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Poverty Analysis: Concepts and Measures

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Outline

- Session 1: Poverty analysis – tools and exercises
- Session 2: exercises
- Session 3: Interpretation and use

Why measure poverty?

- To make the poor visible
- To inform national policy design
- To assess impact of poverty reduction strategies
- To identify the poor

Poverty = Outcome

Challenges

- Agree on the concept
- Define an appropriate welfare indicator
- Determine a cut-off point
- Count the poor
- Interpret and use the findings

What *is* Poverty?

WHAT IS POVERTY ?
From Rowntree (1901) to Foster (2013)

"Poverty is not having the financial resources necessary to support a person at the subsistence level of food, shelter, clothing and other necessities"
(Rowntree, 1901)

"Poverty is the absence of acceptable choices across a broad range of important life decisions – a severe lack of freedom to be or to do what one wants"
(Foster et al, 2013, p.1)

Conceptualizing Well-Being

Welfarist approach:

- Individual utility determines well-being
- (Lack of) well-being expressed in the level of income, consumption, assets, etc.
- Monetary measure

Non-welfarist point of view:

- Other aspects determine well-being, such as ownership of commodities, fulfillment of basic needs, access to basic services, being socially included….
- Lack of capabilities to function

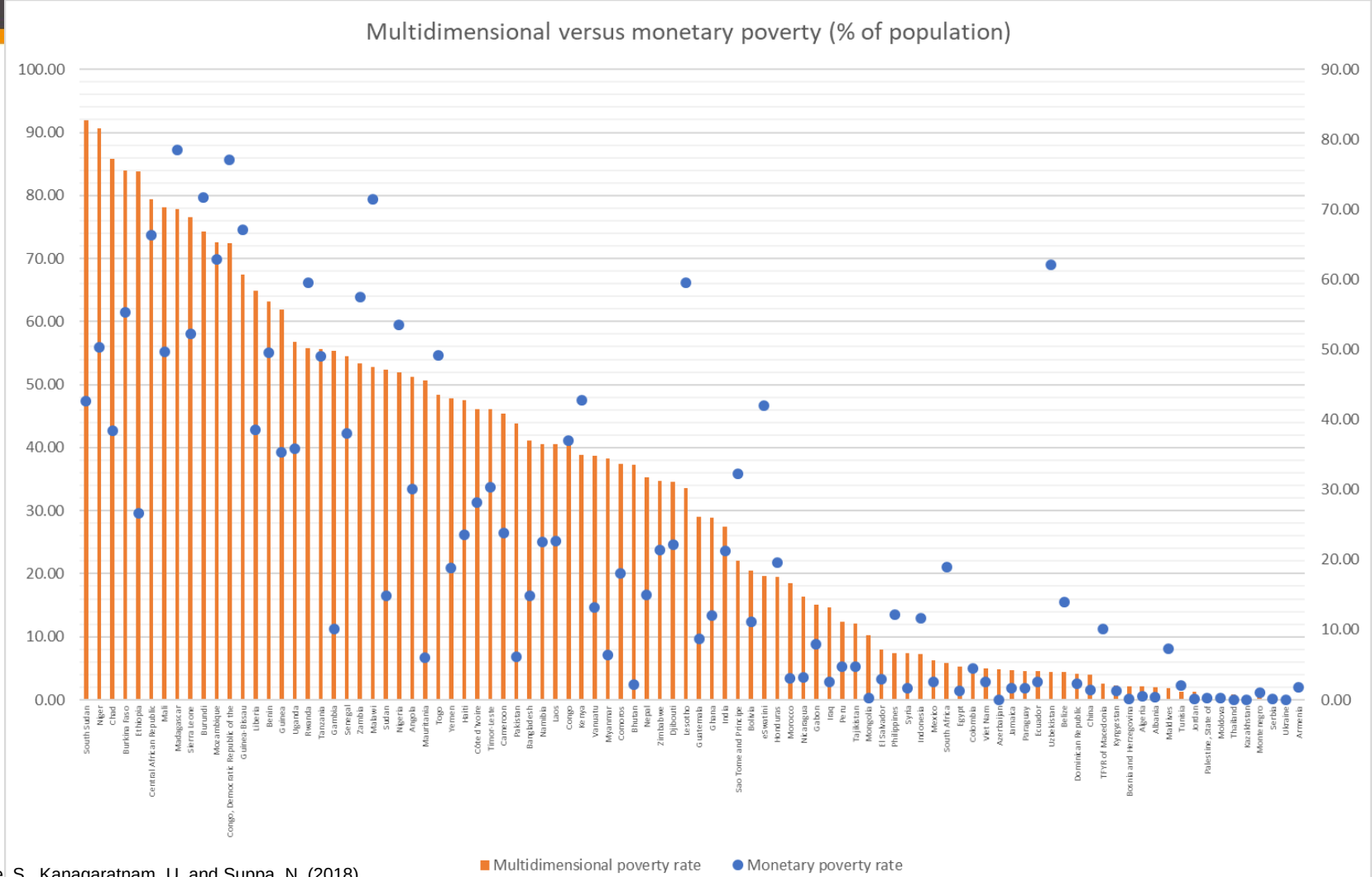
Most common approaches

Monetary poverty (income, consumption, expenditure, assets, …)

Multidimensional poverty/well-being (often non-monetary)

→ Capability approach (term coined by Sen)

- Each approach has different perspective on what constitutes a good life
- Each requires methodological assumptions
- Each approach may identify a different group of the population
- Each has different policy implications



Source: Alkire, S., Kanagaratnam, U. and Suppa, N. (2018).

SDG 1 reflects both approches

1.1: By 2030, eradicate extreme poverty for all people everywhere, **currently measured as people living on less than $1.25 a day**

1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in **poverty in all its dimensions** according to national definitions

Monetary poverty: traditional approach

- Poor households are defined as **households with insufficient monetary resources, i.e.** below a defined minimum

- Monetary resources:
  - Income
  - Expenditures
  - Consumption
  - …

Shortcomings of the monetary poverty approach

Monetary poverty does not tell the whole story…

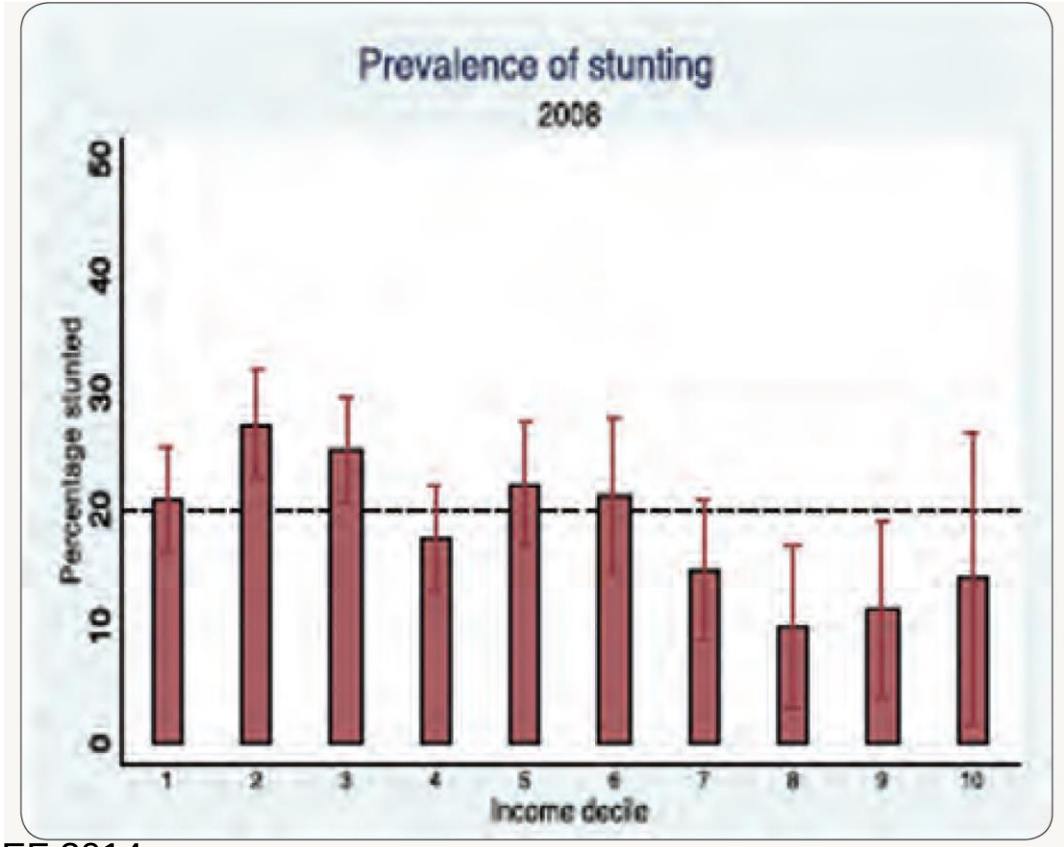
- Not all members of a poor households are poor, and not all members living in non-poor households are by definition not poor

…because…

- Not all goods and services may be available
- Does rarely consider the intra-household distribution of resources

…and therefore may only provide limited information/guidance for policy design

South Africa: percentage of stunted children by income decile



Source: SAHRC & UNICEF 2014

Poverty as multidimensional concept

Multi-dimensional poverty seeks to identify and locate those individuals that have little means to live on, with limited possibilities for development and deprived from the fulfillment of basic needs

Deprived of what?

Examples of domains

- education
- nutrition
- health
- housing
- water and sanitation
- …

Tools for measuring poverty

- Indicators and data
- Poverty lines
- Poverty measures

Choosing an appropriate welfare indicator

Poverty is an outcome!

- What indicator(s) are best suited to determine the living standard of a household or individual in a given society?

- What indicator(s) will allow the ranking of the households from poorest to richest, from most deprived to least deprived, from most vulnerable to least vulnerable…?

Different welfare concepts imply different indicators

Why is there still a strong focus on monetary indicators of living standards?

- Very popular, although one-dimensional
  - Ravallion: consumption by its very nature captures multiple dimensions
- Easy to interpret
- Consensus on methodology
- Can be easily complemented with non-monetary indicators
  - Dashboard approach

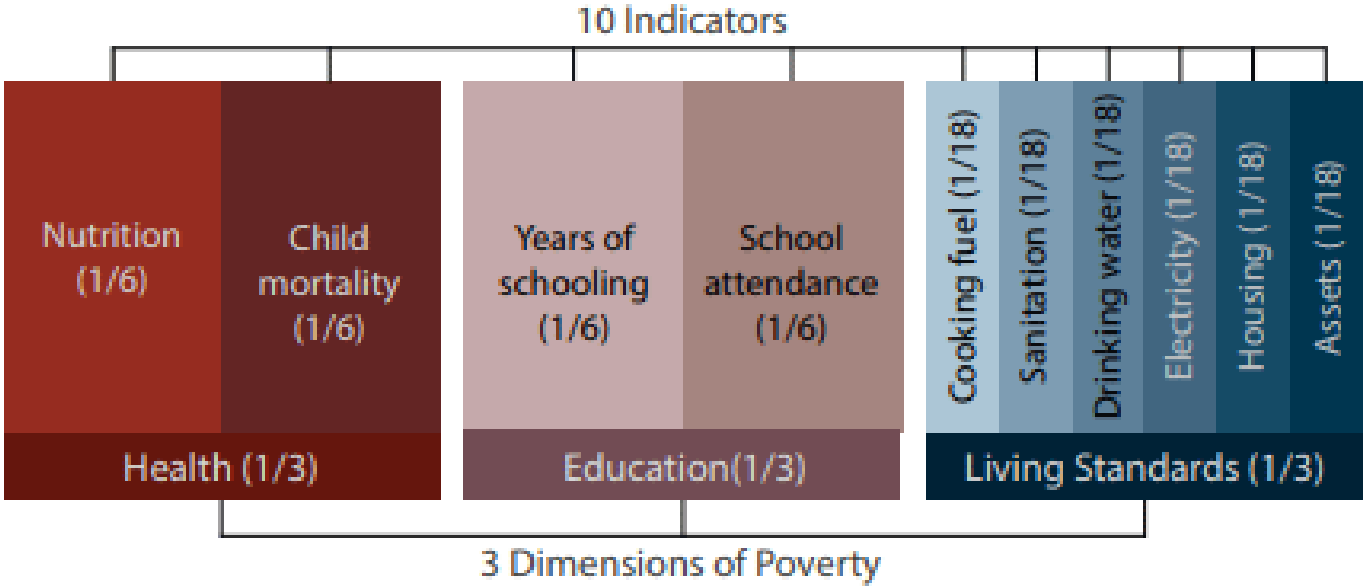
A multi-dimensional indicator…

- Tries to capture different dimensions of well-being
- Methodologically challenging
  - How to combine into a single index
  - Weighting of different dimensions
- Interpretation not always straightforward

Examples: OPHI MPI, World Bank MPI, UNICEF's MODA

	GLOBAL EXAMPLES		
	OPHI Global MPI	**World Bank MPI (3-dimension)**	**World Bank MPI (5-dimension)**
No. of Dimensions	3	3	5
Which dimensions?	• HEALTH • EDUCATION • LIVING STANDARDS	• MONETARY WELLBEING • EDUCATION • ACCESS TO BASIC INFRASTRUCTURE	• MONETARY WELLBEING • EDUCATION • ACCESS TO BASIC INFRASTRUCTURE • HEALTH & NUTRITION • SECURITY
No. of Indicators	10	6	12
Method	Alkire-Foster (AF) Methodology		
Weighting Scheme	Equal weighting across dimensions and equal weighting across indicators within each dimension		
Poverty Cut-off	One third of the weighted indicators (k= 33.3%)		One fifth of the weighted indicators (k=20%)
Aggregated Measure Produced	• Incidence (H) • Intensity (A) • Multidimensional Poverty index between 0 and 1 (M)	• Incidence (H) • Intensity (A) • Multidimensional Poverty index between 0 and 1 (M) • Distribution-sensitive measure (D)	• Incidence (H) • Intensity (A) • Multidimensional Poverty index between 0 and 1 (M) • Distribution-sensitive measure (D)

The global OPHI/UNDP MPI



Dimensions of poverty	Indicator	Deprived if…	Weight
Health	Nutrition	Any adult under 70 years of age or any child for whom there is nutritional information is undernourished.*	1/6
	Child mortality	Any child has died in the family in the five-year period preceding the survey.[7]	1/6
Education	Years of schooling	No household member aged 10 years or older has completed six years of schooling.	1/6
	School attendance	Any school-aged child+ is not attending school up to the age at which he/she would complete class 8.	1/6
Living standards	Cooking fuel	The household cooks with dung, wood, charcoal or coal.	1/18
	Sanitation	The household's sanitation facility is not improved (according to SDG guidelines) or it is improved but shared with other households.**	1/18
	Drinking water	The household does not have access to improved drinking water (according to SDG guidelines) or safe drinking water is at least a 30-minute walk from home, round trip.***	1/18
	Electricity	The household has no electricity.	1/18
	Housing	At least one of the three housing materials for roof, walls and floor are inadequate: the floor is of natural materials and/or the roof and/or walls are of natural or rudimentary materials.****	1/18
	Assets	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike or refrigerator, and does not own a car or truck.	1/18

Dimensions and indicators of the new global MPI

Alkire & Jahan, 2018

World Bank MPI

TABLE 4.1 Dimensions of Well-Being and Indicators of Deprivation

Dimensions	Three dimensions (119 countries)	Five dimensions (6 countries)
Monetary poverty	Daily consumption or income is less than US$1.90 per person	Daily consumption or income is less than US$1.90 per person
Education	At least one school-age child up to the age of grade 8 is not enrolled in school	At least one school-age child up to the age of grade 8 is not enrolled in school
	No adult in the household (age of grade 9 or above) has completed primary education	No adult in the household (age of grade 9 or above) has completed primary education
Access to basic infrastructure	The household lacks access to limited-standard drinking water	The household lacks access to a basic-standard drinking water ("limited-standard" with an added criterion of the source being within a round trip time of 30 minutes)
	The household lacks access to limited-standard sanitation	The household lacks access to basic-standard sanitation ("limited-standard" with an added criterion of the facility for the exclusive use of the household)
	The household has no access to electricity	The household has no access to electricity
Health and nutrition		Any woman age 15–49 with a live birth in the last 36 months did not deliver at a health facility[a]
		Any child age 12–59 months did not receive DPT3 vaccination[a]
		Any child age 0–59 months is stunted (HAZ < –2)
		Any woman age 15–49 is undernourished (BMI < 18.5)
Security		The household has been subject to crime in the previous 12 months or lives in a community in which crime is prevalent
		The household has been affected by a natural disaster (including flooding, drought, earthquake) in the previous 12 months

Note: BMI < 18.5 = body mass index below 18.5 (underweight); DPT3 = diphtheria-pertussis-tetanus vaccine; HAZ < –2 = the height-for-age Z-score is below –2, that is, more than two standard deviations below the reference population mean.

a. If the indicator is not applicable, for example if the household includes no women who gave birth in the previous 36 months, the household is classified as deprived if the relevant deprivation rates in the subregion of residence are sufficiently high. Specifically, the deprivation threshold is set such that the share of individuals in nonapplicable households that are classified as deprived equals the national share of deprived individuals in applicable households who actually experienced a recent birth or have a child under age 6.

Source: World Bank (2018)

- Dimensions weighted equally
- Within D: indicators weighted equally

- Poor if deprived in one dimension, or combination of indicators equal to weight of one dimension

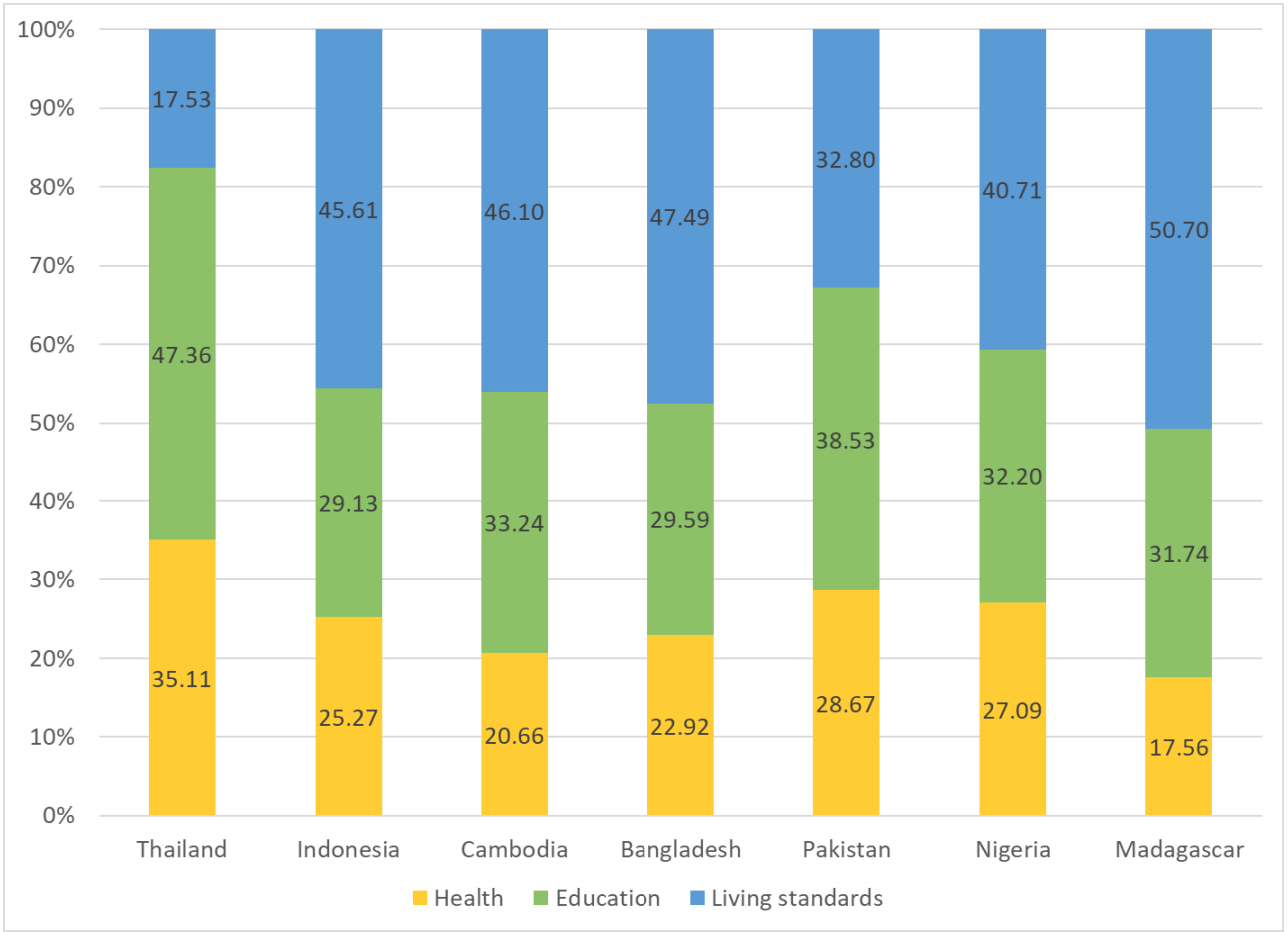
TABLE 4.2 Indicator Weights: Analysis of Three Dimensions

Three dimensions	Weights
Income per capita	1/3
Child school enrollment	1/6
Adult school attainment	1/6
Limited-standard drinking water	1/9
Limited-standard sanitation	1/9
Electricity	1/9

Multidimensional and monetary poverty (UNDP 2018)

	Multidimensional Poverty			Monetary poverty (%)	
	Index	Headcount	Intensity of deprivation	National poverty line	PPP $1.90 a day
Country	Value	(%)	(%)	2006-2017	2006-2016
Thailand	0.003	0.79	39.09	10.50	0.00
Indonesia	0.029	7.25	40.46	10.60	6.50
Cambodia	0.158	34.89	45.28	17.70	
Bangladesh	0.194	41.07	47.33	24.30	14.80
Pakistan	0.228	43.88	52.04	29.50	6.10
Nigeria	0.294	51.95	56.68	46.00	53.50
Madagascar	0.453	77.79	58.24	70.70	77.60

Contribution per dimension to multidimensional poverty



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Poverty Lines

- We defined poverty concept
- We chose the welfare indicator
- Next step:

Define poverty line that separates the poor from the non-poor

How to determine the minimum living standard?

- In monetary terms:
  - Objectively defined minimum, e.g. based on a basket of goods and services – absolute level
  - As a percentage of the average living standard – relative level
- In non-monetary terms:
  - Minimum years of schooling
  - Possession of *x* household appliances
  - …
- In multidimensional terms:
  - Sum of dimension weights is > *x*

Absolute vs. relative minimum standards

Absolute poverty is defined regardless of the general welfare level or distribution in a given society

An individual is living in absolute poverty if he/she is not able to obtain the minimum necessities to maintain purely physical existence (Rowntree)

Relative poverty identifies those people that are poorest within the overall distribution of a given society.

A concept that changes with the ideas and values prevailing in a society (Rowntree)

Absolute poverty lines for monetary indicators – the WB approach

- Based on costs of basic needs basket
- Basic needs comprise a component for food and a component for non-food goods and services

$$PL = z^f + z^{nf}$$

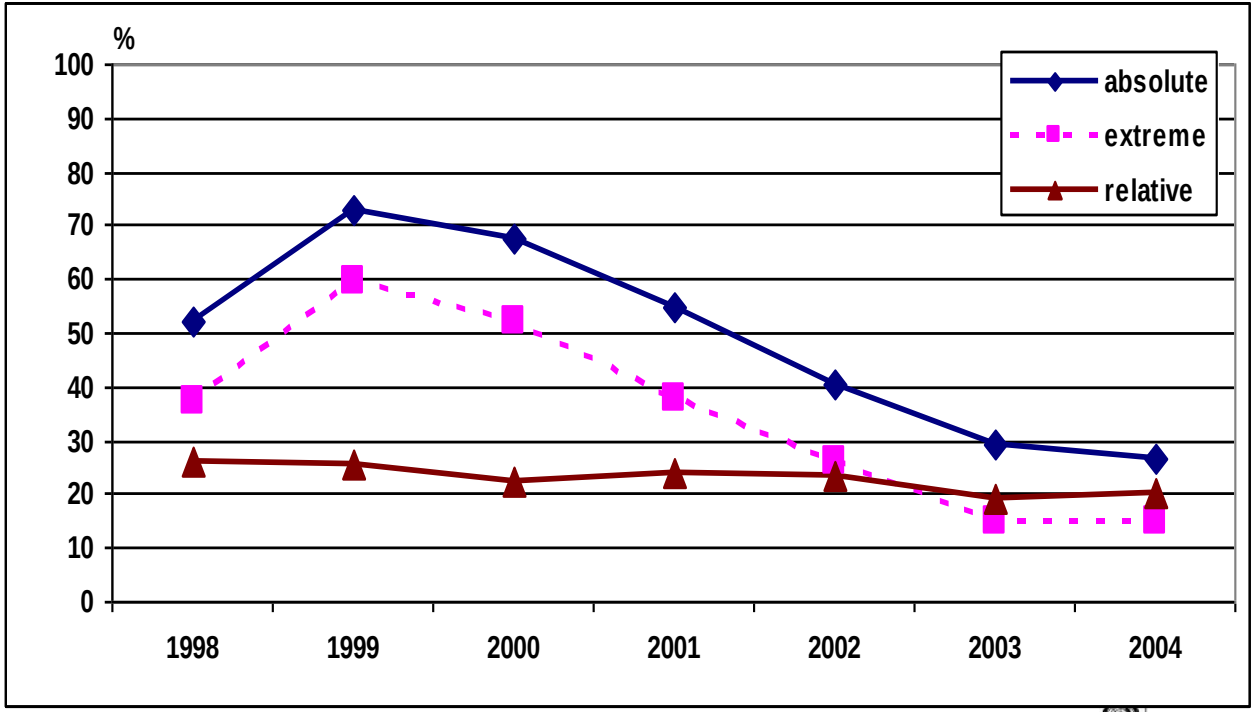
- Food component z^f:
  - Determine the minimum nutritional requirements for good health for an average person, e.g. 2100kcal per day
  - Establish the costs of meeting this food energy requirement
- Non-food component z^{nf}:
  - Add a supplement to cover non-food goods and services

Relative poverty lines

- Used in the EU for cross-country analysis
- Percentage of mean or median income (or expenditures)
  - 60% of median income per adult equivalent

- Drawbacks:
  - Moving concept
  - Closely linked to the welfare distribution in a society

Relative versus absolute poverty lines



Other poverty lines

International poverty lines:

- 1.90 USD (in 2011 PPP) (updated in 2015, World Bank, 10/2015)
- Useful for international comparison, but not necessarily for national policy making

Subjective poverty lines:

- Derived from minimum income question
- Frequently higher than 'objective' poverty lines

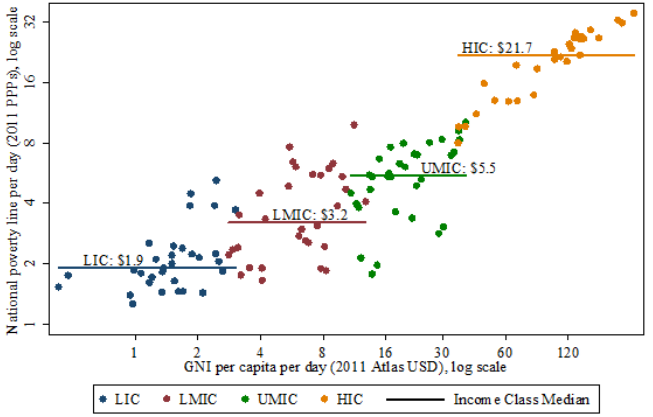
Guaranteed minimum income

- Often budget driven

Normatively derived minimum

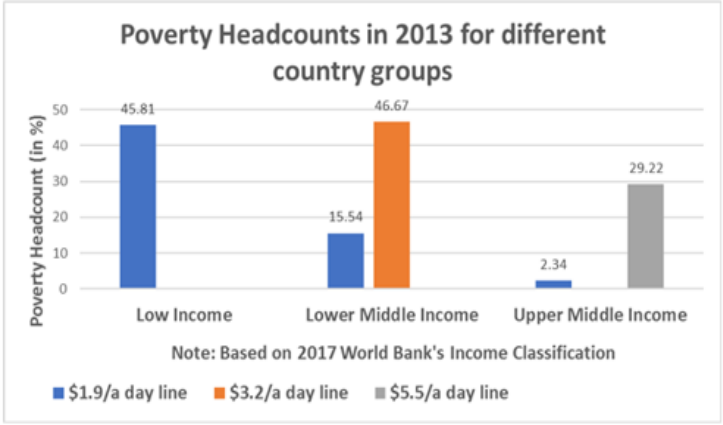
Source Graphs:
http://blogs.worldbank.org/developmenttalk/richer-array-international-poverty-lines?CID=POV_TT_Poverty_EN_EXT

Figure 1: National poverty lines increase with national income

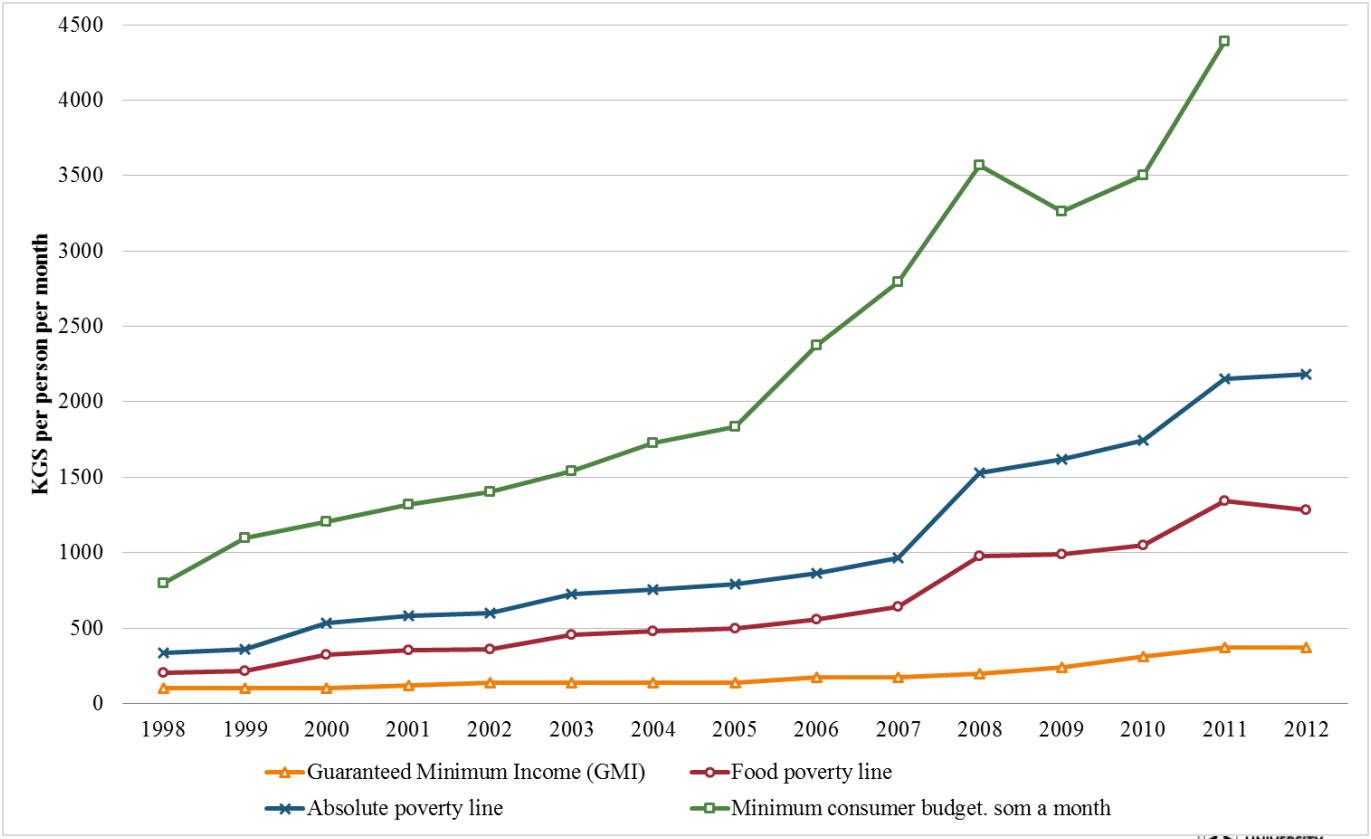


Source: based on data from Jolliffe and Prydz (2016)

Figure 2: Different lines, different headcounts



Kyrgyz Republic: minimum thresholds



Poverty measures

- Poverty concept
- Welfare indicator
- Poverty line

- Next: measuring poverty

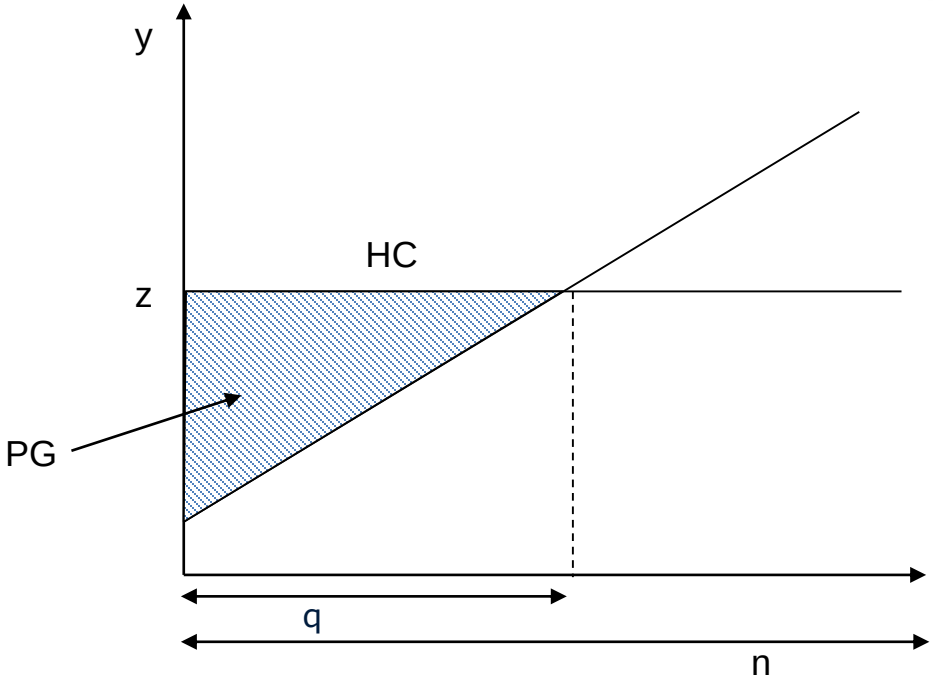
Measuring poverty - Aggregation

- Ideal properties of a poverty measure:
  - Decomposable
  - Easy to interpret

- Sen (1976):
  - Focus axiom: Index should not change if income of the non-poor changes
  - Monotonicity axiom: Any income gain for the poor should reduce poverty
  - Transfer axiom: A transfer from a poor to an even poorer should result in reduced poverty

Poverty measures

$$P\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - y_i}{z}\right]^{\alpha}$$



The 3 most common indicators

$$P\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - y_i}{z}\right]^{\alpha}$$

- Poverty Headcount/Rate/Incidence

  $P_0 = \frac{q}{n}$ → α = 0

- Poverty Gap/Depth Rate

  $P_1 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)$ → α = 1

- Poverty Severity Index

  $P_2 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^2$ → α = 2

z: poverty line
y_i: consumption of household i
q: population below poverty line
n: total population

Important:

The denominator is ALWAYS the total population (and not only the poor)

The poverty gap for the non-poor is ZERO

Poverty severity is an INDEX number (squared poverty gap)

Example: Kyrgyz Republic 2005

Source: WB (2010)

Poverty indicators by region (absolute poverty line)

	Poverty headcount (%)	Poverty gap (%)	Poverty severity
by region			
Issyk-kul	51.5	14.3	5.1
Jalalabat	55.9	16.3	6.1
Naryn	51.2	14.4	5.4
Batken	59.1	17.3	6.1
Osh	55.9	10.4	3.2
Talas	44.4	11.7	4.2
Chui	22.0	4.5	1.3
Bishkek	10.8	1.9	0.4
Total country:	43.1%	10.5%	3.6

Questions?