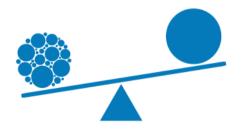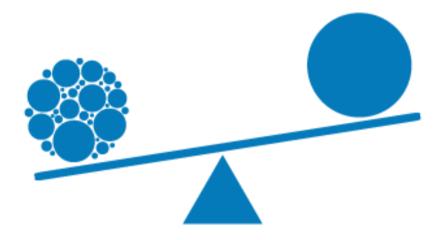# Jean Monnet Chair
Small Area Methods for Monitoring of Poverty and Living conditions in EU (SAMPL-EU)

Lecture 1 ter: measures of poverty

http://sampleu.ec.unipi.it

Measures of Poverty

...and Living Conditions

Poverty measures

Given a welfare measure, such as income per capita, and on a poverty line, for each household or individual, we can define some indicators

- The formulas presented here are all based on the assumption that the survey represents a simple random sample of the population, which makes them relatively easy to understand.

- Where the sampling is more complex—the typical situation in practice—weighting is needed, and the relevant formulas and associated programming are somewhat more difficult.

Poverty measures

Head Count Ratio P_0

*   measures the proportion of the population that is poor. It is popular because it is easy to understand and measure.

Poverty Gap

*   measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line

P_0- HCR - ARPR

The *headcount index* (P_0) measures the proportion of the population that is poor.

$$P_0 = \frac{N_p}{N},$$

$$P_0 = \frac{1}{N}\sum_{i=1}^{N} I(y_i < z).$$

1.1 At-risk-of-poverty rate (after social transfers)

1.1.1 Definition

The share of persons with an equivalised total net income below 60% national median income.

P_0

1. the headcount index does not take the intensity of poverty into account.

Headcount Poverty Rates in A and B, Assuming Poverty Line of 125					
	Expenditure for each individual in country				Headcount poverty rate (P_0)
Expenditure in country A	100	100	150	150	50%
Expenditure in country B	124	124	150	150	50%

2. the headcount index does not indicate how poor the poor are, and hence does not change if people below the poverty line become poorer.

P_0

3. the poverty estimates should be calculated for individuals, not households.

- If 20 percent of households are poor, it may be that 25 percent of the population is poor (if poor households are large) or 15 percent is poor (if poor households are small)

P_0

- survey data are almost always related to households, so to measure poverty at the individual level we must make a critical assumption that all members of a given household enjoy the same level of well-being

- In reality, consumption is not always evenly shared across household members..

P$_1$

define the poverty gap (G$_i$) as the poverty line (z) less actual income (y$_i$) for poor individuals; the gap is considered to be zero for everyone else.

$$G_i = (z - y_i) \times I(y_i < z)$$

- The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted.

$$P_1 = \frac{1}{N} \sum_{i=1}^{N} \frac{G_i}{z}.$$

P_1

Calculating the Poverty Gap Index, Assuming Poverty Line of 125					
	Expenditure for each individual in country				Poverty gap index (P_1)
Expenditure in country C	100	110	150	160	
Poverty gap	25	15	0	0	
G_i/z	0.20	0.12	0	0	0.08 [= 0.32/4]

The minimum cost of eliminating poverty using targeted transfers is simply the sum of all the poverty gaps in a population; every gap is filled up to the poverty line. However, this interpretation is only reasonable if the transfers could be made perfectly efficiently, for instance, with lump sum transfers, which is implausible.