

**UNITED NATIONS STATISTICAL COMMISSION
and ECONOMIC COMMISSION FOR EUROPE
CONFERENCE OF EUROPEAN STATISTICIANS**

**EUROPEAN COMMISSION
STATISTICAL OFFICE OF THE
EUROPEAN COMMUNITIES
(EUROSTAT)**

**ORGANISATION FOR ECONOMIC
COOPERATION AND DEVELOPMENT
(OECD)
STATISTICS DIRECTORATE**

Joint UNECE/Eurostat/OECD work session on statistical metadata (METIS)
(Geneva, 9-11 February 2004)

Topic (ii): Metadata interchange

Inter-agency cooperation for the dissemination and exchange of standard metadata

Invited Paper

Submitted by Eurostat, International Monetary Fund and Organisation for Economic Cooperation and Development ¹

Abstract

This paper commences with an overview of some metadata developments taking place within the three author organisations, together with an overview of problems areas and issues that are also common to many other international organisations and national agencies. The paper emphasises the need for the parallel development of IT metadata standards and what the authors refer to as metadata content standards. It describes how improvements in the exchange and sharing of metadata are envisaged under the auspices of the tools being developed under the Statistical Data and Metadata Exchange (SDMX) initiative. Finally, the paper outlines future developments and advantages of the new metadata environment, together with implications for national agencies, the role and responsibilities of national agencies with respect to metadata exchange, and where national agencies can contribute to the evolution of metadata standards, particularly in the context of web based technologies.

Through close coordination between two SDMX projects (metadata repositories and metadata common vocabulary) substantial progress has been made towards the implementation of new advanced features for metadata search and re-use (portalization) within the existing Dissemination Standards Bulletin Board (DSBB) maintained by the IMF. The paper describes how the SDDS model of metadata (dimensions, elements, indicators, key concepts) has been refined and formalized to serve as the basis of a generic XML format that should be used as a reference SDMX standard for exchanging and sharing metadata across organizations. The paper also outlines how improvements in data analysis and comparability across metadata repositories can be derived from linking the metadata reported using this model to a common metadata terminology.

¹ Prepared by Gary Jones and Robert Di Calogero (IMF), Marco Pellegrino (Eurostat) and Denis Ward (OECD)

I. INTRODUCTION

1. The basic premise of this paper is that the development and adoption of a common worldwide format for metadata for all statistical domains by a large number of international organisations and national agencies is not a realistic goal in the foreseeable future. However, within this environment, the paper highlights a number of key areas where inter-agency co-operation is currently taking place, particularly at the international level, to facilitate the dissemination and exchange of metadata that allows international comparisons. The paper also emphasises the need for parallel development of metadata standards in both the area of IT standards (such as XML) and in what the authors refer to as metadata content standards.
2. The paper commences with an overview of some metadata developments taking place within the three author organisations. The paper then describes how improvements in the sharing of metadata are envisaged under the auspices of the tools being developed under the Statistical Data and Metadata Exchange (SDMX) initiative². Finally, it outlines future developments and advantages of the new metadata environment, together with implications for national agencies, the role and responsibilities of national agencies with respect to metadata exchange, and where national agencies can contribute to the evolution of metadata standards.

II. OVERVIEW OF CURRENT METADATA ACTIVITIES

Metadata within the IMF, storage and dissemination, problems and plans

3. Since the launch of the Dissemination Standards Bulletin Board (DSBB) in September 1996, subscription to the IMF's Special Data Dissemination Standard (SDDS) has grown to 55 countries, with Bulgaria becoming the most recent subscriber on 1 December 2003. Additionally, the European Central Bank and Eurostat disseminate their metadata for some statistical series using the existing SDDS format, and have provided links to/from the DSBB and their respective websites. Further, metadata for 64 participants in the IMF's General Data Dissemination System (GDDS) built on the same four dimensions—data characteristics, quality, access, and integrity—are posted on the DSBB. Taken together, this means that more than half of the IMF's 183 members publicly disseminate information about their statistical practices [or at least some of them] on the DSBB using the SDDS/GDDS framework. Moreover, the IMF is working with a number of additional countries that have committed to subscribing to the SDDS or using the GDDS as a framework for the development of their national statistical systems.
4. The use of a standard presentation format for statistical metadata on the DSBB enables data users worldwide to gain access to information in a readily recognizable and comparable form. In recognition of this, in March 2003 the IMF launched an enhanced DSBB website that transformed the existing set of static pages into pages that are dynamically generated on request (see Appendix 1). This has greatly increased the DSBB's flexibility to meet specific user needs by enabling users to order up a set of web pages containing information gleaned from a search and query operation in formats tailored to their purpose.
5. DSBB users can now access a query facility that provides several "views" into metadata that allow users to quickly find an answer about a particular country's practices or to compare statistical practices across countries and data categories as follows: i) information on elements such as the characteristics, periodicity, and timeliness of the data categories being disseminated for either SDDS subscribers or GDDS participants; ii) more detailed information for SDDS subscribers on methodology topics such as the base/weight reference periods for a price index; iii) advance release calendar information for any combination of SDDS subscribers and data categories on a quarter-ahead basis; and iv) information on how SDDS subscribers are meeting the requirements of the standard, i.e., use of flexibility options, etc.

² SDMX is a collaborative venture sponsored by the Bank for International Settlements (BIS), the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), the United Nations Statistics Division (UNSD) and the World Bank. For additional information see <http://www.sdmx.org>

6. Despite the success with which these enhancements have been received, the existing DSBB metadata query facility lacks the capability—and compatibility—to interact fully with other sources of statistical metadata available at the national and international levels. This is because a common vocabulary, an internationally agreed model articulating the manner in which information is stored, and a standard format for rendering metadata and macroeconomic time series data have not yet been sufficiently developed. This lack of uniformity leads to serious problems and delays when metadata have to be exchanged or harmonized at a higher level. SDMX objectives will be achieved by providing metadata users and producers with agreed metadata guidelines based on a common definition of each metadata element.

Eurostat metadata collection, storage, dissemination on the web

7. The demand for timely and high-quality statistical data for the Euro-zone was, back in 1999, one of the most powerful factors stimulating the harmonisation of the corresponding metadata for European aggregates. When Eurostat launched its *Euro-indicators* and - later on - *Structural Indicators* on the Internet, the SDDS format was adopted for the purpose of simplifying the production and maintenance of metadata files, while improving at the same time the integration between European and national metadata for the same data series. The so-called “1000 tables”, i.e. free dissemination of the most important Eurostat indicators via the Internet, launched early in January 2004, is also widely supported by SDDS metadata.
8. Eurostat maintains, at present, a system of about 220 metadata files in SDDS format, for more than 500 indicators covering the Euro-zone and the European Union - at different periodicities - for domains mostly included in the SDDS classification (national accounts, balance of payments, industrial production, price index, external trade, monetary and financial indicators,...). All these files include a “summary methodology” and, in some cases, they provide direct hyperlinks to the corresponding national metadata available on the DSBB. Eurostat and the Statistics Department of the IMF agreed in 2001 that metadata for Euro and Structural indicators and the DSBB should be linked to each other for establishing an integrated system where national and international institutes, private and public users, can find the metadata they are looking for in a common dissemination format³.
9. Eurostat is currently working on the standardisation of its corporate metadata (or “text”) repository, based on a detailed metadata typology compatible with the SDDS and agreed with our subject-matter experts. The objective is to avoid the typical drawbacks connected with the existence of multiple metadata formats, which are difficult to convert and maintain. The SDDS format, in this context, is seen as an output of the metadata production process and as a sort of *proxy*, as it provides a reference view of the service that our metadata systems need to provide. Agreement on a common format for exchanging and sharing metadata between national and international organisations would therefore represent a significant step forward. In this context, Eurostat could play a role in interconnecting European and national metadata for a wide range of indicators of common interest.

Metadata within the OECD, storage and dissemination, problems and plans

10. The current situation with respect to metadata in the OECD takes place within the context of the Organisation’s decentralised statistical system wherein statistical data collection, storage and dissemination for 30 Member countries (plus a limited number of non-member states) is conducted by a number of units across the OECD. Only limited metadata are stored in databases actually linked to the statistics they describe. Most metadata currently reside in numerous text files that have been used in the preparation of a large number of statistical and other publications produced across the Organisation. In the absence of a corporate metadata facility and corporate metadata model there is frequent duplication of metadata storage.
11. A key element of the new OECD corporate data environment currently being developed is the METASTORE facility which will, for the first time, enable users within the Organisation to store their

³ see <http://dsbb.imf.org/Applications/web/eurostatnote>

metadata in a corporate facility that can be readily accessed by different in-house users and allow metadata describing common data disseminated by different Directorates to be linked to different outputs in lieu of duplicated collection and storage. METASTORE will also have the capability of storing links (URLs) to metadata maintained both by other international organisations and national agencies, again in lieu of direct collection. It is also equipped with powerful text search and retrieval facilities. Finally, METASTORE will be linked to other elements of the OECD corporate data environment such as the primary external data dissemination facility, OECD.STAT and the OECD Glossary of Statistical Terms.

12. METASTORE is being developed in the context of the OECD's decentralised statistical system and provides sufficient flexibility appropriate to the Organisation's needs. In a worst case scenario it could merely be used as a corporate metadata storage facility storing the existing duplicated metadata compiled and disseminated by the various Directorates within the OECD. In order to maximise the advantages and potential such a facility provides the OECD has still to develop a set of governance practices, etc, regarding the insertion of new metadata in lieu of using existing metadata both within METASTORE and in the repositories of other organisations.

Overview

13. As can be seen from the above brief overview, there are a number of common problems with respect to the existing metadata environment. These are not unique to these organisations. The main metadata problem areas are:
 - multiple storage of metadata using different storage media – WORD files, stand alone databases, domain specific databases and web pages;
 - lack of standardisation of metadata describing the same data which results in the duplication of metadata holdings, wasted effort in maintenance and interpretation problems;
 - duplication of metadata reporting burden by national agencies; [The extent of such burden should not be exaggerated, as in many instances international organisations themselves extract metadata from sources such as national websites and publications]
 - consistency problems affecting the exchange of metadata between international organisations.
14. Because of these problems - and the absence of standardisation of metadata presentations for the same statistical series - it is extremely difficult for users to efficiently compare information for different countries.

III. SDMX METADATA PROJECTS

15. In the area of metadata dissemination, the focus of the SDMX initiative is on establishing business practices - across the international organizations involved and among their respective national constituencies - that would allow more efficient processes for the exchange and sharing of data and metadata. To achieve this, SDMX partners are exploring common e-standards and standardization activities that will allow them to achieve efficiencies while avoiding duplication of effort in their own work and possibly facilitate the work of others in the field of statistical information and its management. The two SDMX projects focusing specifically on metadata are the metadata common vocabulary and the metadata repositories projects.

Metadata common vocabulary

16. The metadata common vocabulary (MCV) contains a comprehensive set of definitions, referring to the description of statistics and processes, widely used by national agencies and international organisations. As information (or metadata) used to describe statistics represent knowledge about statistical data, exchanging metadata means, in practical terms, exchanging knowledge between organisations. Without agreement on a common terminology, there is a risk that national and international organisations are not able to understand the precise nature of the information that is being exchanged. In other words, the exchange of metadata can only be meaningful if it is based on a common terminology. Consequently, the focus of the MCV is on establishing a core set of standard definitions of metadata items for: (a) improving the standardisation of metadata for the purposes of data exchange; and (b) promoting the preparation by authors in different agencies/countries of metadata that describes the same aspects about

the statistics, thus helping international comparisons of statistical data (the provision of metadata is also essential to ensure that users have a clear understanding of the strengths and limitations of the statistics that metadata describe).

17. Although there is some commonality between the different metadata models developed by national agencies and international organisations, each model has a slightly different objective and each describes different methodological issues and stages of the statistical production cycle. The MCV, while providing a common ground of metadata elements, at the same time still provides the flexibility for each organisation to manipulate these elements to derive a variety of metadata models and specific dissemination outputs according to their own needs. As the definitions – mainly derived by international standards and guidelines – can be easily linked with existing metadata models, the adoption of a common terminology would simplify the metadata interchange between organisations and, in particular, mapping from one meta-information system to another.
18. The MCV, by its very nature, will never be considered as complete or final, as the need to include new terms, refine existing definitions and provide more context information will always arise in the future. Future work will entail:
 - The provision of additional context information for definitions currently included in the vocabulary, such as additional explanations about the term, highlighting peculiarities in how a certain definition is applied within a certain domain or geographical context, etc.
 - The inclusion of new elements or more appropriate definitions.
 - The dissemination of the MCV in the most appropriate formats (text, database, XML, web glossary) and the dynamic maintenance by the SDMX sponsors.

Metadata Repositories project

19. The immediate objective of the metadata repositories project is twofold: (1) identify the commonalities in the metadata structures of macroeconomic datasets that are collected and stored in existing repositories; (2) use these commonalities to develop standardization in format, structure, and vocabulary. The long-term objective is to enable websites of national and international authorities, as well as private sector organizations, to support intelligent queries across diverse repositories and multiple websites using a common thesaurus of metadata terms. This would support data exchange, publishing, and dissemination needs of a wide community of metadata providers.
20. The development of a platform-independent data exchange system that provides fluid and unobstructed access to international statistical information from a large number of content providers would leverage the investments that have been made in developing SDDS metadata as well as the actual data linked to the DSBB. Therefore, the purpose of the metadata repository project is to enable content users to access, analyze, and repurpose statistical metadata from multiple websites using protocols that operate independently of the computing platform (hardware and software configurations). These protocols include: a) a common model or structure for describing all metadata elements (the resulting model is included as [Appendix 2](#)); b) linking the terminology used in the model to the concepts described within the metadata common vocabulary; and c) a common XML based format for expressing the model.
21. The SDDS metadata model, the basis for this work, is neither broad enough in its coverage—the SDDS covers some 18 data categories focused on economic data—nor deep enough in detail to meet all the needs of SDMX partners for the dissemination of metadata. Therefore, SDMX partners are collaborating—under the metadata repositories project—to develop a scalable model that satisfies a broader range of needs. Collaborative work undertaken by Eurostat, the IMF, and the OECD has resulted in a shared understanding of existing commonalities in the way metadata are – or could be - handled within different organisations. This has led to a “common view” of the SDDS metadata model (see [Appendix 2](#)) and the adaptation of this model for metadata exchange across organizations, independent of the different technological platforms and the corporate metadata systems used within each.
22. The SDMX common information model has been developed drawing from the generic model that underlies the DSBB and the data model for time series exchange that is embedded in GESMES/TS (a data exchange standard that is used widely in the banking and statistical communities). The generic metamodel - developed in Universal Modelling Language (UML) at the highest level of abstraction - and the SDDS “presentation” of the metadata model will be linked to SDMX partners’ sector-specific data models to derive subject-matter prescriptions for the interchange of metadata. Moreover, this “exchange

format”, based on the common terminology represented by the MCV, should also allow mapping between, for instance, information exchanged via GESMES/TS and information posted on the DSBB or other similarly structured metadata repositories.⁴

IV. ADVANTAGES OF THE NEW SYSTEM AND FUTURE DEVELOPMENTS

23. While individual systems for collecting, storing and using metadata will still co-exist, the new SDDS metadata model being adopted across SDMX organizations—by parsing the metadata structure into dimensions, elements, indicators, and key concepts—promotes metadata comparability among countries and data categories and the sharing of metadata content among providers (and users). However, an important pre-condition for sharing metadata is that metadata are accessible on the web and that they use the same language. Use of the MCV harmonized definitions of metadata concepts and an improved metadata extraction facility using XML—based on a set of “tags” largely extracted from the MCV—for accessing and repurposing information from SDMX partners’ websites will promote exchanging metadata while also facilitating the repurposing of content to meet users’ needs.
24. The new SDDS metadata model will be used not only for reference purposes across SDMX organizations but also as an input for the XML-based tagging of the metadata available within the DSBB. A production version of an XML schema for statistical metadata - along with protocols for the acquisition, exchange, and dissemination of metadata repository content - will facilitate information management across diverse systems. In this regard, SDDS subscribers will be able to manage DSBB metadata themselves through the use of web forms accessed by secured identification systems. They also will be able to share any part of their metadata, with the metadata repository of any other organization that adopts SDMX standards.

V. CONTRIBUTION OF NATIONAL AGENCIES IN THE DEVELOPMENT OF METADATA STANDARDS AND IN THE AUTHORSHIP OF METADATA

25. A key objective of the SDMX initiative is to develop standards that can accommodate the requirements of many - and diverse - metadata providers. To this end, the new SDDS model and the XML interchange format using the MCV that is under development can be considered as reference SDMX standards for the open interchange of metadata originating from multiple sources. While the collaborating organisations have made substantial progress, national agencies will play a critical role in the evolution of these standards. The authors believe that the leveraging of technology for the efficient exchange and use of metadata for comparing statistics is of direct concern to national agencies. These agencies are encouraged to provide feedback on the work currently taking place under the auspices of the SDMX initiative.
26. Wider participation in the effort would facilitate the adoption of the SDMX standards and metadata infrastructure being developed. In the context of the MCV, this could lead to its linkage with national metadata models. In relation to the metadata repositories project, this could entail adoption of the new model and XML format being developed.

⁴ Another aspect of SDMX work is to prototype a registry-based architecture that supports navigation across the web, extracting data posted on country web sites and the explanatory metadata from sites such as the DSBB.

VI. ISSUES FOR DISCUSSION BY METIS

27. Leveraging XML to render statistical metadata on the web is an important step forward in building an open exchange system for the dissemination of statistical data and metadata. Initially, this work will be undertaken for selected data categories or domains (e.g. external debt, quarterly national accounts, industrial production) for pilot testing this spring. SDMX partners plan to formalize the protocols resulting from the pilot implementation by the end of 2004.
28. The existence of a common metadata “exchange format” that is adopted as an international standard by all SDMX organizations implies that current metadata formats and query facilities—such as that deployed on the IMF’s DSBB in March 2003—be revised to comply with the SDMX standard. In order to maximize the benefits of the new standard, it will be necessary to discuss how national metadata can migrate from the old to the new system.
29. In summary, the SDMX approach is grounded in the following three operating principles:
 - The data and metadata structure should be captured in a standard way so that it can be used by any tool or technology and not be dependent on a specific vendor’s product.
 - The structure should be described in a language that is extensible, allowing for additions as new information is included or becomes available.
 - The language used to describe the structure should be independent of formatting and presentation, thereby allowing for repurposing on the web, in conventional print, and other means of distribution.
30. In light of these principles, the METIS work session might wish to discuss on how the SDMX approach parallels initiatives underway in national agencies and how these efforts can be harmonized.

Appendix 1 New Ways to Look at DSBB Content

The enhanced DSBB website (<http://dsbb.imf.org/Applications/web/dsbbhome/>) permits users to conduct comparative analysis of statistical practices among all 55 SDDS subscribers. For example, a user interested in comparing the institutional coverage (“queried concept”) of the data on central government operations could submit a query and get the information displayed below.

The screenshot shows the IMF Dissemination Standards Bulletin Board website. The main heading is "Dissemination Standards Bulletin Board" and "Special Data Dissemination Standard". Below this, it says "Results of the Key Concepts for Central government operations (AS PROVIDED TO THE IMF BY THE RESPECTIVE COUNTRY)". A yellow box labeled "data category" points to this text. On the left, there is a sidebar with a search box and navigation links. A yellow box labeled "queried concept" points to the search input area. Below the sidebar, a yellow box labeled "countries identified" points to the table rows. The table has three columns: "Country", "Comments", and "Details". The "Details" column contains links for "Metadata" and "Data". A yellow box labeled "linked access to metadata/data" points to these links. The table contains three rows for Argentina, Brazil, and Mexico.

Country	Comments	Details
Argentina	All financial operations of the National Treasury and earmarked resources (budgetary central government), decentralized bodies (extrabudgetary central government), and social security institutions.	Metadata Data
Brazil	The Central Government, National Treasury, and Social Security.	Metadata Data
Mexico	All federal government units under the general budget and social security. These comprise: the legislative and judicial branches; autonomous agencies; the central public administration with its decentralized organs; and social security institutions.	Metadata Data

Users may choose to present the results of the queries executed in a variety of different formats including: by country, data category, dimension, element, and key-concept. Additionally, comparative analyses of data compilation and dissemination practices are now possible. Specifically, the facility is designed to provide users with the ability to tap into information in four ways:

- [by Metadata Dimension\(s\) and Element\(s\) for one or more Countries and Data Categories](#): This feature provides quick access to subscribers' metadata for any combination of countries, data categories, and metadata elements (data coverage, periodicity, timeliness, etc.).
- [by Key Concepts within Metadata Element\(s\) for one or more Countries and Data Categories](#): This feature provides a rapid means to analyze various statistical compilation and dissemination practices among SDDS subscribers in terms of key concepts (i.e., index base year, institutional coverage, etc.) embedded within many of the metadata elements. More than 250 analytically useful key concepts may be queried within the SDDS subscribers' metadata. These key concepts are being further refined and expanded within the SDMX Metadata Repositories project.
- [View Advance Release Calendar \(ARC\): information for one or more data categories and countries](#): This feature permits the review of ARC information for any combination of countries and data categories on a quarter-ahead basis.
- [View Summary of Observance information: cross-country practices vis-à-vis the SDDS](#): This facility provides comparative summary information for any combination of countries and data categories regarding how the SDDS specifications on data coverage, periodicity, and timeliness are being met.

Appendix 2 REVISED SDDS METADATA MODEL

For a better understanding of the SDDS metadata model, we present the generic hierarchical structure following a multi-level schema, going from the most aggregate (the main SDDS metadata dimensions) to the most detailed levels, where the semantic content of the key concepts is more evident. In the Metadata Common Vocabulary, the underlined terms find the corresponding definition. The main metadata elements contain a reference to the corresponding item of the IMF's Data Quality Assessment Framework (DQAF), see <http://dsbb.imf.org/Applications/web/dqrs/dqrsdqaf/> "

Draft: 15 January 2004

<i>Level 1</i>	<i>level 2</i>	<i>level 3</i>	<i>level 4</i>
<u>CONTACT</u>	<u>Contact person(s) and Organization(s)</u>	Last name	
		First name	
		Title	
		Organization	
		Department / Division / Unit	
		Address	Street address
			City
			Country
			Postal code
		Phone number	Country code
			City code
			Local number
		Fax number	Country code
			City code
	Local number		
	e-mail address		

<u>DATA</u>	Country (area)		
	Data category (DQAF 5.3.1)		
	Data characteristics	Short presentation of data items (<u>components disseminated</u>),	Encouraged components (SDDS)
		<u>Analytical framework</u>	
		National currency (units of)	
		<u>Types of data source</u> (administrative survey, etc)	
		<u>Reference period</u> (<u>base period</u>)	
		<u>Seasonal adjustment</u>	
	<u>Periodicity</u> (DQAF 4.1.1)		
	<u>Timeliness</u> (DQAF 4.1.2)		

<u>ACCESS BY THE PUBLIC</u>	Advance dissemination of <u>release calendar</u> (DQAF 5.1.3)	In country	
		On DSBB	
	<u>Simultaneous release to all interested parties</u> (DQAF 5.1.4)	Means of release	
	<u>DISSEMINATION FORMATS</u> (DQAF 5.1.2)	Publications catalogue	Hardcopy (ISBN)
			Electronic (URL)
		News release	Hardcopy (ISBN)
			Electronic (URL)
		Weekly bulletin	Hardcopy (ISBN)
			Electronic (URL)
		Monthly bulletin	Hardcopy (ISBN)
			Electronic (URL)
		Quarterly bulletin	Hardcopy (ISBN)
			Electronic (URL)
		Annual bulletin	Hardcopy (ISBN)
			Electronic (URL)
		Other	Hardcopy (ISBN)
			Electronic (URL)
		Diskette	
		CD ROM	

<u>INTEGRITY</u>	The <u>institutional framework</u> under which official statistics are produced, including the <u>confidentiality</u> of individual responses	Principal legislation— statistical compilation (DQAF 0.1.1)	means of public access to legislation (hardcopy/electronic) (DQAF 1.2.1)
		Principal legislation— statistical confidentiality (DQAF 0.1.3)	means of public access to legislation (hardcopy/electronic) (DQAF 1.2.1)
	Identification of <u>internal access to data</u> by government officials prior to public release	Agency (DQAF 1.2.2)	Timing of access
	Identification of <u>ministerial commentary</u> on the occasion of statistical releases	Agency (DQAF 1.2.3)	Nature of commentary
	Provision of information about <u>data status upon release</u> , <u>revision (policy and studies published)</u> and advance notice of <u>major changes in methodology</u>	Status of data upon release (DQAF 4.3.2)	Final
		Revision policy (DQAF 4.3.1)	Provisional
		Notification of methodological change (and means of informing the public) (DQAF 1.2.4)	Publicly available revisions studies (titles) (DQAF 4.3.3)
			Timing (prior to, at time of, or following implementation)
			Means of informing the public

<u>QUALITY REFERENCES</u>	Dissemination of <u>reference documentation</u> on <u>methodological soundness</u> and types of <u>data sources</u> used in preparing statistics	Title and frequency of publication(s) (DQAF 5.2.1 & 5.2.2)	Hardcopy (ISBN)
			Electronic (URL)
	Dissemination of <u>reference documentation</u> that support statistical <u>cross-checks</u> and provide assurance of <u>serviceability</u> over time	Title and frequency of publication(s) (DQAF 4.2.2)	Hardcopy (ISBN)
			Electronic (URL)
		Component breakdown - Data type (<u>time series / comparative / related</u>) (DQAF 4.2.1)	<u>Breaks in time series data</u>
		<u>coherence</u> and <u>consistency</u> with other indicators/data sets (DQAF 4.2.3)	
		Quality assurance references / <u>Benchmark</u> (ROSC/DQAF, etc.)	Hardcopy (ISBN)
			Electronic (URL)

<u>METHODOLOGY</u>	Concepts and <u>Definitions</u> (DQAF 2.1.1)	International / Supranational guidelines (e.g. BPM5, GFSM, SNA, ESA)	Specificities of national practice
	<u>Scope / Coverage</u> of the data (DQAF 2.2.1)	Geographic coverage	Exceptions
		Sector coverage	Exceptions
		Transactions coverage	Exceptions
	<u>Classifications / Sectorization</u> (DQAF 2.3.1)	International / Supranational guidelines (e.g., COICOP, COFOG, ISIC)	Specificities of national practice
	Basis for <u>recording of transactions</u>	<u>Accounting basis</u> and exceptions (DQAF 2.4.1)	Timing of observations
			Types of prices
		<u>Valuation</u> (DQAF 2.4.2)	Transactions
			Financial positions
		<u>Grossing/netting</u> procedures (DQAF 2.4.3)	
	<u>Nature of the basic statistical data</u>	<u>Data collection</u> (DQAF 3.1.1)	List indicators used
			Frequency with which source data are gathered

			Period used for gathering source data
			Survey organization for gathering source data
		Assessment of source data (DQAF 3.1.3)	<u>Data checking</u>
			<u>Data confrontation</u>
		<u>Items / products / reporting Units</u>	Selection
			Selection of replacements
			Specification
			Introduction
	<u>Compilation practices</u>	<u>Adjustments</u> (DQAF 3.3.1)	<u>Seasonal adjustment</u>
			Statistical adjustments
		<u>Data processing</u> (DQAF 3.3.1)	<u>Aggregation</u> (DQAF 3.3.2)
			<u>Consolidation</u> (DQAF 3.3.2)
		<u>Estimation</u> (DQAF 3.3.2)	
		<u>Imputation</u> (DQAF 3.3.2)	Treatment of missing data
			Procedures for non-response
		<u>Index type</u> (DQAF 3.3.1)	<u>Base period / reference period</u> (DQAF 3.3.1)
		<u>Reconciliation</u> (DQAF 3.3.2)	
		<u>Sampling</u> (DQAF 3.2.1)	Sample size
			Sample frame
			Sample updating
			Seasonal items
		<u>Validation</u> (DQAF 3.4.2)	Verification of data
			Verification of processing
		<u>Weights</u> (DQAF 3.2.1)	Sources of weights
			Nature of weights
			Period of current index weights
			Frequency of weight updates
	Other aspects	Other important aspects	