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Issues in data quality and comparability in EU-SILC

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1.1 Quality dimensions

Canada	Netherlands	R. of Korea	IMF	Eurostat
			Prerequisites of quality	
Relevance	Relevant	Relevance		Relevance
Accuracy	Accurate	Accuracy	Accuracy and reliability	Accuracy
Timeliness	Timely	Timeliness	Serviceability	Timeliness and Punctuality
Accessibility		Accessibility	Accessibility	Accessibility and clarity
Coherence				Coherence
		Comparability	Methodological soundness	Comparability
Interpretability				
			Integrity	Completeness
	Cost-effectively	Efficency		
	Without too much a burden			

Data quality: a multidimensional concept

1 Relevance and use of the data

2 Timeliness and punctuality

3 Data accuracy

4 COMPARABILITY

5 Coherence with other statistics and over time

6 Accessibility and clarity

7 Other quality aspects

Relationship between different aspects of quality

To a certain extent, dimensions compete against each other

But different aspects also support and reinforce each other, one often forming a precondition for the other.

Quality of [EU-SILC Country] Quality Reports

- QR a useful indicator also of the quality of the data
- Generally country QRs thorough and useful

1 provide plausible values for Common EU Indicators

2 survey structure

3 sample selection and design

4 unit non-response and substitution

5 item non-response

6 mode of data collection

7 comparability and coherence

Comparability: a central requirement

Comparability is increasingly becoming one of the central dimensions of data quality.

- particularly important in the context of a EU-wide undertaking such as EU-SILC.

The concept of 'comparability':

(1) what comparability is;

(2) how comparability is achieved in practice:
- measurement and estimation aspects
- role of standardisation;

(3) how to assess the extent to which comparability has or has not been achieved.

What is comparability of statistical data

→ their usefulness in drawing comparisons and contrast among different populations

- is a complex concept difficult to assess in precise or absolute terms
- but essential in multi-population comparisons

Comparability → data (estimates) for different populations can be

legitimately (i.e. in a statistically valid way)

put together (aggregated),

compared (differenced), and

interpreted (given meaning)

in relation to each other and against common standards

Comparability → a relative concept

We can have only 'degrees of comparability', not absolute comparability.

Why comparability?

- countries' need to assess their place in relation to other countries.
- increased scope for learning from others' practices
- data needs of international and bilateral agencies
- advantages of support from international programmes
- researchers increasingly want comparable datasets.

How comparability is achieved

Measurement aspects

concern obtaining information on given set of units

should be strictly standardised to control measurement biases

Estimation aspects

concern drawing conclusions about population represented by observed units

required are not identical procedures, but common standards

estimation aspects can be chosen flexibly without affecting comparability, as long as valid and common standards are followed

Standardisation

a useful tool for ensuring that conditions for comparability are actually met.

Lessons from ECHP

In ECHP comparability was achieved through

(1) common concepts, definitions, classifications;

(2) use of common 'blue-print' questionnaire, serving as point of departure for the national surveys;

(3) common survey structure and procedures;

(4) common sampling requirements and standards, coupled with flexibility in actual designs to suit national conditions;

(5) common standards and arrangements for data processing and statistical analysis;

(6) the creation of standardised microdata sets - a crucial element of data comparability in practice; and

(7) the above achieved through centralised support and co-ordination of national surveys by Eurostat.

Characteristics and requirements of EU-SILC affecting comparability

Flexibility is an essential feature of EU-SILC

It involves different types and combinations of data sources, with different designs

- **Cross-sectional and longitudinal components**
- **Diverse data sources**
- **Varied structures**
- **More complex structure(s)**
- **Expanded coverage**

EU15 to EU25, and possibly others

Norway, Iceland, Switzerland, Bulgaria, Romania, Croatia, Turkey ….

Income and social variables

Income variables must be obtained for a sample of complete households, covering all income recipients. Information is too complex to be obtained by proxy

Social variables are also complex and personal .. must be collected through direct personal interview … but can use sample of persons (one per household)

Assessment of achieved comparability

How may we assess the extent to which comparability has or has not been achieved across countries in the implementation of EU-SILC?

- By examination from the input side: comparison of the production processes
- By examination from the output side: assessment of the findings

Both these aspects in the assessment are important

Comparison of the production processes

- …it can indicate where results are most likely to *lack* required comparability
- …often reliable comparisons from "output" side are simply not possible
- …remember that measurement aspects need to be the same or comparable, and

  …the estimation aspects can be chosen flexibly following common standards
- …sometimes even measurement aspects need to be *different* for comparability
- …must compare EU-SILC data production methodologies among countries in a context-sensitive manner

Comparison of the substantive results

1. Our actual interest is in comparability of substantive results rather than the production process

Sometimes, comparisons from the "input" side may do not give correct indication of comparability achieved

2. But direct comparison often too difficult, even impossible

Must be complemented by comparison from the "input" side

3. Often it is necessary to look for large differences, for *implausible* patterns

4. Anyway, to indicate lack of comparability observed differences should be significantly larger than

- sampling and non-sampling errors involved

- also than differences expected from existing knowledge

5. → comparisons of substantive results also not a mechanical task: researchers need to use analytical skills and subject-matter specific knowledge

Potential sources of non-comparability in EU-SILC

1. Comparability of income distribution by component,
   - especially self-employment income, imputed rent, housing costs, non-monetary income

2. Treatment of income taxes;
   Gross-Net conversion

3. Effect of annual vs. current income concepts

4. Collection of non-income items defining living conditions

5. Major differences in structure of the EU-SILC instrument:

   (i) registers for income;
   sample of persons for social variables

   (ii) income from interview survey;
   household sample for complex social variables

Potential sources of non-comparability in EU-SILC (cont)

6. Comparability between register and interview data on income

7. Differences of basic concepts
- definition of household and household membership

8. Variations in modes of data collection

9. Comparability of the national questionnaires

10. Different rates of non-response and attrition

Potential sources of non-comparability in EU-SILC (cont)

11. Item non-response and imputation procedures used

12. Differences in the weighting procedures/standards

13. Incidence and treatment of negative, zero and small incomes

… etc., etc.

Examples of studies on comparability:
(1) Comparability of income distribution by component

Differences in income concepts and
classification of income by component

1. Self-employment income
2. imputed rent of owner-occupied or rent-free dwelling
3. housing costs and housing assistance
4. Income-in-kind
   especially "auto consumption" in enlarged EU

- Necessary to carefully study *extent* of differences across countries to identify main sources of non-comparability

-Then to try and quantify the *impact* of these differences on the inter-country comparability on indicators produced from EU-SILC

→Income distribution by component must be carefully compared and major discrepancies explained before public release of data

Examples of studies on comparability:
(2) Negative and zero incomes

Significance and treatment of negative and zero incomes

- can be genuine

-but often result from under-reporting and other errors in data

-cannot serve as proxies for living standards

Major source of negative income

- income from self-employment

- often also inappropriate application of deductions

Problem: different treatment by different countries

To study

-incidence and impact of differences

-consequences of adopting a common adjustment procedure

Examples of studies on comparability:
(3) definition of household and household membership

Significance of concept of household and household membership

- as sampling unit
- as substantive unit for income analysis

Standard definition

- co-residence + sharing of expenses and provisions
- supplemented by treatment of special categories of members

To study

- national differences in the concepts and definitions used
- extent of the differences (numbers of persons affected)
- impact of the differences
  - especially on measures of poverty and inequality
  - for students, domestic servants and other special groups