Workshop on updated and new recommendations for International Merchandise Trade Statistics (IMTS 2010) and their implementation in countries of the Sub-Saharan Africa region

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Agenda item 14: Data quality and metadata

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II - Data quality

Newly added, previously covered in IMTS Compilers Manual

Data quality (IMTS 2010 Chapter IX)

Four parts

A. Enhancing quality of international merchandise trade statistics

B. Measuring quality of international merchandise trade statistics

C. Quality measures and indicators

D. Cross-country data comparability

A. Enhancing quality

- Enhancing data quality is a process covering all stages of the statistical production process:

  - **starts with validation of the data provided by the trader or broker** when completing the customs declaration,

  - **requires appropriate institutional arrangements**, for example, in order to allow adequate access to different data sources and

  - **implies the appropriate use of information and communication technology** among many other relevant activities.

A. Enhancing quality

- ## Systematic approach to data quality:

  ⇨ **implies that all aspects of the entire trade statistics program are examined and evaluated against certain <u>principles and standards</u>**

  (which allows to more effectively identify and implement appropriate actions to further improve data quality)

  ⇨ **<u>It is recommended</u> that countries develop such standards and related good practices covering the institutional arrangements, the statistical processes and outputs (IMTS 2010, para 9.4, new)**

  ➔ *Actions for enhancing data quality are often focused on individual elements of the data such as reported commodity, value, quantity, quantity unit and trading partner etc. They must also address more general issues of coverage and comprehensiveness of recording.*

A. Enhancing quality

- Quality reporting:

  ⇨ **Further, it is recommended** that countries develop a **standard for regular quality reports** (IMTS 2010, para 9.5, new)

    ⇨ which **cover the full range of statistical processes and their outputs** and which would use the above mentioned principles and standards as its basis.

    ⇨ Such reports can be either **producer-oriented** with the aim to identify strengths and weaknesses of the statistical process and lead to or contain the definition of quality improvement actions or **user-oriented** with the aim to keep users informed on the methodology of the statistical process and the quality of the statistical output.

  ⇨ **It is recommended** that the quality reports on IMTS should be completed or updated at least **every five years or more frequently** (IMTS 2010, para 9.6, new)

  ⇨ **It is recommended** that countries base their quality reports on a **set of quantitative and qualitative indicators** for IMTS and on a **checklist covering data collection, processing and dissemination** to allow for an assessment of strengths and weaknesses in the statistical process and to identify possible quality improvement actions (IMTS 2010, para 9.7, new)

B. Measuring quality of IMTS

- Data quality assessment frameworks:

  ⇨ **Most international organizations and many countries have developed definitions of quality, outlining the various dimensions (aspects) of quality and quality measurement, and integrated them into <u>quality assessment frameworks</u>**

  ⇨ **Examples:**
    - **The _<u>IMF Data Quality Assessment Framework (DQAF)</u>_ covers some prerequisites and identify five dimensions of data quality: assurance of integrity, methodological soundness, accuracy and reliability, serviceability and accessibility.**
    - **The _<u>European Statistical System (ESS)</u>_ adopted a <u>Code of Practice</u> composed of 15 principles, 5 are related to statistical output: relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity.**
    - **The _<u>OECD quality measurement framework</u>_ views quality in terms of seven dimensions: relevance, accuracy, credibility, timeliness, accessibility, interpretability and coherence.**

B. Measuring quality of IMTS

- ## Data quality assessment frameworks:

⇨ The overall aim of the three quality assessment frameworks is to standardize and systematize statistical quality measurement and reporting across countries.

⇨ The quality assessment frameworks could be used in a number of contexts, including for

(a) **guiding countries' efforts towards strengthening their statistical systems by providing a self-assessment tool and a means of identifying areas for improvement;**

(b) **technical assistance purposes;**

(c) **reviews of particular statistical domains as performed by international organizations; and**

(d) **assessment by other groups of data users.**

B. Measuring quality of IMTS

- ## Dimensions of quality

  - Countries should implement one of the existing frameworks for quality assessment or develop on their own a national quality assessment framework that fits best their country's practices and circumstances.

  - **It is recommended** that the following dimensions of quality are taken into account while developing such frameworks **(IMTS 2010, para 9.10, new)**:

    1. *Prerequisites of quality*

    2. *Relevance* **(degree to which they meet the user needs)**

    3. *Credibility* **(confidence that users place in those statistics)**

    4. *Accuracy*

    5. *Timeliness*

    6. *Methodological soundness*

    7. *Coherence*

    8. *Accessibility*

C. Quality measures and indicators

➢ **countries are encouraged** to use a system of quality measures/indicators as a single quantitative measure of quality is not possible

➢ in practice, quality measures can be difficult or costly to calculate. Instead, quality indicators can be used in the quality assessment.

➢ When countries define the quality indicators for their international merchandise trade statistics, **it is recommended** that the indicators satisfy the following criteria: **(IMTS 2010, para 9.15, new)**

  a) they cover all dimensions of quality

  b) are based on the consistent application of a sound methodology; and

  c) the indicators are easy to interpret both by internal and external users.

➢ **It is recommended** that countries maintain a balance between different dimensions of quality and the number of indicators **(IMTS 2010, para 9.16)**

C.   Quality measures and indicators

Table 9.1:   **Suggested indicators for measuring the quality of international merchandise trade statistics**

Quality dimension	Quality measure/indicator
Relevance	1. Gaps between key user interests and compiled international, merchandise trade statistics in terms of concepts, coverage and detail 2. Results of users' satisfaction surveys and meetings with user groups.

Accuracy	1. Application of reporting thresholds,
	2. Under-coverage (% of non-reporting due to thresholds, % of non-reporting due to non-response),
	3. Characteristics and frequency of revisions (e.g. as % of total value),
	4. Application of confidentiality and its impact,
	5. Use of data validation techniques and their impact.
	In the case of sample surveys-based international merchandise trade estimates, the accuracy can be measured using the following indicators:
	6. Sampling errors
	7. Non-sampling errors
	     - Unit response rate
	     - Item response rate

D. Cross-country data comparability

➢ Non-comparability is caused, inter alia, by differences in coverage; different methods for the treatment of certain goods (e.g. military goods, ship's stores, confidential data); value increases in intermediary countries; differences in classification of goods; time lags in reporting etc.

➢ Such non-comparability may be substantially reduced by the adoption of the concepts and definitions recommended in the present publication.

➢ Nevertheless, a certain amount of non-comparability will remain.

➢ **Countries are encouraged**, therefore, to periodically conduct bilateral and multilateral reconciliation studies or implement data exchanges so that their statistics can be made more accurate and useful both for national purposes and for international comparisons **(IMTS 2010, para 9.18, new).**

II – Metadata (newly added)

Metadata

Refer to all information used to describe another data, that is "data about data":

➢ can include definition of concepts, methodological description of data collection and processing,…

➢ facilitate sharing, querying and understanding the statistical data over its lifetime;

➢ Bidirectional relation with data quality: the metadata describe the quality of statistics

    …but are also a quality component.

Metadata

Minimum requirement:

In order to allow users to readily assess the data and their quality, **metadata at the following two levels are recommended as a minimum segmentation (IMTS 2010, para 9.22):**

1. **Reference metadata** (example: explanatory note describing the scope, coverage and data quality)

2. **Structural metadata:** is an integral part of the database and can be extracted together with any data item

Metadata: content

Metadata on IMTS should include the description of the following (IMTS 2010, para 9.22):

i. Underlying concepts and definitions, including the trade system used, and deviations from international standards, if any;

ii. Legal framework, institutional arrangements and data sources;

iii. Data collection and data processing procedures;

iv. Estimation methods;

v. Data dissemination policy including release and revision schedules;

vi. All data fields/ variables (reference period, trade flow, commodity classification used, …);

vii. Explanations and footnotes informing about revisions, break in series and application of confidentiality;

viii. Quality reporting.

Metadata

it is recommended **that countries view the development of metadata as a high priority and consider their dissemination as an integral part of the dissemination of IMTS** **(IMTS 2010, para 9.25, new)**

Thank you for your attention