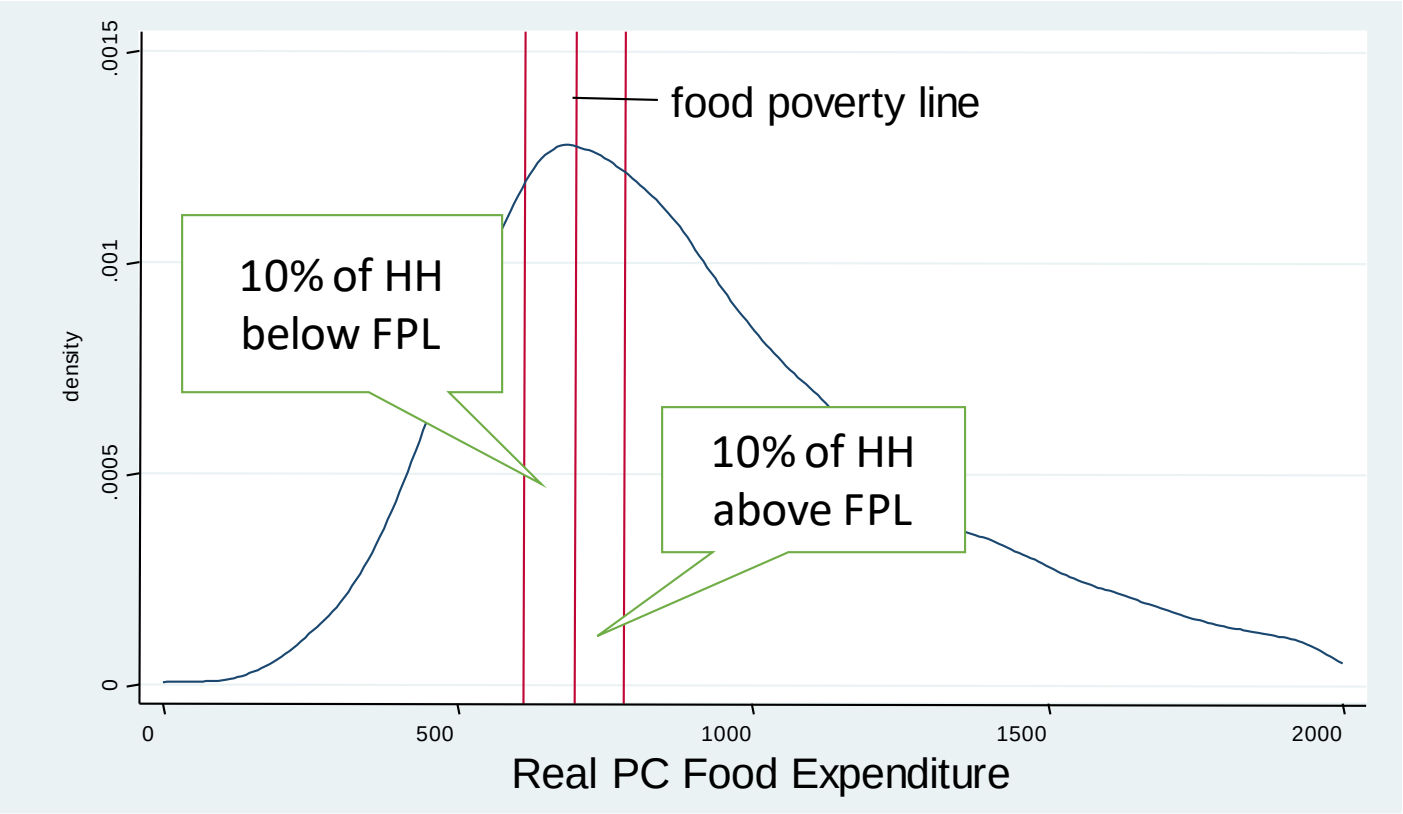
1. $z^{NF} = E\{\, x^{NF} \mid x^{F} = z^{F} \,\}$ (upper poverty line)
2. $z^{NF} = E\{\, x^{NF} \mid x = z^{F} \,\}$ (lower poverty line)

Where Z is poverty line, N is nonfood, f is food, x is consumption

Which do you expect to be higher?

Non-Food Adjustment, example from Afghanistan

Identifying subsample per region



Objective measures of Poverty

Cost of basic needs, and ***Consumption***

Estimating total household consumption

- Consumption = Food + Nonfood components
  - Food consumption, Price (p)*Quantity(q)
    - Consumption vs. expenditure
    - Recall or diary, Food item prompts
    - Food away from home, guest meals
  - Non-food "consumption"
    - Items for which expenditure is treated as consumption
    - Durable items, estimating use-value – housing, durables

Total Food Consumption^h = $\sum_f^F (p_f{}^h * q_f^h)$

Total nonfood Consumption^h = estimated use value of nonfood items

Estimating total household consumption

- Consuming food (q) and nonfood items improves wellbeing. The metric used to score this is the value of consumption at market prices.
- Higher value of consumption, higher wellbeing.
- Caution: q is what improves wellbeing, not p*q; but p*q is what sorts people.
- Why can't we use q to sort people?
- When might p*q fail as a measure of wellbeing?
- Economic theory (under typical assumptions) suggests that within a market, people face the same prices. When this is not the case, we need to adjust for differences in prices faced.

	consume, q		price ($/kg)		p*q ($)
	Rice (kg)	Meat (kg)	Rice	Meat	
Ringo	2	2.5	10	32	100
John	4	2.8	4	30	100
Paul	4.4	3.0	5	26	100
George	15	7.0	2	10	100

Who is better off?

Who is estimated to be better off?

Objective measures of Poverty

Assets

Using asset holdings to measure wellbeing

- Why might we want to use assets in addition to, or in place of, consumption & income?
- Conceptually: A reasonable definition of poverty might include not only current consumption but also stability and certainty in future consumption. Current consumption tells nothing about future, Income contains signal on savings, but wealth may be the best indicator of temporal security.
- Practicality: Consumption data are collected infrequently in developing countries, expensive (both in terms of enumerator and respondent burden), presumed to be sensitive to significant measurement error (eg. NSU), requires prices. Asset data, if just counts, can be easy to collect.
- Problem*:* Can list of assets sort people?

Common statistical tool, Principal components analysis (PCA)

- Advantage of PCA: converts numerous dimensions into a scalar.
- PCA delivers importance weights for each factor based on finding the vector that explains the most variation in the data.
- Attributes of PCA
  - Scale dependent (need to either use all binary, all counts, or all values)
  - Ordinal, not cardinal (mean signifies nothing, ordering is all that matters)
    - Common weights needed for comparability
    - Typically not comparable across countries or over time
  - Modelling variation helps sort but does not indicate levels or gaps
    - A phone might be a critical asset for wellbeing, but if everyone has it, the importance weight is zero (it explains no variation).

*Sahn, D. E., & Stifel, D. (2003). Exploring alternative measures of welfare in the absence of expenditure data. *Review of income and wealth*, *49*(4), 463-489.

Alternative measures of welfare- constructing an asset index*

- Ten datasets from LSMS and LSMS-type surveys (1988-1998)
- Use a list of assets and factor analysis, letting data determine relative weights
- Three categories of assets: household durables, housing quality and human capital (years of education of household head)

TABLE 1

SCORING COEFFICIENTS (WEIGHTS) FOR ASSET INDICES BY COUNTRY

	Durables					Characteristics					
	Radio	TV	Refrigerator	Bicycle	Motorized Transport	Piped Water	Surface Water	Flush Toilet	No Toilet	Low Quality Floor	Education of Head
Cote d'Ivoire (1988)	0.058	0.258	0.264	0.032	0.024	0.185	–0.035	0.172	–0.101	–0.058	0.129
Ghana (1988)	0.028	0.268	0.314	0.036	0.097	0.192	–0.089	0.212	–0.037	–0.049	0.108
Ghana (1992)	0.008	0.275	0.292	0.020	0.063	0.254	–0.075	0.174	–0.050	–0.054	0.098
Jamaica (1998)	0.050	0.356	0.475	0.034	0.077	0.093	–0.039	0.063	–0.038	–0.058	0.060
Madagascar (1993)	0.072	0.224	0.141	0.039	0.081	0.369	–0.063	0.242	–0.080	–0.054	0.041
Nepal (1996)	0.067	0.230	0.092	0.026	0.083	0.143	–0.016	0.346	–0.169	–0.161	0.065
Pakistan (1991)**	0.007	0.070		0.018	0.067	0.122	–0.033	0.433	–0.205	–0.222	0.085
Papua New Guinea (1996)	0.063	0.141	0.111	0.028	0.063	0.255	–0.099	0.320	–0.020	–0.158	0.098
Peru (1994)	0.033	0.148	0.150	0.035	0.038	0.181	–0.104	0.278	–0.131	–0.168	0.085
South Africa (1994)	0.024	0.117	0.142	0.024	0.087	0.278	–0.041	0.341	–0.055	–0.123	0.033
Vietnam (1993)	0.052	0.129	0.149	0.039	0.138	0.281	–0.041	0.381	–0.042	–0.096	0.126
Vietnam (1998)	0.026	0.096	0.212	0.030	0.146	0.251	–0.047	0.363	–0.051	–0.089	0.066
Unweighted mean	0.041	0.193	0.213	0.030	0.080	0.217	–0.057	0.277	–0.081	–0.107	0.083

*The Jamaica JSLC did not include information on floors, so wall material is substituted here.
**The Pakistan integrated household survey (PIHS) did not include information on ownership of refrigerators.

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PCA, Discussion questions

- Can we infer anything about whether the PCA measure is based on *binary*, counts, or value?
  - Series of yes/no questions, characteristics variables unable to be count or value.
- Why does radio have a higher weight than motorized transport in Cote d'Ivoire? Can we compare asset scores across countries? With consumption, prices are the weights?
- What does it mean that there are no sign changes within each column?

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Alternative measures of welfare- comparing the asset index*

TABLE 2

SPEARMAN RANK CORRELATIONS BETWEEN REPORTED EXPENDITURES AND ALTERNATIVE MEASURES OF WELFARE

Log Per Capita Household Expenditure	Predicted Expenditures	Asset Index
Cote d'Ivoire—CILSS (1988)	0.71	0.51
Ghana—GLSS2 (1988)	0.72	0.43
Ghana—GLSS3 (1992)	0.72	0.42
Jamaica—JSLC (1998)	0.65	0.39
Madagascar—EPM (1993)	0.71	0.50
Nepal—NILSS (1996)	0.70	0.55
Pakistan—PIHS (1991)	0.60	0.42
Papua New Guinea—PNGHS (1996)	0.55	0.47
Peru—ENNIV (1994)	0.78	0.71
South Africa—SAIHS (1994)	0.86	0.71
Vietnam—VNLSS (1993)	0.60	0.55
Vietnam—VNLSS (1998)	0.74	0.67

[18]The transition matrices associated with these correspondence indexes are available upon request from the authors.

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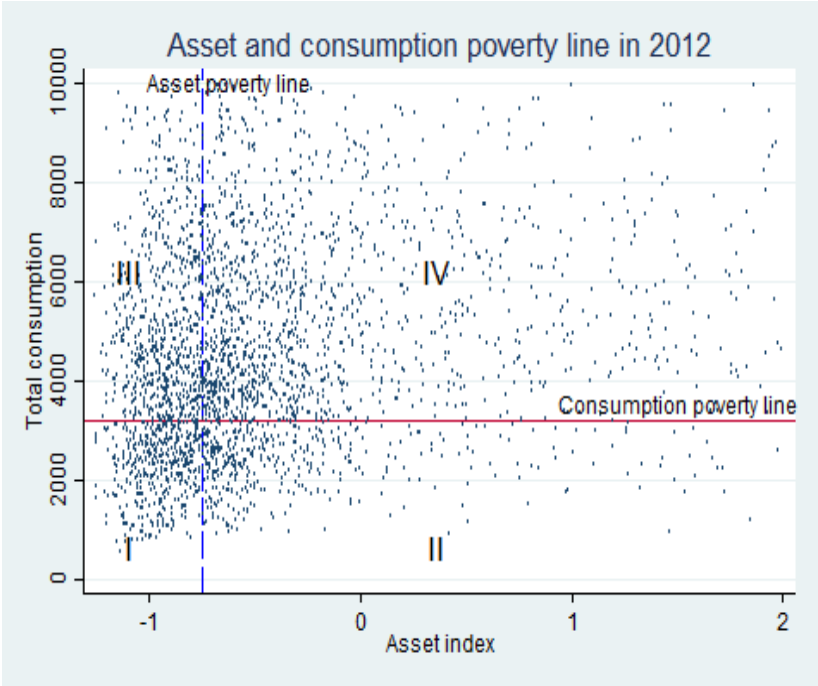
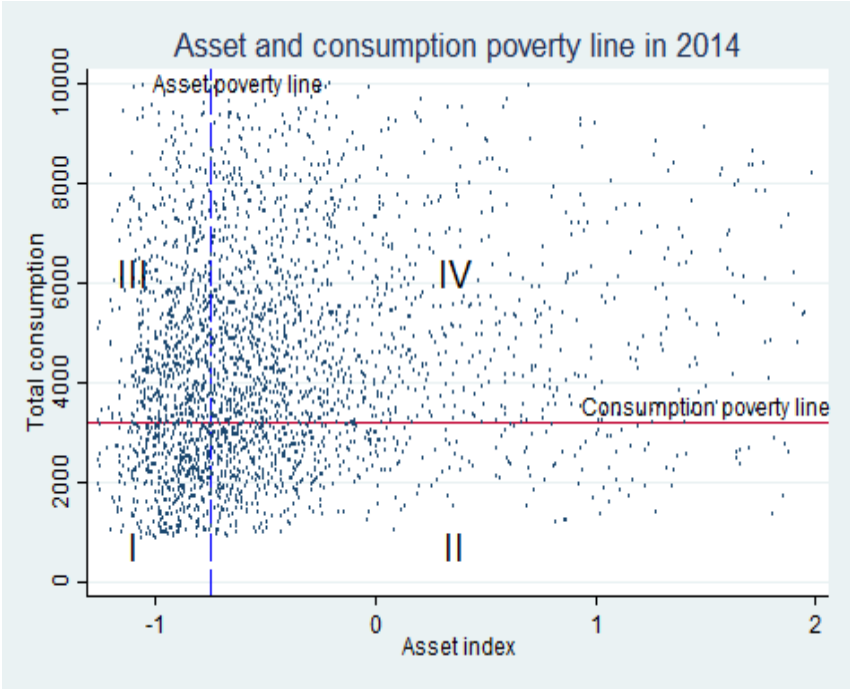
Asset-based poverty dynamics, example from Ethiopia (using ESS1 and ESS2)

Constructing an asset index

- 52 total assets
  - 34 household durables, 8 livestock species, and 10 dwelling characteristics
- Principal component analysis (PCA)
  - Pooled assets across two waves
  - Estimated scoring factors and means for the pooled data, same weights for all
  - Used to calculate period specific asset indices (can we compare change over time?)
- Asset poverty line in wave 1 set to match share of those in consumption-based poverty
- Same poverty line (asset index value of -0.963) set in wave 2

Asset-based poverty dynamics in Ethiopia (using ESS1 and ESS2)





- Approximately 66% of households had same poverty status based on both the asset index and consumption expenditures
- 34% of households were poor in one space but non-poor in the other space
- Implies some correlation in the cross-section

Alternative measures of welfare*

- Why might we want to use non-consumption or non-expenditure measures of well-being?
  - Generally, consumption data are collected infrequently in developing countries
  - Consumption data are collected using recall, which is subject to measurement error
  - Requires price data (both temporally and regionally adjusted)
  - High inflation periods, weak price data infrastructure
- Objective: Find simpler and less demanding ways to collect data to measure economic welfare and rank households

Objective measures of Poverty

Multi-dimensional Poverty Indices (MPI)

Compiled and adapted from the
Oxford Poverty and Human Development Initiative (OPHI)
http://www.ophi.org.uk/policy/multidimensional-poverty-index/

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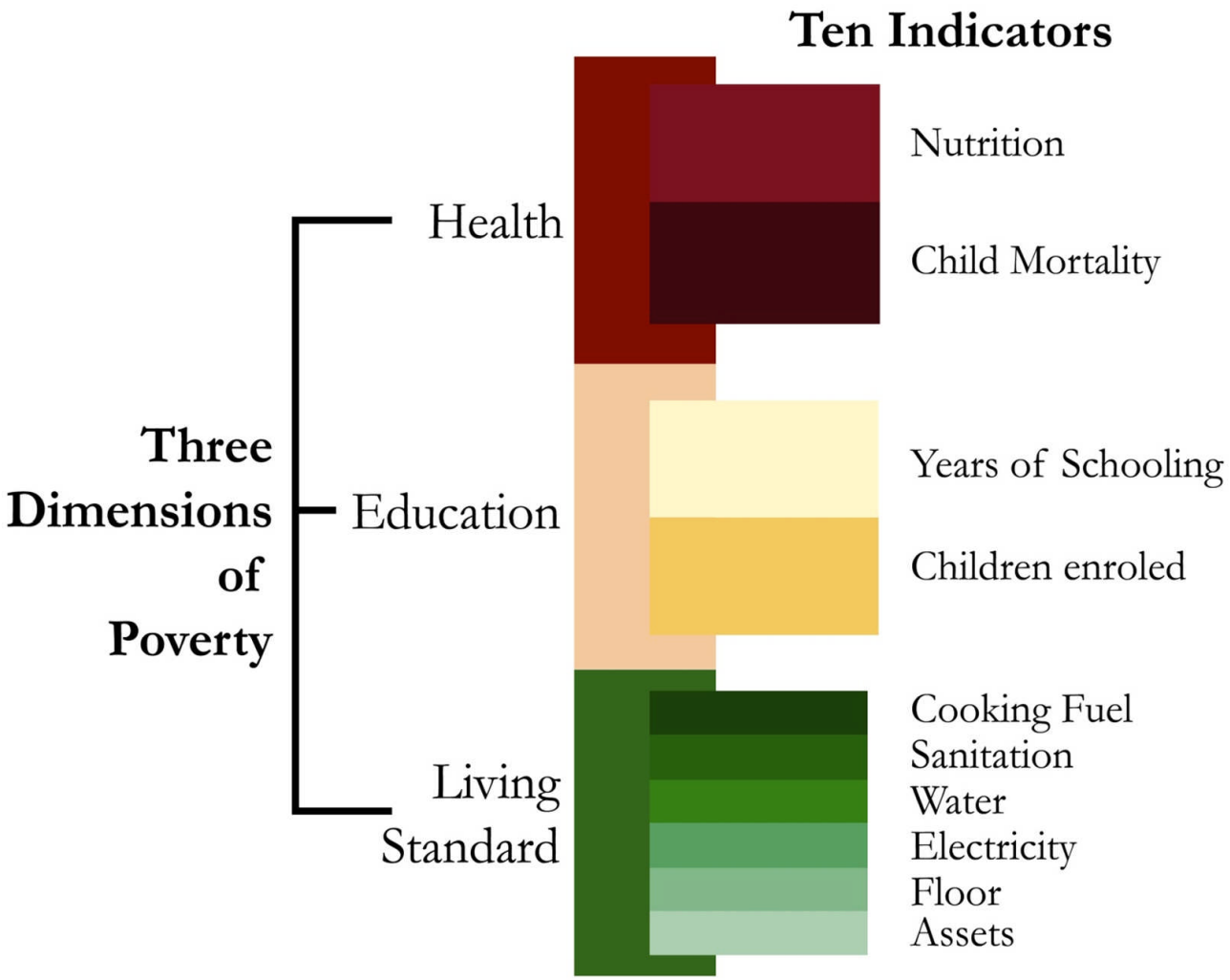
Background: the MPI

- An international measure of acute poverty for 104 developing countries.
- Launched by UNDP's Human Development Report Office and Oxford Poverty & Human Development Initiative (OPHI) on 14 July 2010, and in the HDR launched 4 November 2010
- Updated annually for countries having new data
- Aims to encourage the development of better national measures of multidimensional poverty

The dimensions of the OPHI global MPI

- Education (2 indicators, each weighted 1/6)
- Health (2 indicators, each weighted 1/6)
- Standard of Living (6 indicators, each 1/18)
- Equal weight to three dimensions (1/3)
- What's the difference with PCA? Data-driven, socially driven.

Dimensions and Indicators of the OPHI global MPI



The OPHI global MPI: Education

- Years of Schooling: deprived if no household member has completed five years of schooling
- Child Enrolment: deprived if any school-aged child is not attending school in years 1 to 8
- What's my household score if I have 6 years of schooling but no one else, and my 10-year old son is not attending school?
- Each weighted equally at 1/6

The OPHI global MPI : Health

- Child Mortality: deprived if any child has died in the family
- Nutrition: deprived if any adult or child for whom there is nutritional information is malnourished
- Each weighted equally at 1/6
- My wife gave birth to 5 children, 4 of whom are healthy and alive. None of my kids are malnourished, as measured by height, weight and age. Score?

The OPHI global MPI : Standard of Living

- Electricity: deprived if the household has no electricity
- Drinking water: deprived if the household does not have access to clean drinking water or clean water is more than 30 minutes walk from home (MDG Definition)
- Sanitation: deprived if they do not have an improved toilet or if their toilet is shared (MDG Definition)
- Flooring: deprived if the household has dirt, sand or dung floor
- Cooking Fuel: deprived if they cook with wood, charcoal or dung
- Assets: deprived if the household does not own more than one of: radio, TV, telephone, bike, or motorbike
- Each weighted equally at 1/18

Who is multi-dimensionally poor, OPHI MPI

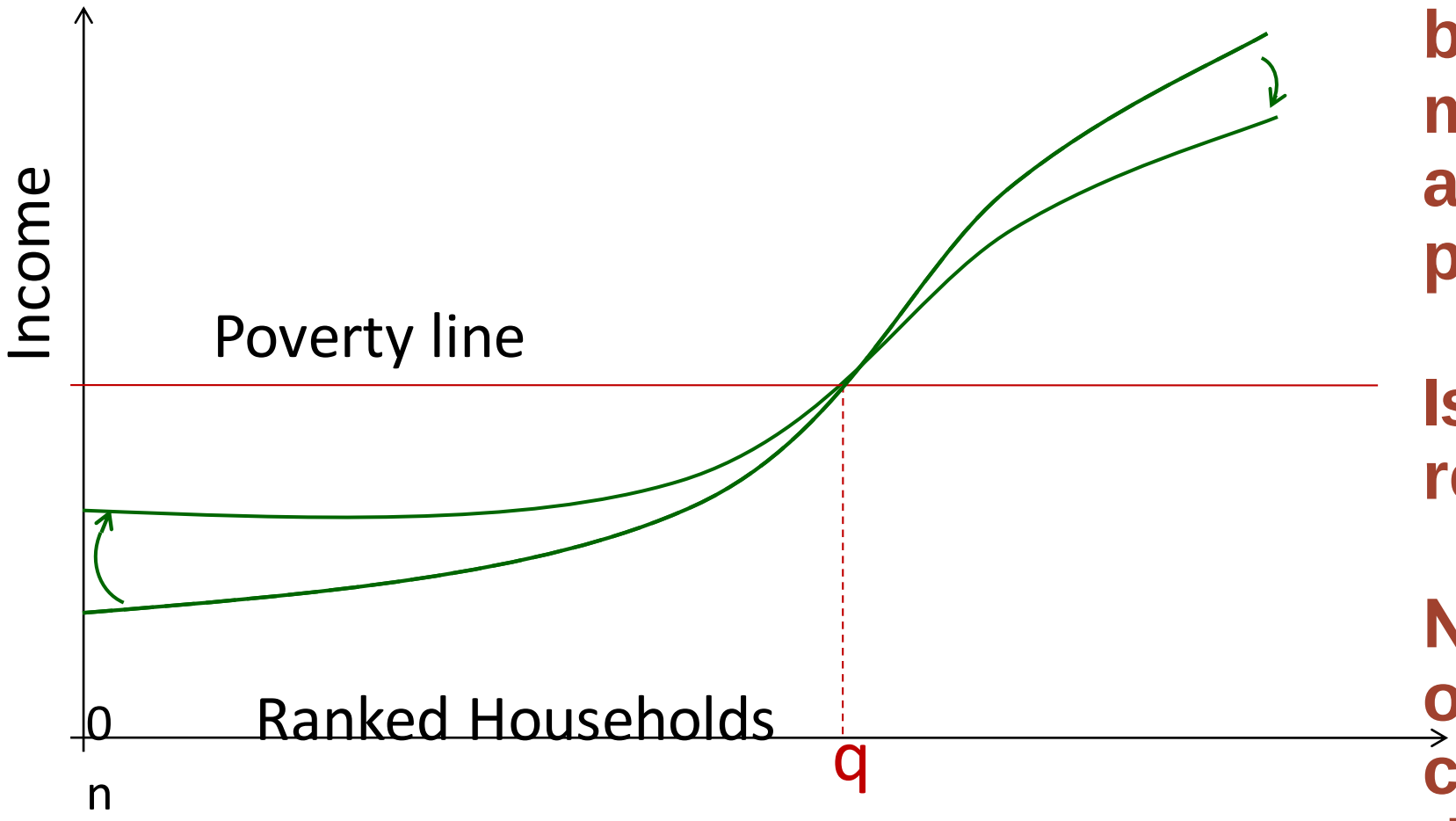
- Household indicator
- Multi-dimensionally poor if, and only if
  - Weighted sum exceeds 30% of deprivations. (a score of 3/10 (0.3) or more)
  - Can be in any combination.

Who is multi-dimensionally poor, OPHI MPI

- Half of the world's poor as measured by the MPI live in South Asia (51%, 844 million)
- Quarter in Africa (28%, 458 million).
- Niger has the greatest intensity and incidence of poverty in any country, (93%).

Poverty Measurement, extensions

Depth of poverty



Suppose the poor get better off, but no one moves above the poverty line.

Is poverty reduced?

Not if you're only counting the poor

Alternative to counting the poor: Poverty Gap Ratio

$$PG = \frac{1}{n}\sum_{i=1}^{q}\frac{z - y_i}{z}$$

$$y_1, \ldots, y_q < z < y_{q+1}, \ldots, y_n$$

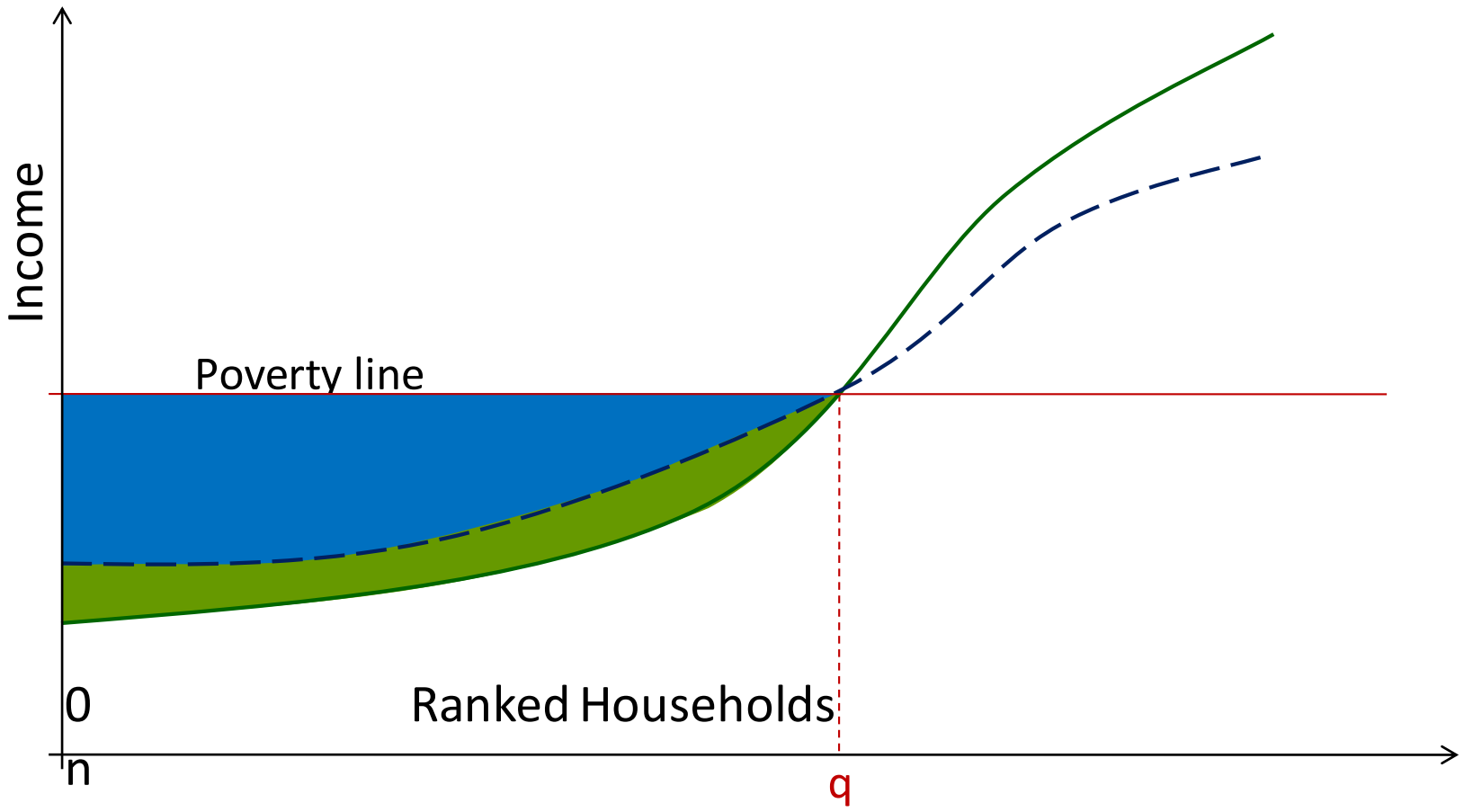
- Advantages of *PG*: reflects depth of poverty
- Example:

A: (1, 2, 3, 4) B: (3, 3, 3, 4)

Let z = 3.1, HA = 0.75 = HB;

Data needs?: tails matter, mention SPG

Adding up poverty: Poverty Gap

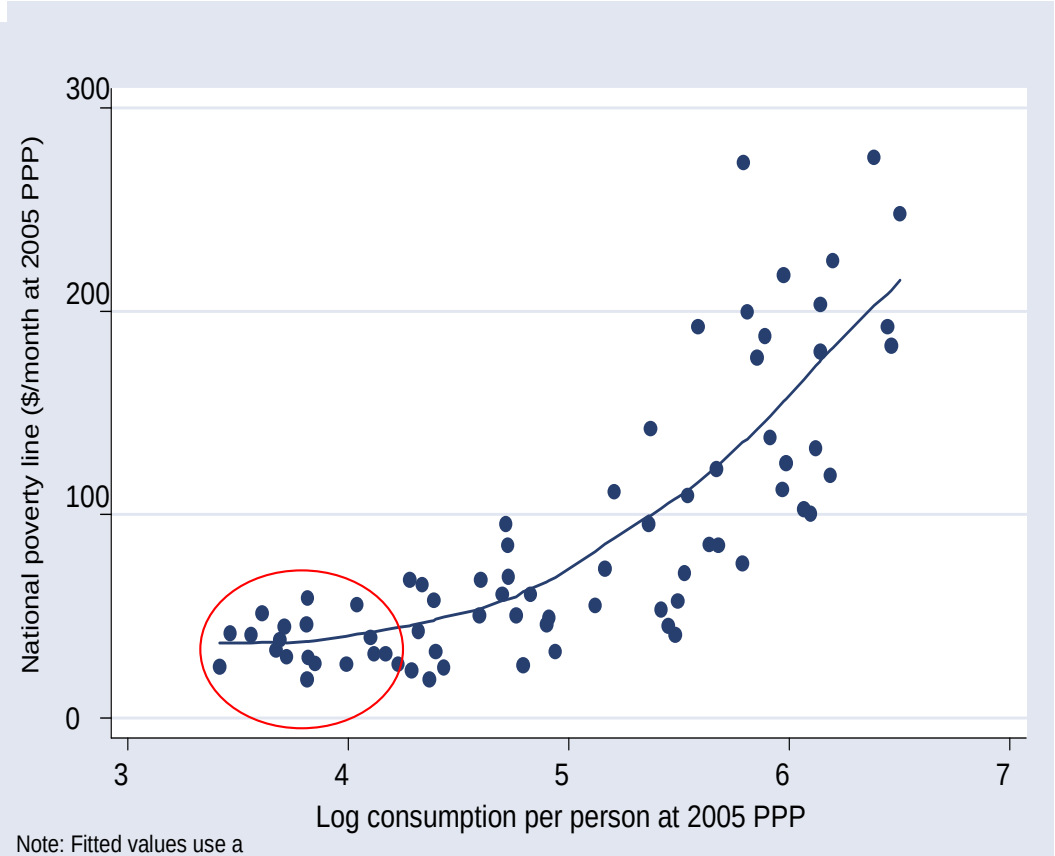


Poverty Measurement, extensions

Global poverty counts

Where does the $1.90 line come from?

Figure 1: National poverty lines for 74 developing countries plotted against mean consumption using consumption PPPs for 2005



Note: Fitted values use a lowess smoother with bandwidth=0.8

Source: Ravallion, Chen and Sangraula (2009)

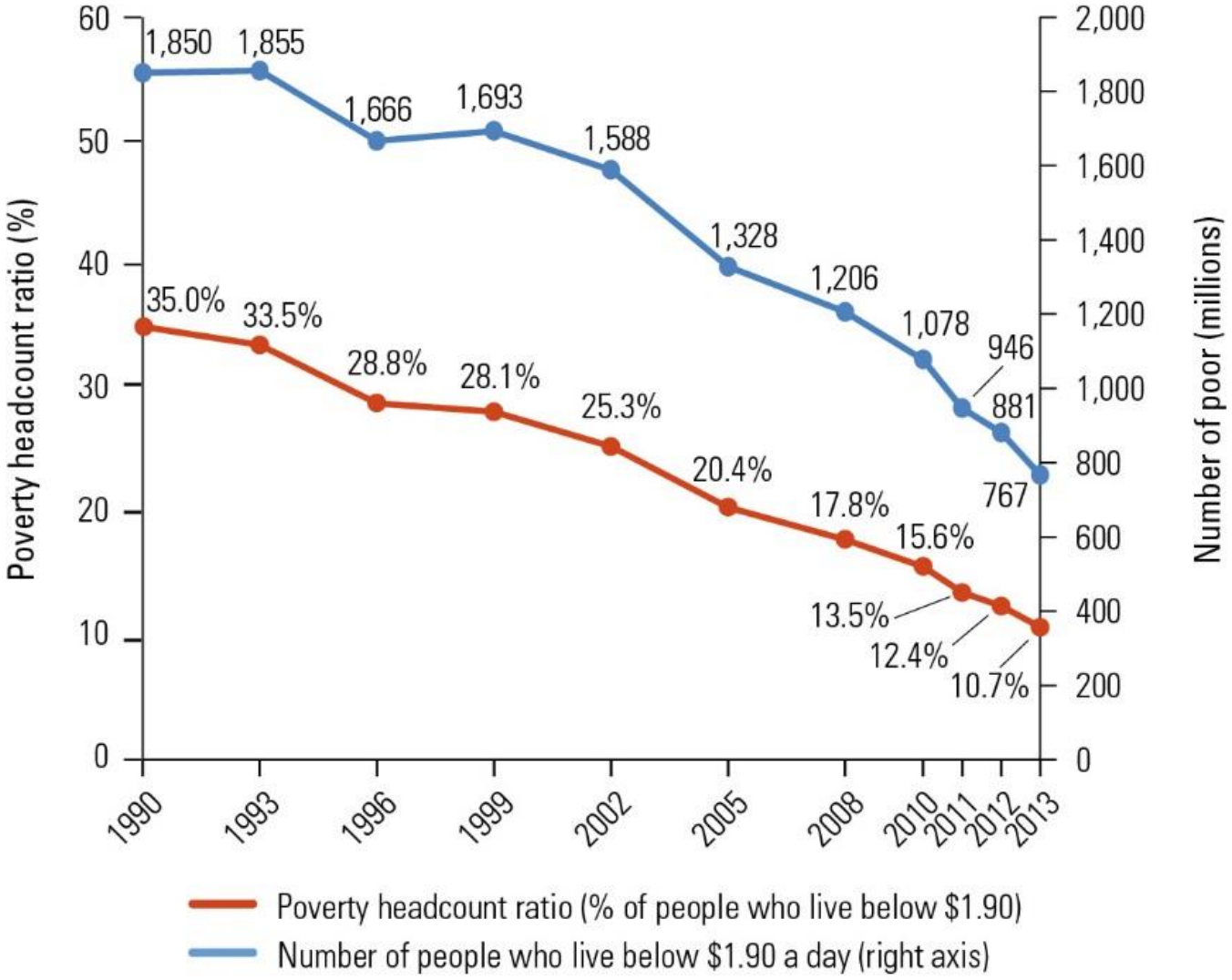
Country	Year	2005 PPP	2011 PPP
Malawi*	2004-05	0.86	1.34
Mali	1988-89	1.38	2.15
Ethiopia	1999-2000	1.35	2.03
Sierra Leone	2003-04	1.69	2.73
Niger	1993	1.10	1.49
Uganda	1993-98	1.27	1.77
Gambia, The	1998	1.48	1.82
Rwanda	1999-2001	0.99	1.50
Guinea-Bissau	1991	1.51	2.16
Tanzania	2000-01	0.63	0.88
Tajikistan*	1999	1.93	3.18
Mozambique	2002-03	0.97	1.26
Chad	1995-96	0.87	1.28
Nepal	2003-04	0.87	1.47
Ghana*	1998-99	1.83	3.07
Average		**1.25**	**1.88**

Source: Ferreira et al. (2016)

The recent progress against poverty…

- 767 million people or 10.7% of the global population live on less than 1.90 USD/day
- 1.1 billion fewer poor since 1990 in a world with 1.9 billion more people

The Global Poverty Headcount Ratio and the Number of the Extreme Poor, 1990–2013

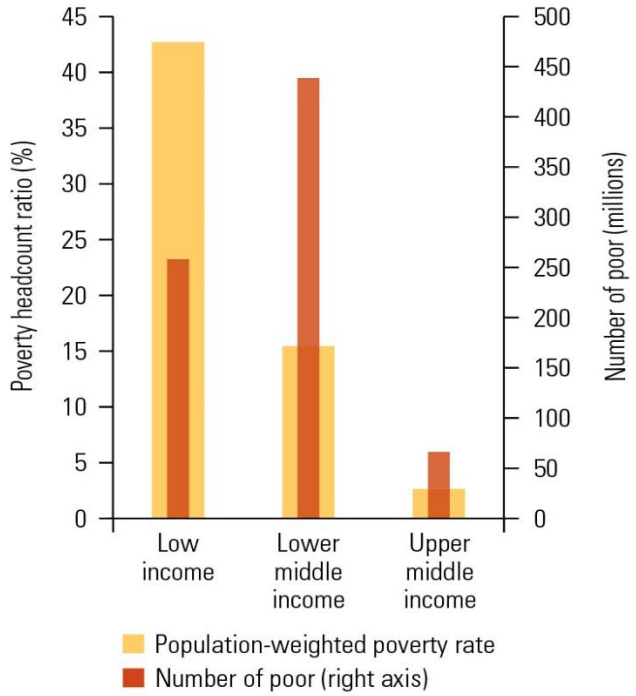


Sources: Annex 2A; most recent estimates, based on 2013 data using PovcalNet (online analysis tool), World Bank, Washington, DC, http://iresearch.worldbank.org/PovcalNet/.
Note: Poverty is measured using the 2011 US$1.90-a-day PPP poverty line.

C4D2 TRAINING

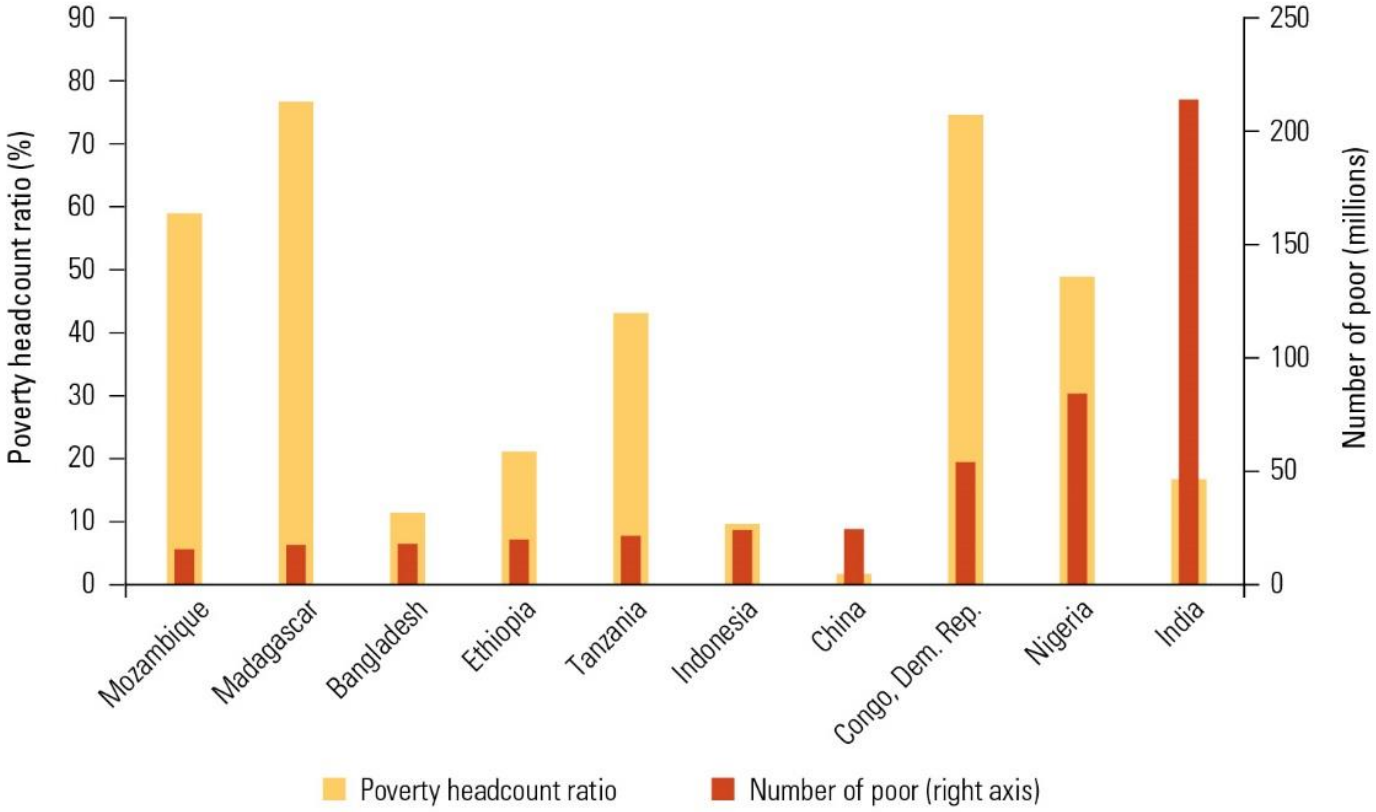
Majority of extreme poor in middle income countries

FIGURE 2.5 Poverty Headcount Ratios and Number of the Poor, by Country Income, 2013



Source: Most recent estimates, based on 2013 data using PovcalNet (online analysis tool), World Bank, Washington, DC, http://iresearch.worldbank.org/PovcalNet/.
Note: Poverty is measured using the 2011 US$1.90-a-day PPP poverty line. Countries are grouped into income categories following the 2016 classification of lower-, lower-middle, and upper-middle-income countries in PovcalNet.

FIGURE 2.7 Number of the Poor, Top 10 Countries, 2013

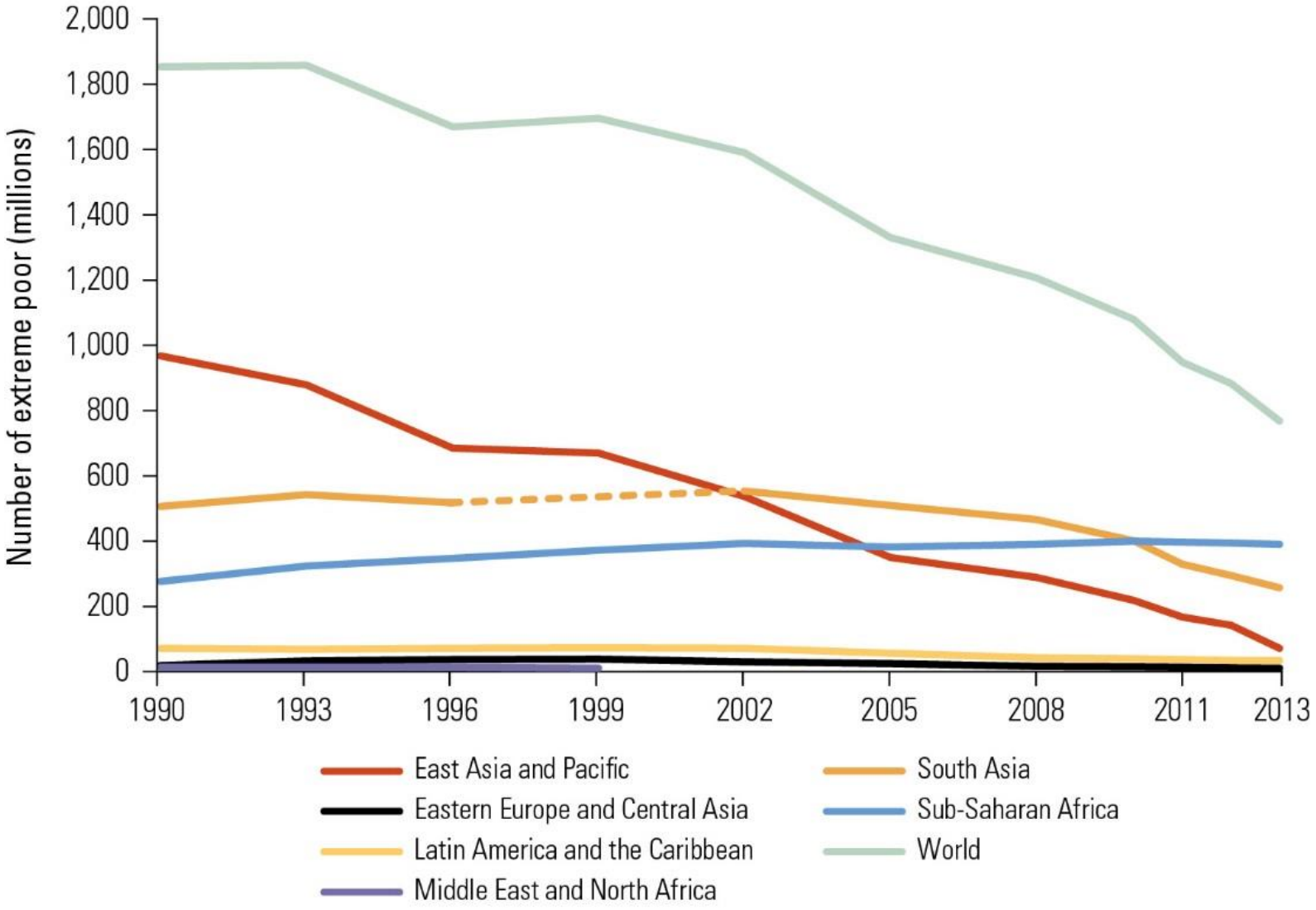


Source: Most recent estimates, based on 2013 data using PovcalNet (online analysis tool), World Bank, Washington, DC, http://iresearch.worldbank.org/PovcalNet/.
Note: Poverty is measured using the 2011 US$1.90-a-day PPP poverty line.

C4D

- Steep global decline, but important regional differences
- East Asia and Pacific (China, Indonesia) & South Asia (India) main source of global reduction
- Half of the extreme poor live in Sub-Saharan Africa; 1/3 in South Asia

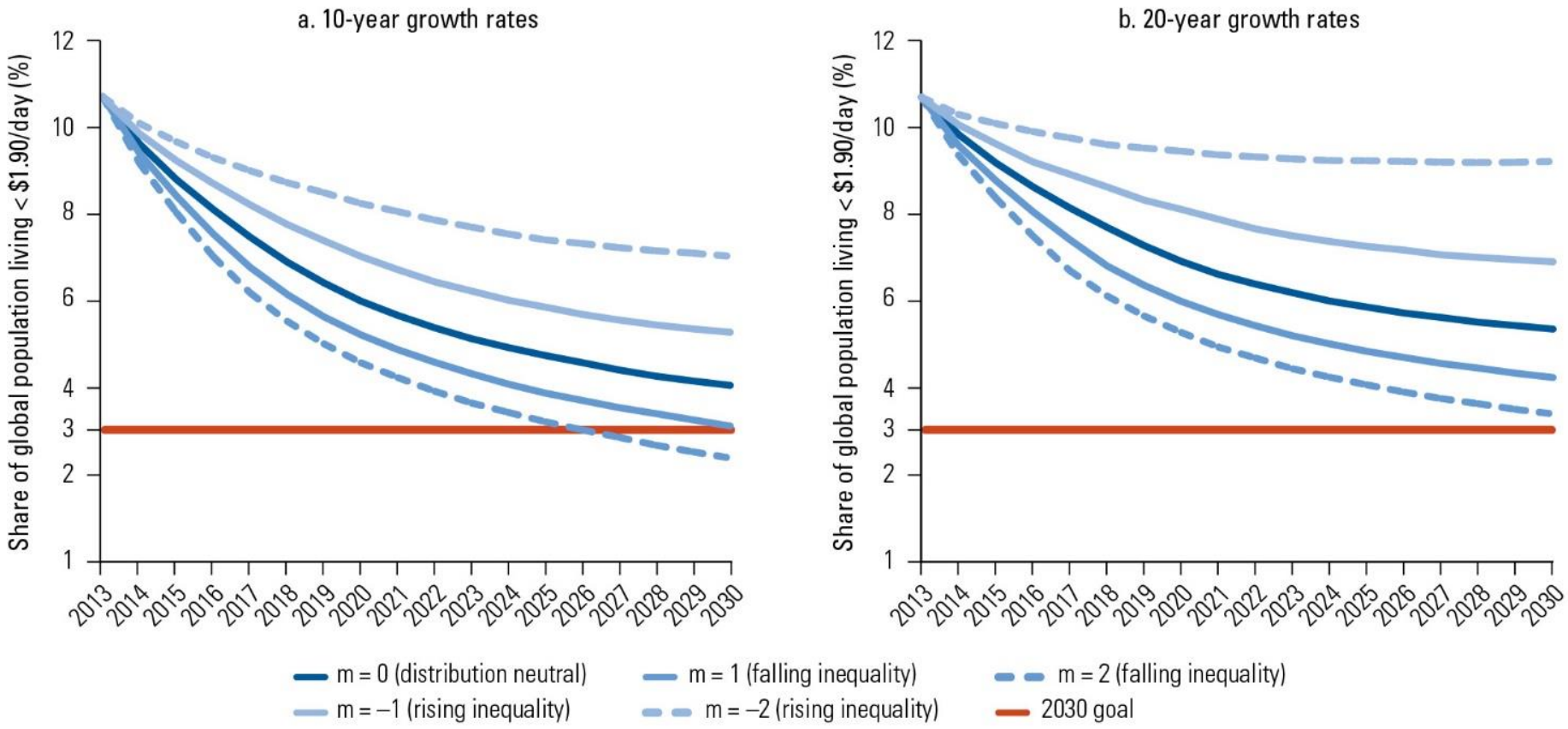
FIGURE 2.3 Regional and World Trends, Number of the Extreme Poor, 1990–2013



Sources: Annex 2A; most recent estimates, based on 2013 data using PovcalNet (online analysis tool), World Bank, Washington, DC, http://iresearch.worldbank.org/PovcalNet/.
Note: Poverty is measured using the 2011 US$1.90-a-day PPP poverty line. The breaks in the trends shown in the figure arise because of the lack of good-quality data.

A tougher road ahead?

FIGURE 3.4 Boosting Shared Prosperity and Ending Poverty, 2013–30



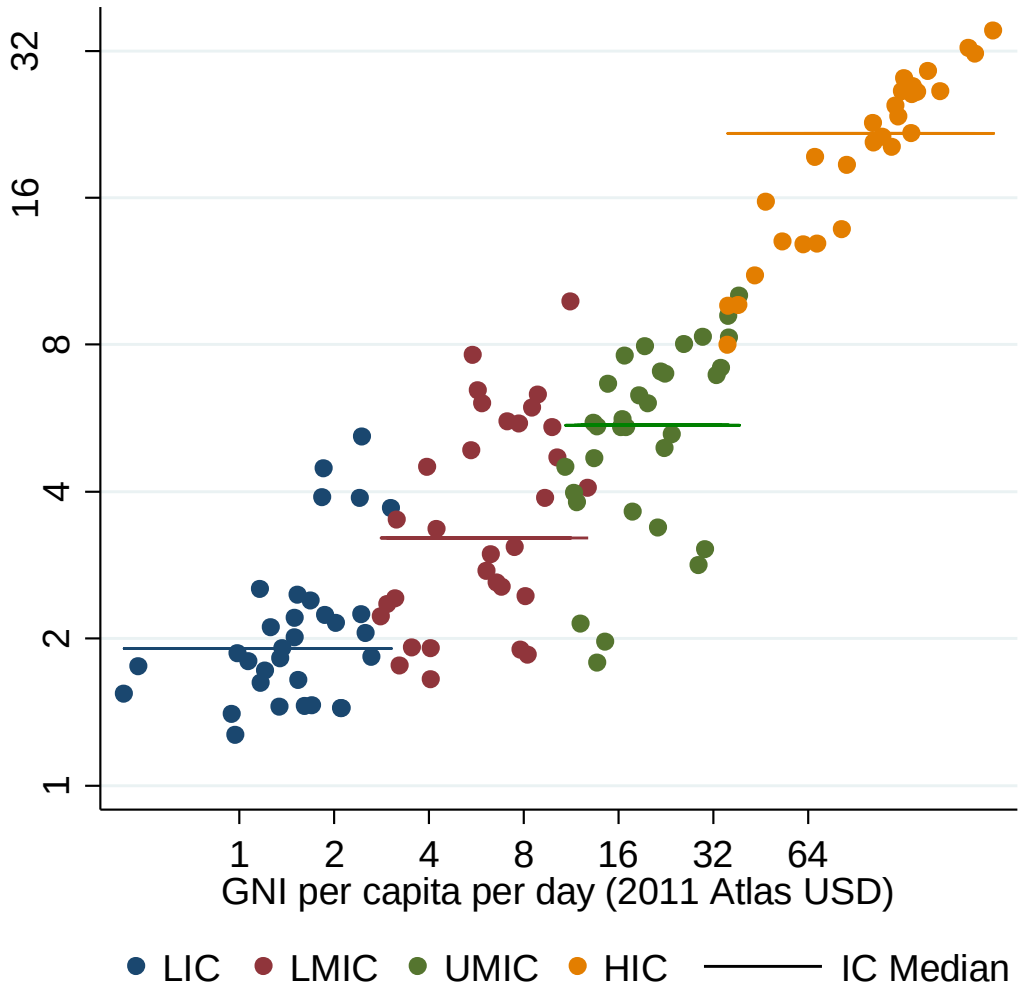
Source: Updated results based on Lakner, Negre, and Prydz 2014.
Note: m = the assumed shared prosperity premium, that is, the growth in income or consumption among the bottom 40, minus the growth in income or consumption at the mean. For example, m = 2 indicates that the growth in income among the bottom 40 exceeds the growth in income at the mean in each country by 2 percentage points.

C4D2 TR

… and towards income-class poverty lines, LMIC & UMIC poverty lines

- Assumes social relevance of a poverty line more linked to income than geography
- The same for all countries, fixed in time
- Reflecting typical national poverty line for lower and upper middle income countries
- Can be used where $1.90 is less relevant

Income Classifications	Median
Low Income	$1.9
Lower Middle	**$3.2**
Upper Middle	**$5.5**
High Income	$21.7



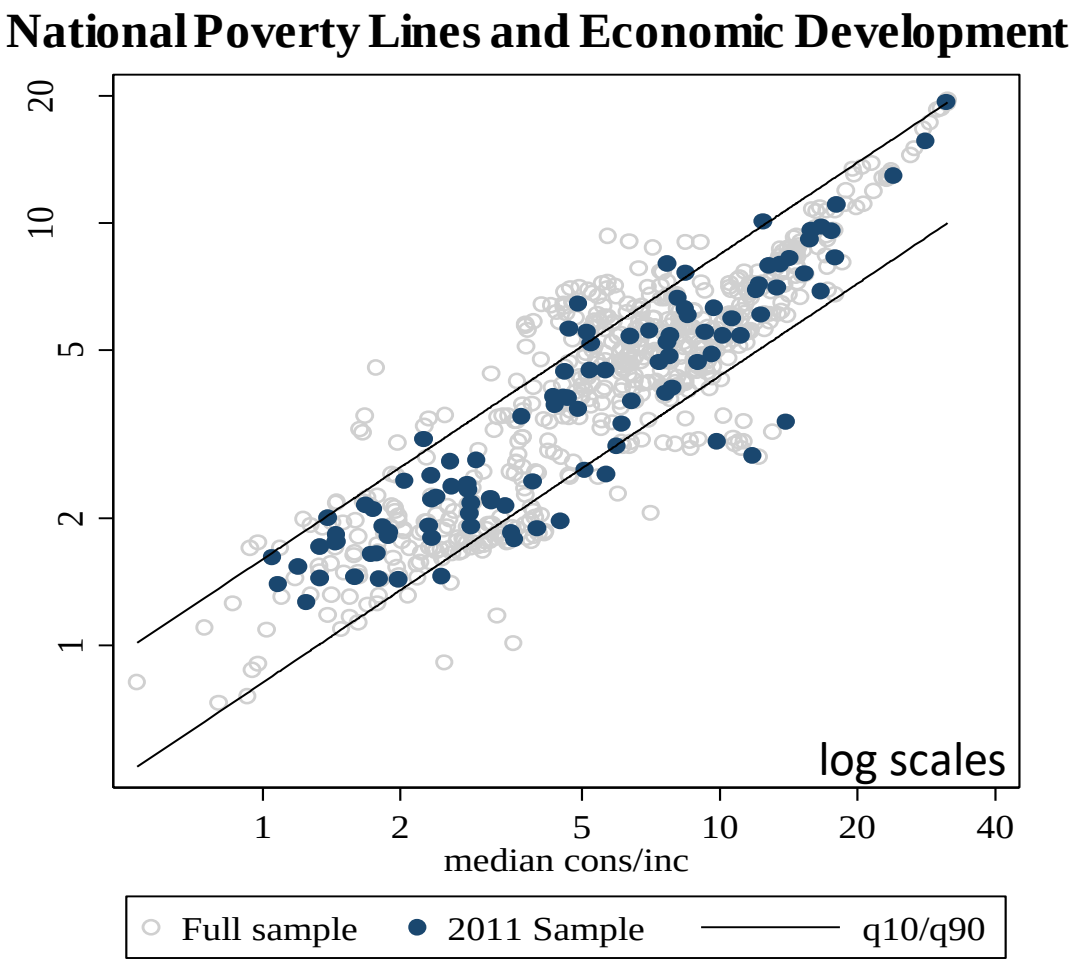
Jolliffe, D., Prydz, E. B. 2016. "**Estimating International Poverty Lines from Comparable National Thresholds,**" Journal of Economic Inequality, 14(2): 185-98.

Poverty Measurement, extensions

Societal poverty, a global relative poverty line

Atkinson: Societal Poverty Measure

- Plot national poverty lines on average national wellbeing (median, avg, HFCE)
- Upward sloping, definition of basic needs varies widely across nations
- In our data, everywhere upward sloping, no flat part at lower bound (lowess & spline)
- Why a global relative line? Why not use national lines?
  - National lines will continue to be the focus of country dialogue, SPL not a replacement
  - As a global poverty measure, 2x differences in estimated needs across range.



Atkinson: Societal Poverty Measure

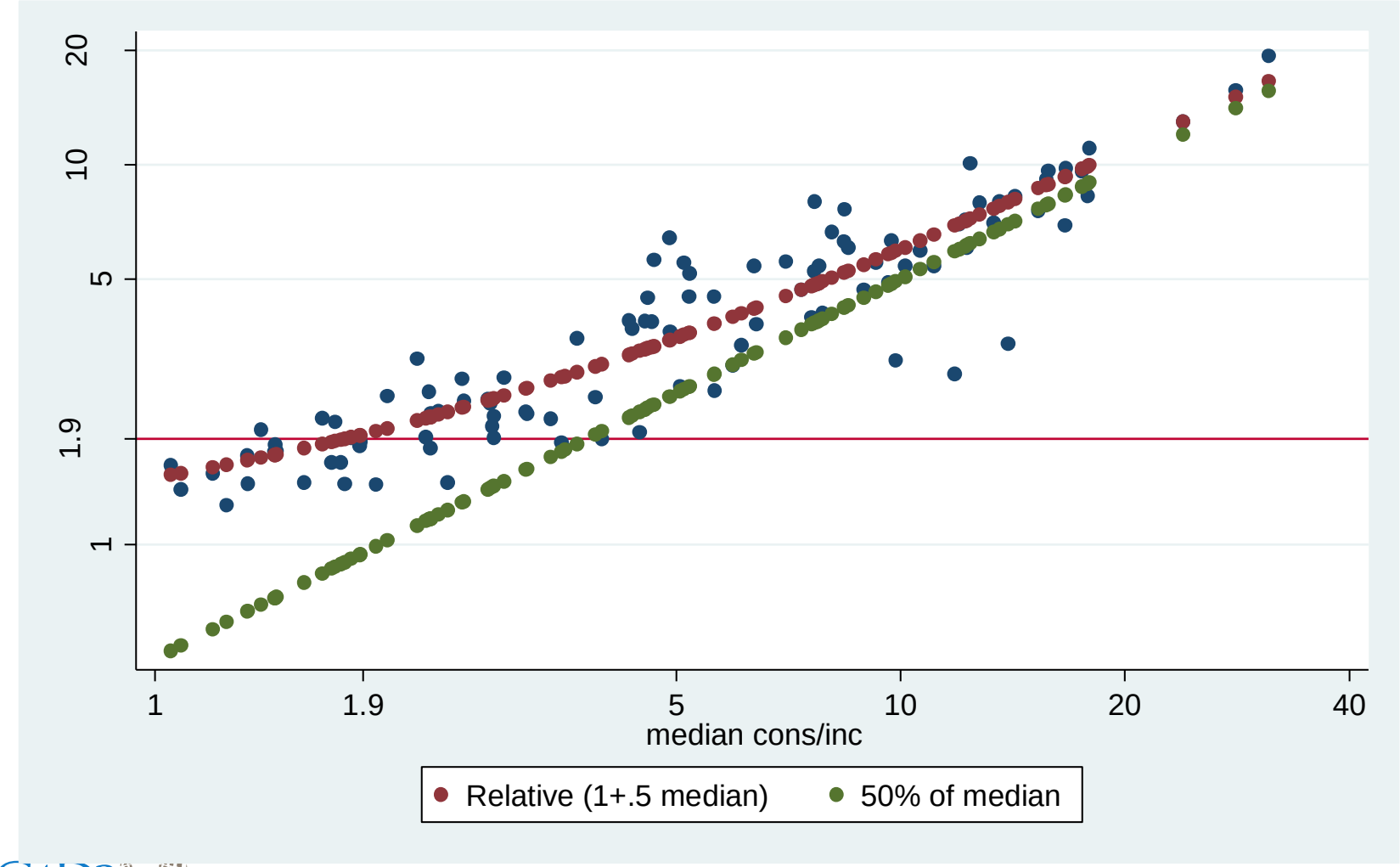
Interpreting $1 + 50% of median

- 'Relativist gradient' of 50% of median is used in many high income countries.
  - OECD's headline poverty indicator based on "half the median household income".
  - Eurostat 'at-risk-of poverty thresholds': 40%, 50%, 60% of national median (& mean) income.
  - NSOs in rich countries frequently also report using similar lines (50% or 60% of median).
- The intercept (α) is the fixed element, $1 has some basis in existing literature
  - $1/day = global consumption floor in 2011 PPPs proposed by Ravallion (2016).
  - Allen (2016) & Lindgren (2015) estimate of bare-bones basket is similar.
- Empirically we observe no floor, Z*, but treating $1 as the fixed element representing absolute basic needs may be unpalatable (e.g. Allen), even in the limit. Poverty lines are social assessments. *An alternative floor to $1 is the existing $1.90 IPL,* suggesting an alternative parameterization

Max ($1.90 , $1 + 50% of median)

Atkinson: Societal Poverty Measure

Assessing fit



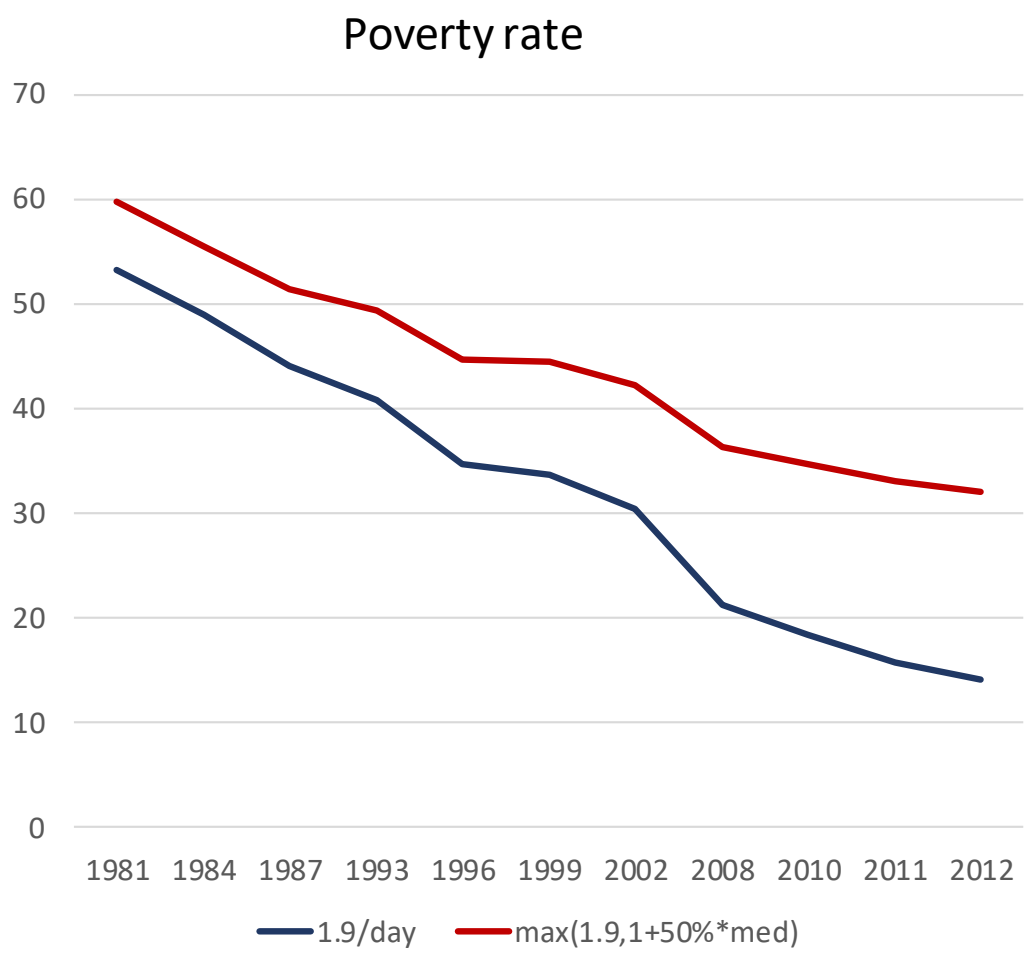
Comparing
National poverty lines (blue), $1+50% median (red), 50% (green)

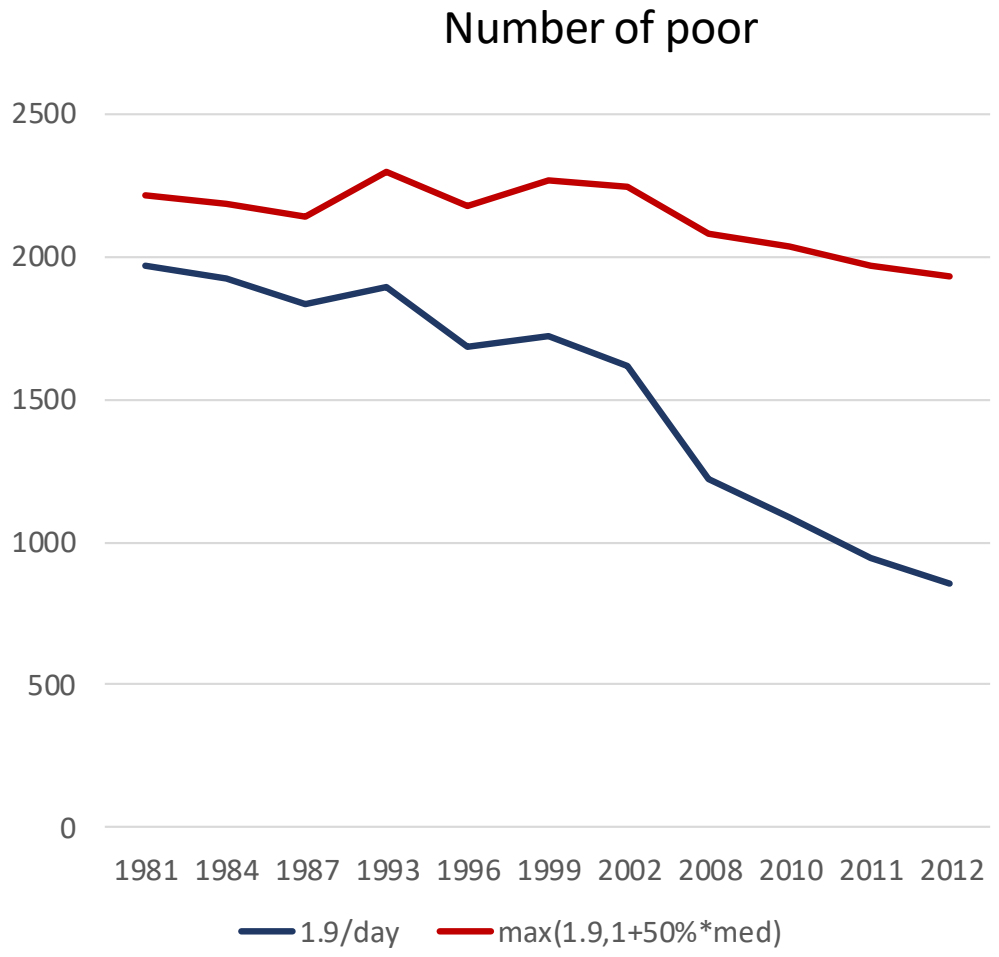
Strongly relative line, too low for poor countries

$1 + 50% median fits rich and poor

Atkinson: Societal Poverty Measure

Comparing extreme poverty trends and societal poverty, max(1.9, 1+ 50% median)





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