Jean Monnet Chair

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

Lecture 2: measuring poverty, welfare indicators, issues on survey design

http://sampleu.ec.unipi.it

Definition of Poverty

...and Living Conditions

Measuring Poverty

- The *first step* in measuring poverty is defining an indicator of welfare such as income or consumption per capita.

- Information on welfare is derived from *survey data.*

- Good survey design is important.

[1] EU projects: SAMPLE, AMELI, Eframe, INGRID; World Bank, United Nations

[2] Betti G, Lemmi A (2014) Introduction. In: Betti G, Lemmi A (eds) Poverty and Social Exclusion: New Methods of Analysis, London: Routledge., pp 1–6

...be aware

Indicator of welfare such as income or consumption per capita comes from National Accounts and should be in coherence with them and with the principles adopted by the European Statistical System.

[1] reference: Lectures by Luigi Biggeri

[2] principal financial instruments to support Member States in their fight against poverty and social exclusion at the EU level: ESF European Social Fund

Some surveys

- Household Budget Survey (HBS) - Eurostat
- Survey on Income and Living Conditions (EU-Silc) – Eurostat
- Labour Force Survey (LBS) – Eurostat

- Living Standards Measurement Surveys (LSMS) – World Bank

- Eurobarometer Survey 2007 (n. 279) on European's attitudes towards poverty and social exclusion

…some EU projects

http://www.sample-project.eu; (SAMPLE)

https://www.uni-trier.de/index.php?id=25157&L=2 (AMELI)

http://www.eframeproject.eu (Eframe)

https://inclusivegrowth.be/ (INGRID)

Measuring poverty

Three steps need to be taken in measuring poverty :

• Defining an indicator of welfare.

• Establishing a minimum acceptable standard of that indicator to separate the poor from the non poor (the poverty line).

• Generating a summary statistic to aggregate the information from the distribution of this welfare indicator relative to the poverty line.

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Measuring poverty

This Lecture assumes an indicator of welfare based on income or consumption per capita.

All measures of poverty rely on household survey data, so it is important to recognize the strengths and limitations of such data and to set up and interpret them with care.

Survey design

Although some surveys use simple random sampling, most use stratified random sampling.

This requires the use of sampling weights in the subsequent analysis.

Multistage cluster sampling is also standard.

It is cost-effective and unbiased, but it lowers the precision of the results, which calls for some adjustments when analyzing the data.

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Household Survey design: key issues

The sample frame

The unit of observation

The number of observations over time

The principal living standard indicator collected

The sample frame

Frame: the list of households (HH) or the list of areas where the households live.

It is the basis from which the sample is selected.

- The appropriateness of a survey's particular sample frame will depend on the inferences one wants to draw from it

The unit of observation

Household: a group of persons eating and living together

Individuals within the household

The number of observations over time

Single cross section surveys:

The sample of household is coverd just once

Longitudinal surveys:

The same households or individuals are resurveyed more times (panel data sets)

The principal living standard indicators collected

- Most measures of welfare are based on household consumption expenditure or household income.
- Need for information on education, gender, usage of time, quality of the house, of its service to explore not economic aspects of poverty and vulnerability

 Many surveys collect both kind of data, but there are tradeoffs...

...tradeoffs

- More detailed and complex questionnaire longer to administer.
- Sample size can be smaller, given the budget constraints

Limits the precision of the general estimates

Limits the amount of disaggregation that is possible

Direct estimates vs Small area estimates

Survey Problems

When using and interpreting household survey data several problems arise

- Survey design

- Sampling

- Goods coverage and Valuation

- Variability and the Time period of Measurement

- Comparisons across HH at similar consumption levels

Survey design

- If the sample on which a survey is based is not random, then the resulting estimates of poverty are almost impossible to interpret. They are likely to be biased, but we do not know by how much.

- If the sample is simple random (srs), <u>in theory</u> you create a list of everyone in the country and then randomly choose subjects to be interviewed, with each person having an equal chance of being selected.

Survey design

If the sample is random, in practice

1) some people or households may be hard to find, nonresponse issues, homeless

2) some of the surveys that have been used to measure poverty were not designed for this purpose: limited sampling frame, coverage issues .

3) it is very often cost-effective deliberately to oversample some interesting small groups, stratification issues

Survey design

Key questions to ask about any survey are the following:

• Does the sample frame (the initial listing of the population from which the sample was drawn) span the entire population? Coverage of the sampling frame

• Is there likely to be a response bias? This may take one of two forms: unit nonresponse, which occurs when some households do not participate in the survey, and item nonresponse, which occurs when some households do not respond fully to all the questions in the survey.

Sampling

actual measures of poverty and inequality are sample statistics, and so estimate the true population parameters with some error:

"the poverty rate is 15.2 percent,"

"We are 99 percent confident that the true

poverty rate is between 13.5 percent and 16.9 percent; our best point estimate is that it is 15.2 percent."

Sampling

- it is essential to know how the sampling was done, because the survey data may need to be weighted in order to get the right estimates of such measures as mean income or poverty rates.

Stratified sampling

Cluster sampling

Multistage sampling

Table 2.1 Illustration of Why Weights Are Needed to Compute Statistics Based on Stratified Samples

	Region A	Region B	Whole country
Population (million)	2.0	8.0	10.0
True income/capita ($/year)	500	1,375	1,200
Case 1. Simple random sampling. *Use simple average*.			
Sample size (given initially)	400	1,600	2,000
Estimated total income, $	196,000	2,235,200	2,431,200
	$= 400 \times 490$	$= 1,600 \times 1,397$	$= 196,000 + 2,235,200$
Estimated income/capita, ($/year)*	490	1,397	**1,215.6**
			$= 2,431,200/2,000$
Case 2. Stratified sampling.			
Sample size (given initially)	1,000	1,000	2,000
Estimated total income, $	490,000	1,397,000	1,887,000
	$= 1,000 \times 490$	$= 1,000 \times 1,397$	$= 490,000 + 1,397,000$
Case 2a. Stratified sample, using simple average. *This is incorrect, so don't do this*!			
Estimated income/capita ($/year)	490	1,397	**943.5**
			$= 1,887,000/2000$
Case 2b. Stratified sampling, using weighted average. *This is the correct approach*.			
Weight (Based on population)	0.2	0.8	
	$= 2.0/10.0=$	$= 8.0/10.0$	
Estimated income/capita ($/year)	490	1,397	**1,215.6**
			$= (0.2 \times 490) + (0.8 \times 1,397)$

Source: Example created by the authors.

* Estimated income per capita is likely to differ from true income per capita, due both to sampling error (only a moderate number of households were surveyed) and nonsampling error (for example, underreporting, poorly worded questions, and the like).
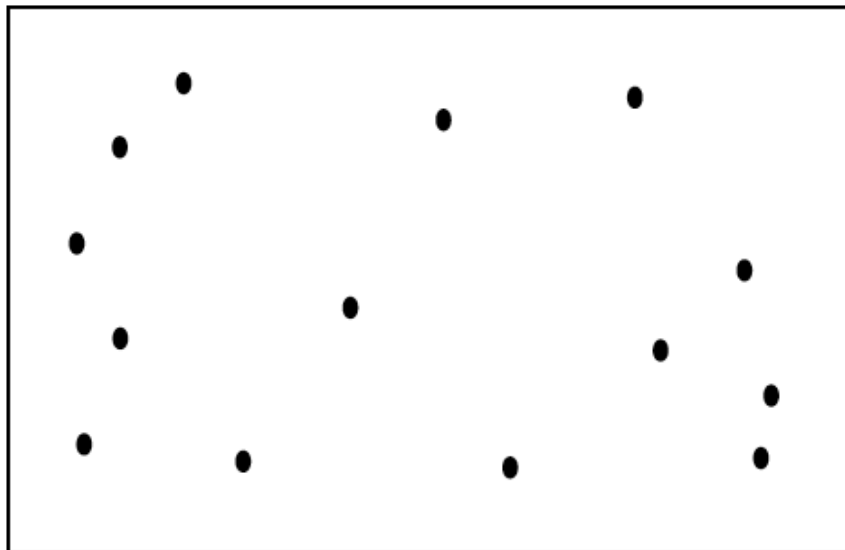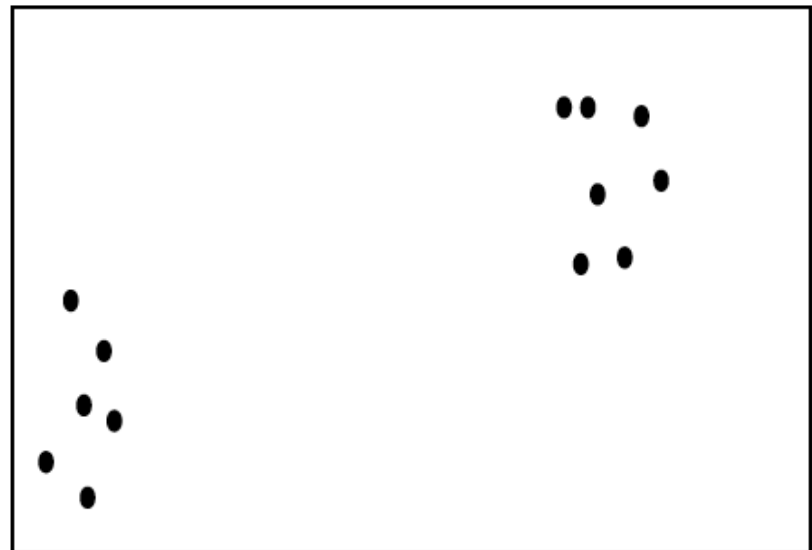
Figure 2.1a Simple Random Sample

Figure 2.1b Cluster Sampling

Source: Authors.

Goods coverage and evaluation

- It has been widely observed that the more detailed the questions about income and expenditure, the higher are the reported levels of income and expenditure.

- Such in-kind income/expenditure will typically have to be valued at local prices.

- It is also essential to collect enough information on housing (rent or current capital value if the household owns its residence), and the main durable goods (age,purchase price, current value), in order to be able to quantify these important components of expenditure and income.

Variability and the time period of measurement

- Income and consumption vary from month to month, year to year, and over a lifetime. But income typically varies more significantly than consumption.

- In less-developed countries, most analysts prefer to use current consumption than current income as an indicator of living standards in poor countries

This does not mean that consumption is a perfect measure of well-being!!!!

Comparisons across Households at similar consumption level

Households vary not only in their income or expenditure levels, but

- in size,
- in the prices they face,
- in the publicly provided goods (such as roads and schools) to which they have access,
- in the amount of leisure time they enjoy,
- and in the agreeableness of the environment in which they live (some areas are too hot or too cold or too dry or too flood-prone).

….corrections

- Easy to correct for differences in the cost of living faced by households, need for Purchasing Power Parities (Lecture by Luigi Biggeri)

- Easy to express income or expenditure in per capita (or per adult equivalent) terms

- Difficult to assess the value of publicly provided goods and services

References

- Haughton J and Khandker S R (2009) Handbook on poverty and Inequalities, The World Bank, Washington DC

- R.M. Groves (2004) Survey Errors and Survey Costs, Wiley, New York

- R.M. Groves, Fowler F.J, Couper M. et others (2004) Survey methodology, Wiley New York

- Valliant R., Dever J.A, Kreuter F. (2014) Practical Tools for designing and weighting survey samples, Springer New York, Heidelberg