

**Seminar on International Trade Statistics**  
**Implementation of IMTS 2010 and follow-up to the Global Forum**  
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**Agenda item 16: Data quality and metadata**



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**Data quality (IMTS 2010 Chapter IX)**

➤ **Newly added, previously covered in IMTS  
Compilers Manual**

**Five parts**

- A. Enhancing quality of IMTS
- B. Measuring quality of IMTS
- C. Quality measures and indicators
- D. Cross-country data comparability
- E. Metadata

## A. Enhancing quality

- Process covering all stages of the statistical production process:
  - **validation of basic data records**  
e.g., data provided by the trader or broker when completing the customs declaration
  - **appropriate institutional arrangements**  
e.g., in order to allow adequate access to different data sources
  - **appropriate use of information and communication technology**
  - **and many other relevant activities...**

## A. Enhancing quality

- Systematic approach to data quality:
  - ⇒ all aspects of the entire trade statistics program are examined and evaluated against certain **principles and standards**  
(which allows to more effectively identify and implement appropriate actions to further improve data quality)
  - ⇒ **It is recommended** that countries develop such standards and related good practices covering the institutional arrangements, the statistical processes and outputs
    - ➔ *Actions for enhancing data quality are often focused on individual elements of the data (e.g., reported commodity, value, quantity, quantity unit and trading partner)*
    - ➔ *but must also address more general issues (e.g., coverage and comprehensiveness of recording)*

## A. Enhancing quality

- Quality reporting:
  - ⇒ **Recommendation:** develop a standard for regular quality reports
    - ⇒ Covering the full range of statistical processes and their outputs
    - ⇒ Based on principles and standards
    - ⇒ *Producer-oriented*
      - Aimed to identify strengths and weaknesses of the statistical process
      - Leading to or containing the definition of quality improvement actions
    - ⇒ *User-oriented*
      - To inform users on methodology of statistical process and quality of statistical output
  - ⇒ **Recommendation:** complete or update quality reports on IMTS at least every five years
  - ⇒ **Recommendation:** base 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.

## 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 quality assessment frameworks
  - ⇒ Examples:
    - The IMF Data Quality Assessment Framework (DQAF) takes holistic view of data quality and includes governance of statistical systems, core statistical processes and statistical products.
    - The Code of Practice adopted by the European Statistical System (ESS) provides broad conceptual framework for quality and sets standards for the institutional environment, statistical processes and statistical outputs.
    - The OECD quality measurement framework views quality as a multifaceted concept in terms of seven dimensions: relevance, accuracy, credibility, timeliness, accessibility, interpretability and coherence.

## B. Measuring quality of IMTS

- Data quality assessment frameworks:
  - ⇒ Their overall aim is to standardize and systematize statistical quality measurement and reporting across countries.
  - ⇒ Can 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 an existing framework for quality assessment or develop on their basis a national quality assessment frameworks that fit best their country's practices and circumstances.
  - **Recommendation:** To take into account the following dimensions of quality while developing such frameworks:
    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

- The use of a system of quality measures/indicators **is encouraged**, 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.
- **Recommendation:** That IMTS quality indicators defined by countries satisfy the following criteria:
  - a) cover all dimensions of quality
  - b) based on the consistent application of a sound methodology
  - c) easy to interpret, both by internal and external users
- **Recommendation:** That countries maintain a balance between different dimensions of quality and the number of indicators

## C. Quality measures and indicators

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

<i>Quality dimension</i>	<i>Quality measure/indicator</i>
Relevance	<ol style="list-style-type: none"> <li>1. Gaps between key user interests and compiled international, merchandise trade statistics in terms of concepts, coverage and detail</li> <li>2. Results of users' satisfaction surveys and meetings with user groups.</li> </ol>
Accuracy	<ol style="list-style-type: none"> <li>1. Application of reporting thresholds,</li> <li>2. Under-coverage (% of non-reporting due to thresholds, % of non-reporting due to non-response),</li> <li>3. Characteristics and frequency of revisions (e.g. as % of total value),</li> <li>4. Application of confidentiality and its impact,</li> <li>5. Use of data validation techniques and their impact.</li> </ol> <p>In the case of sample surveys-based international merchandise trade estimates, the accuracy can be measured using the following indicators:</p> <ol style="list-style-type: none"> <li>6. Sampling errors</li> <li>7. Non-sampling errors           <ul style="list-style-type: none"> <li>- Unit response rate</li> <li>- Item response rate</li> </ul> </li> </ol>

## D. Cross-country data comparability

- Some causes of non-comparability:
  - differences in coverage;
  - different 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 adopting concepts and definitions recommended in IMTS 2010
- Nevertheless, a certain amount of non-comparability will remain.
- To make their statistics more accurate and useful, both for national purposes and for international comparisons, countries are **encouraged** to periodically:
  - conduct bilateral and multilateral **reconciliation studies**
  - implement **data exchanges**

## E. Metadata on international merchandise trade statistics

- **Metadata**: *all information used to describe other data* ("data about data")
  - administrative facts about data (who has created them and when)
  - definition of concepts applied
  - description of how data were collected and processed before they were disseminated or stored in a database
- Metadata facilitate sharing, querying and understanding of statistical data over the lifetime of the data.
- **Relationship between metadata and quality.**
  - Metadata describe the quality of statistics
  - Metadata are themselves a quality component, which improves the availability and accessibility of statistical data.

## E. Metadata on international merchandise trade statistics

As a minimum segmentation, metadata at the following two levels are **recommended**:

- a) *Reference metadata*: As a detailed explanatory note describing the scope, coverage and quality of a data set, made available electronically alongside the database or in special publications;
- b) *Structural metadata*: As integral part of the international merchandise trade statistics database, which can be extracted together with any data item  
→ Can be published as part of a statistical table.

## E. Metadata on international merchandise trade statistics

**Recommendation:** To cover at least the following categories of metadata for IMTS:

- a) Underlying concepts and definitions, including trade system and deviations from international standards, if any
- b) Legal framework, institutional arrangements and data sources;
- c) Data collection and processing procedures;
- d) Estimation methods;
- e) Data dissemination policy, including release and revision schedules;
- f) Description of all data fields / variables:\* reference period, trade flow, commodity classification, valuation, currency, quantity (net weight), weight unit, supplementary quantity, supplementary quantity unit, partner country (origin, last known destination, consignment)
- g) explanations and footnotes concerning the data as required, e.g., informing about revisions, breaks in series, and application of confidentiality;
- h) quality reporting.

\* This applies to all forms of data dissemination

## E. Metadata on international merchandise trade statistics

- **It is recommended** that countries view the development of metadata as a high priority and consider their dissemination an integral part of the dissemination of international merchandise trade statistics.
- Moreover, **it is recommended** that this is done in compliance with the approach adopted by a given country to metadata across all areas of economic statistics.
- **Countries are encouraged** to take advantage of the metadata standards proposed by various international organizations while developing their metadata in general and trade metadata in particular.
- Further guidance on metadata for purposes related to international merchandise trade statistics will be elaborated and presented in the updated version of the IMTS Compilers Manual.

Thank you for your attention!