Measuring multi-dimensional poverty

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Outline

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- Theoretical framework
- Measurement framework

- Dimensions and Indicators
- Weighting
- Identifying the poor: cut-off
- Measures: aggregation
- Other issues: reference household; data sources

Background -

- Normally, poverty is measured in monetary terms
  - Household expenditure or income
  - Useful mainly for social assistance
- But poverty is multidimensional in nature – monetary and non-monetary aspects

# Income/Expenditure versus extended measures of well being

- Rationale for MPI-like measures –
  - some countries and regions of countries have high levels of income and very little poverty, but their populations rank very low in terms of basic needs e.g. HDI

- Different rankings of countries –
  - ..But Essentially the same ranking of Arab countries in both
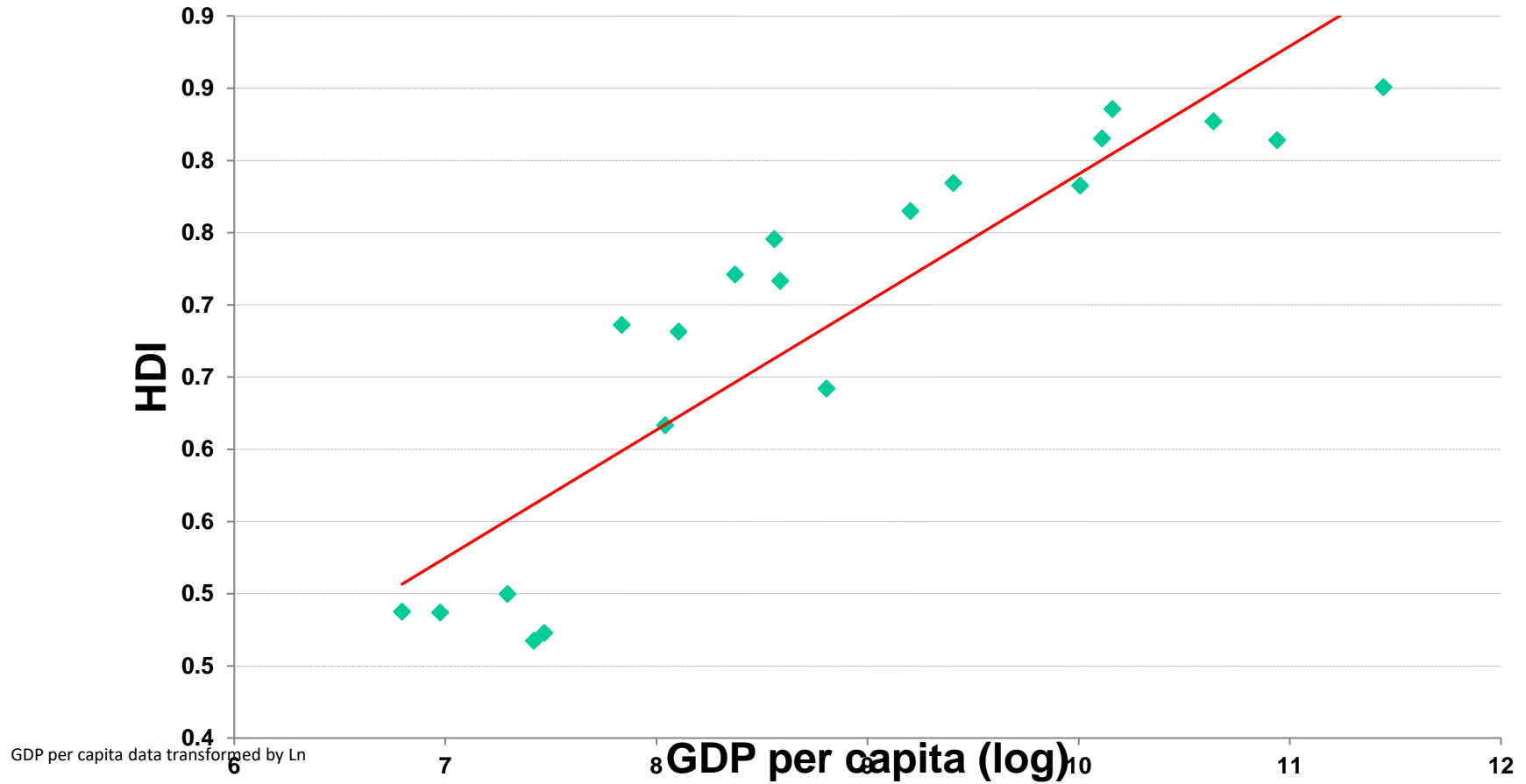
  But still important – targeting; SDGs etc

Same ranking?

HDI ranking versus GDP ranking for Arab countries
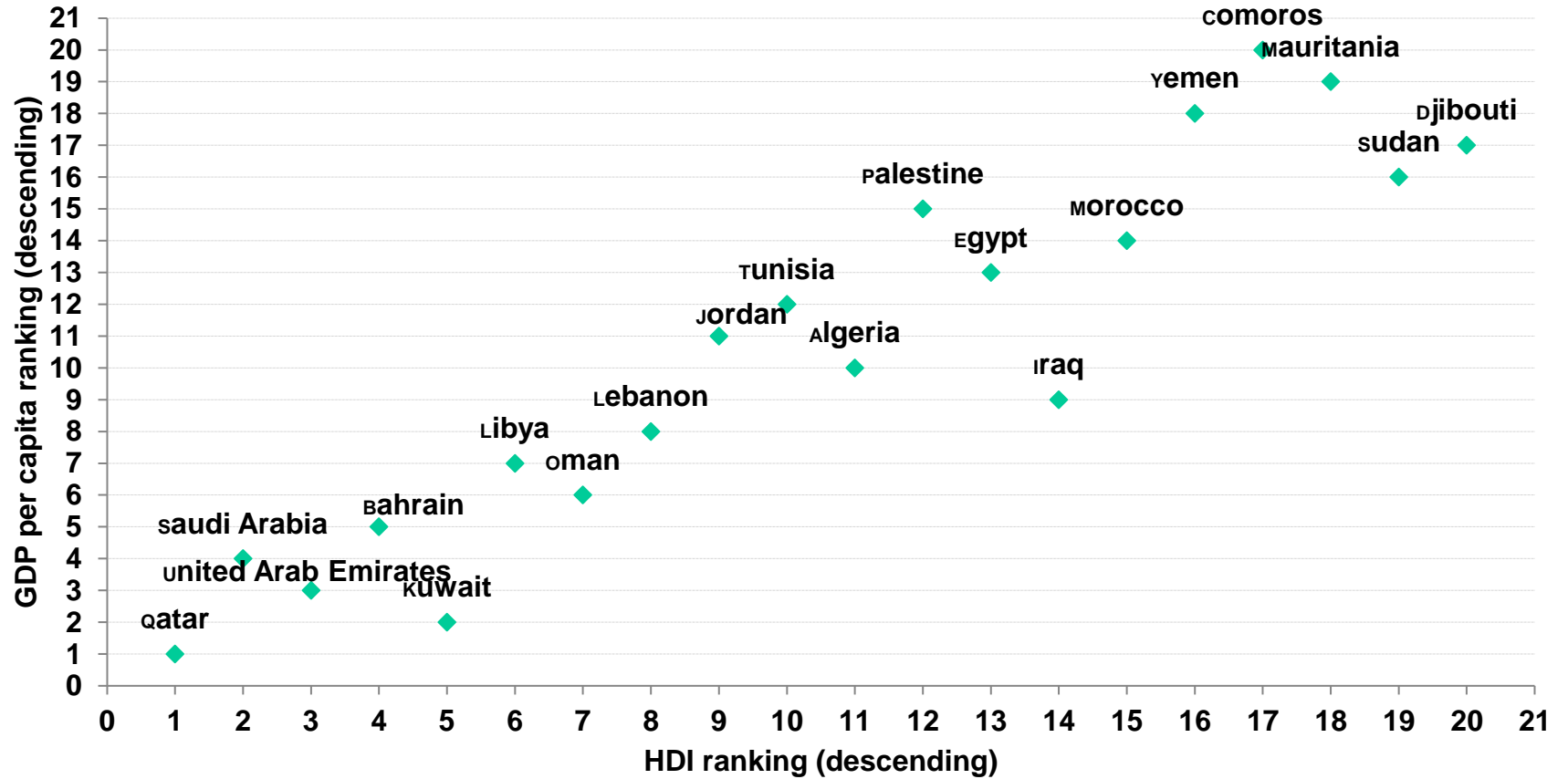
Highly correlated – but not perfect (r=.90)

GDP per capita data transformed by Ln

GDP per capita (log)

HDI

The concept

- Sen's (1992) capability framework
- Poverty as social exclusion (Townsend, 1979)
- Lack of basic needs (Stewart 1985)

- Poverty as capability failure
  - one's capabilities - the degree of a person's freedom to achieve his or her objectives
  - Poor: a person who lacks the capabilities to achieve his or her valued objective

Measurement framework

- Sen's (1976) measurement framework

Three steps

(1) select the space in which poverty is to be assessed,

(2) identify the poor by determining a cut-off for each space to distinguish the poor from non-poor, and

(3) aggregate the resulting data by an appropriate poverty index

- Several measurement procedures consistent with this framework

MPI normally

- .. consists of two spaces:
    - economic well-being (monetary)
    - Social well-being

- Economic well-being
    - Usually is captured by one dimension and one indicator: the usual monetary poverty line; sometimes others can be used
- Social well-being (human development/deprivation)
    - More challenging
    - Three ways: Expert opinion; constitution/law; public at large

Measurement framework

- The global MPI framework – most common
  - Oxford Poverty and Human Development Initiative and UNDP
  - Fairly simple, mirroring the UNDP HDI global index but with household level micro data
  - Three dimensions: health, education and standard of living
  - Eight equally weighted indicators within each dimension

- Designed to reflect poverty in low income countries
  - MPI (2020) shows Jordan with about 0.4% poverty; Palestine and Tunisia <1%

Dimensions of Poverty	Indicator	Deprived if--	Weights
Education	Years of Schooling	No household member has completed five years of schooling.	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8.	1/6
Health	Child Mortality	Any child has died in the family.	1/6
	Nutrition	Any adult or child for whom there is nutritional information is malnourished.	1/6
Living Standards	Electricity	The household has no electricity.	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip.	1/18
	Flooring	The household has a dirt, sand or dung floor.	1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	1/18
	Assets ownership	The household does not own more than one radio, TV, telephone, bike,,motorbike or refrigerator AND does not own a car or truck.	1/18

The Alkeir-Foster framework (2008)

- AF: identifying the poor by assigning a cut-off in each equally weighted dimension and then using a counting approach to identify the multi-dimensionally poor by an arbitrarily chosen percentage of the overall score

- A cutoff of **33%** is used for identifying the multi-dimensionally poor households

Dimensions and indicators

- Arbitrary numbers and selection..
  - A rights-based approach can be followed in the selection of dimensions- identify a set of rights in the constitution or other laws

- Expert opinion (e.g., us; officials)

- Public opinion

Dimensions -the Palestine example

- 10 dimensions were identified:

1. Education   (Article 24)
2. Health status   (Article 22)
3. Employment and work conditions   (Article 25)
4. Housing conditions   (Articles 22, 23)
5. Personal safety   (Articles 13, 29)
6. Access to social services   (Article 22)
7. Personal freedom   (Articles 11, 19, 20, 28)
8. Social Protection   (Article 22)
9. Social participation   (Article 26)
10. Ownership and use of own assets   (Article 21)

Indicators

- Number for each dimension is arbitrary

    – Statistical: They all should indicate deprivation – 'reasonable' frequencies
    – Normative: basic right but violated regardless of its prevalence

Identifying the multi-dimensionally poor…

- Using the above framework,

		Social well-Being	
		Poor	Non-poor
Economic well-being	Poor	Multi-dimensional poor	Income poor
	Non-poor	Socially deprived	Not poor

Weighting/"Costing"

- ..is perhaps the most researched and contested one in constructing composite indexes, including MPIs

- Almost all agree on weighting, but how to 'cost' non market goods?
- Statistical vs normative criteria
  - Multivariate exploratory models – PCA et al

  - Frequency (inverse) of the item – e.g., death is rare and TV is almost universal
  - Consensus method – Burden of Disease Study
    - Convert various injuries to fraction of a year of life

Normative:

- The standard practice is to use equal weights for the various dimensions and indicators as is the case for the Global MPI

- Sometimes, countries give more weight to monetary poverty or standard of living dimension than other dimensions

Identifying the poor – cut-off

- In monetary poverty, the cutoff is decided by establishing the minimal consumption standards for all necessary goods.

- Defining the minimum in a multidimensional setting is somewhat more arbitrary and challenging

- AF (Global MPI): A cutoff of **33%** is used for identifying the multi-dimensionally poor households

- Different scenarios for identifying cut-offs for EACH dimension can be pursued depending on the weighting scheme used and number of indicators,

    E.g., a family is poor if it is deprived of any of the indicators included in that dimensions

Poverty measures – aggregation

- The current practice is to use the following Foster-Greer-Thorbecke (1984) decomposable poverty measures:
  - Head count index (P_0) which gives the percentage of the population in poverty.
  - Poverty severity index (P_1) which gives the percentage by which the average income of the poor is below the poverty line.
  - Poverty severity index (P_2). Since this index is sensitive to the distribution of income below the poverty line, it can be used to compute the amount of transfer needed to bring the poor up to the poverty line.
- Alkeir-Foster show that the simple headcount ratio (P0) is insensitive to the increase in the scope of poverty
- Use Alkeir-Foster adjusted FGT measures

Poverty measures –

- Alkeir-Foster adjusted FGT measures

- MPI = incidence * intensity

- **Incidence**: Percentage of people who are poor
- **Intensity** of deprivation: The average percentage of dimensions in which the poor are deprived

Household or individual

- All calculations are done at the household level
- Average household –
  - Varies across time and space (in terms of size & composition)
  - Not useful for targeting purposes

- Head count – per capita adjustment
  - Indicators used in MPI are mainly individual based not household e.g. education & health – thus scoring relates to demographics

- Most common family – e.g., 2 adults+5 children
  - Adapt equivalence scale concept – but only for the monetary poverty line

Data source

- A basic requirement for this kind of multi-dimensional poverty measures is to use a **single** source of data for all the estimation and analyses

- If monetary poverty is included (monetary poverty line) then the income and expenditure survey should be used

- … otherwise, demographic and health surveys, MICS surveys, censuses can be used

- labor force surveys can be used, but they lack health related measures

Software

- ESCWA's MPI tool

- STATA – mpi command (2016)
- R – convey package (2021)

Thank you!