

11th World Telecommunication/ICT Indicators Symposium (WTIS-13)

Mexico City, México, 4-6 December 2013



Contribution to WTIS-13

Document C/6-E
5 December 2013

English

SOURCE: International Monetary Fund

TITLE: Data Quality Assessment Framework



Data Quality Assessment Framework

World Telecommunication/ICT Indicators Symposium

Mexico City, Mexico

December 4-6, 2013

The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management

1

Statistics Department

Outline

- ❖ Background
 - ❖ Data Transparency and Metadata
 - ❖ SDDS/GDDS
- ❖ Broader view of Quality
- ❖ DQAF Architecture
- ❖ Prerequisites of Quality and Dimensions
- ❖ Conclusions
 - ❖ Applications of DQAF within the Fund
 - ❖ Other Applications
 - ❖ Importance of applying a DQAF

2

Data Transparency and Metadata

- ❖ The Special Data Dissemination Standard (SDDS) was established in 1996 to guide members in **providing** economic and financial data to the public.
 - ❖ Data dissemination standard that identifies best practices in the *dissemination* of economic and financial data.
 - ❖ For countries having, or seeking, access to international capital markets
- ❖ The General Data Dissemination System (GDDS), established in 1997 provides a framework for participating countries to **develop a strategy** for strengthening their statistical systems.
 - ❖ The GDDS fosters:
 - ❖ The application of sound methodology
 - ❖ The adoption of good compilation and dissemination practices
 - ❖ The observance of procedures ensuring professionalism

3

Data Transparency and Metadata

- ❖ A **standard** (SDDS) is precise
 - ❖ Specific requirements for coverage, periodicity, and timelines of data
- ❖ A **system** (GDDS) is less prescriptive
 - ❖ Emphasis on improvement over time and progress toward higher quality, increased periodicity, and more timely data
- ❖ How about **quality** considerations?

4

What is Quality?

- ❖ **Accuracy** is generally the first-mentioned data quality criterion; that is to what extent data portray reality.
- ❖ But, what about...
 - ❖ Timeliness
 - ❖ Periodicity
 - ❖ Consistency
 - ❖

5

Broader view of Quality

- ❖ Broader view of quality looks at:
 - ❖ The statistical institutions
 - ❖ Statistical processes
 - ❖ Statistical output

6

DQAF Architecture

- ❖ The DQAF is organized around a set of prerequisites and five dimensions of data quality
 - ❖ assurances of integrity,
 - ❖ methodological soundness,
 - ❖ accuracy and reliability,
 - ❖ serviceability, and
 - ❖ accessibility.
- ❖ The DQAF identifies a non-exhaustive list of “**good practices**” in the compilation and dissemination of macroeconomic statistics products.

7

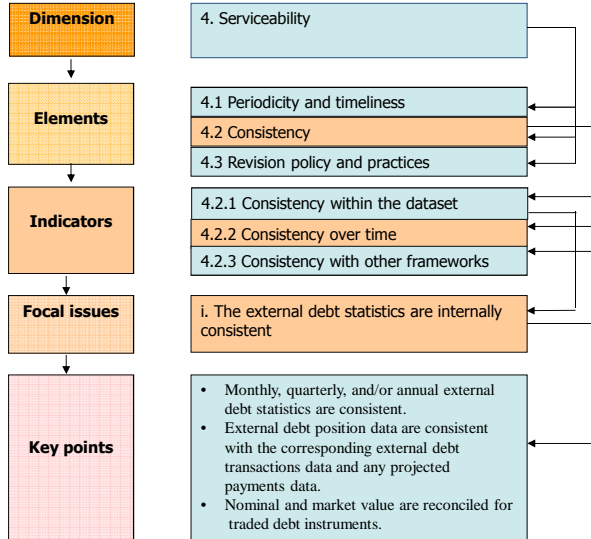
A Cascading Structure

- ❖ **Five dimensions** of quality
 - and for each dimension,
 - ❖ **Elements** (that can be used in assessing quality)
 - and for each element,
 - ❖ **Indicators** (that are more concrete and detailed)
 - and for each indicator,
 - ❖ **Focal issues** (that are tailored to the dataset)
 - and for each focal issues
 - * **Key points** (to be considered for the assessment)

Note: The first three levels are applicable to any dataset; the next two are dataset specific.

8

DQAF Cascading Structure: An example



DQAF—Prerequisites of Quality

| | Description |
|--------------------------|---|
| Prerequisites of quality | <p>This category identifies conditions within the agency in charge of producing statistics that have an impact on data quality (legal and institutional environment, available resources, relevance, and quality awareness).</p> <ul style="list-style-type: none"> □ The primary responsibility for collecting, processing, and disseminating macroeconomic statistics is clearly specified. □ Confidentiality of individual reporters' data is guaranteed. □ A law or other formal provision provides for the reporting of information needed to compile macroeconomic statistics. □ Staff / computing resources / physical facilities / funding for compiling macroeconomic statistics are adequate to performed required tasks. |

DQAF—Dimension 1

| | Description |
|---|---|
| Assurances of integrity | It identifies features that support firm adherence to objectivity in the collection, processing, and dissemination of statistics so as to maintain users' confidence. Elements refer to professionalism, transparency, ethical standards. |
| <ul style="list-style-type: none"> <input type="checkbox"/> Recruitment and promotion are based on relevant aptitude and/or expertise. <input type="checkbox"/> Choices of data sources and statistical techniques are based solely by statistical considerations. <input type="checkbox"/> Terms and conditions under which statistics are collected, processed, and disseminated are available to the public. <input type="checkbox"/> Clear set of ethical standards are available and staff are made aware. | |

11

DQAF—Dimension 2

| | Description |
|---|--|
| Methodological soundness | It refers to the application of international standards, guidelines, and accepted practices. Application of such standards, which are specific to each dataset, is indicative of the soundness of the data and fosters international comparability. Elements refer to the basic building blocks of concepts and definitions, scope, classification and sectorization, and basis for recording. |
| <ul style="list-style-type: none"> <input type="checkbox"/> Concepts and definitions / scope / classification and sectorization/ basis for recording used to compile macroeconomic statistics are in broad conformity with internationally accepted methodologies. | |

12

DQAF—Dimension 3

| | Description |
|--------------------------|--|
| Accuracy and reliability | <p>It identifies features that contribute to the goal that data portray reality. Elements refer to features of the source data, statistical techniques, and data validation.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The data collection programs employed to compile macroeconomic statistics are adequate. <input type="checkbox"/> Source data are consistent with the definitions, scope, classifications, and time of recording adopted by the data producing agency. <input type="checkbox"/> Statistical techniques employed conform to sound statistical procedures. <input type="checkbox"/> Appropriate measures are taken to adjust source data. <input type="checkbox"/> Bilateral comparisons/ reconciliations are conducted with data of other countries and international organizations. |

13

DQAF—Dimension 4

| | Description |
|----------------|--|
| Serviceability | <p>It focuses on practical aspects of how well a data set meets user's need. Elements refer to the extent to which data are disseminated with an appropriate periodicity and timeliness, are consistent internally and with other datasets, and follow a known revision policy.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Periodicity and timeliness follows dissemination standards (Fund's SDDS / GDDS). <input type="checkbox"/> Statistics are consistent over time <input type="checkbox"/> Macroeconomic statistics are consistent / reconcilable among national accounts, balance of payments, IIP, monetary and financial, and government finance statistics. <input type="checkbox"/> Revisions follow a regular an transparent schedule. |

14

DQAF—Dimension 5

| | Description |
|---------------|---|
| Accessibility | <p>It deals with the need for data and metadata to be presented in a clear manner, are easily available, that metadata are up-to-date and pertinent, and that knowledgeable support service is available to users.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Supplementary statistical sets encouraged by the SDDS/GDDS are provided to users. <input type="checkbox"/> Statistics are released on the preannounced schedule. <input type="checkbox"/> Statistics are made available to all users at the same time. <input type="checkbox"/> Metadata give adequate information about the meaning of the data and about the methodology used to collect and process them. <input type="checkbox"/> Prompt and knowledgeable support service to users of macroeconomic statistics is available. |

15

Ratings^{1/}

| | |
|-----|----------------------|
| O | Fully observed |
| LO | Largely observed |
| LNO | Largely non-observed |
| NO | Non-observed |

1/ Ratings used in data ROSC missions.

16

Applications of DQAF Within the Fund

- ❖ Data ROSC (Reports on the Observance of Standards and codes).
- ❖ Technical assistance and training.
- ❖ Reviews performed in the context of IMF country work.
- ❖ IMF data dissemination standards.

17

Other Applications

- ❖ The DQAFs could be useful tools for:
 - ❖ other international agencies
 - ❖ national agencies (Generic DQAF)
 - ❖ financial market participants
- ❖ How might you use it?
 - ❖ For assessing institutional arrangements for data compilation and dissemination.
 - ❖ Opening eyes to “good practices” in the compilation or dissemination of macroeconomic statistics.

18

Importance of Applying a DQAF

- ❖ Self Assessment (not only NSOs)

- ❖ Suitable to develop specific frameworks
 - ❖ ICT statistics?

- ❖ Limitations if no QAF is applied
 - ❖ Potential of inconsistent data among providers of statistics
 - ❖ Inability to narrow down and operationalize the multidimensional concept of quality
 - ❖ through comprehensive coverage of the dimensions of quality