



EUROPEAN CENTRAL BANK

EUROSYSTEM

ECB STATISTICS QUALITY FRAMEWORK (SQF)

INTRODUCTION

The development, collection, compilation and dissemination of statistics designed to support the conduct of monetary policy and other tasks of the European system of central banks (ESCB) are one of the core functions of the European Central Bank (ECB). The ECB considers its adherence to high quality standards to be a key factor in maintaining the public's confidence in the ECB statistics upon which policy decisions are based. Therefore, since the start of Economic and Monetary Union the ECB has placed a strong emphasis on key aspects of statistical quality, such as relevance, accuracy, reliability, timeliness, consistency, cost-effectiveness, non-excessive burden on reporting agents and statistical confidentiality. Accordingly, appropriate quality assurance procedures have been put in place.

The aim of this document is to present the ECB Statistics Quality Framework (SQF) and, thereby, to set forth the main quality principles and elements guiding the production of ECB statistics.¹ The SQF combines the principles of good governance and quality currently applied or aspired to throughout the ECB in order to ensure that ECB statistics remain fit for use² by the ECB, its decision-making bodies and other ESCB users as well as users outside the ESCB, such as financial market analysts, journalists and the general public.

The SQF is a statement of intent: while most aspects are already fully reflected in current practices, some are still works in progress.³

The SQF integrates various quality assurance procedures that the ECB has already been applying for some time and that have been laid down in several documents. It also draws on work carried out by other institutions in

this field. Indeed, the increased awareness of quality issues coupled with the ongoing need to improve quality has resulted in the development and implementation of various statistical quality management models by national and international organisations worldwide. Due to differences in their institutional roles and environments, the models differ somewhat with regard to their stakeholders, definitions of quality and scope.

The SQF builds upon existing quality frameworks and adapts them to the institutional environment and operational features of the ECB.⁴ It is fully in line with the ECB's institutional framework, wherein the Governing Council and Executive Board are the final decision-making bodies, and with the ECB's Mission Statement, in which the ECB has committed to adhering to values such as integrity, efficiency, transparency and accountability. With respect to existing quality frameworks, the principles included in the SQF encompass those expressed in the Fundamental Principles of Official Statistics of the United Nations Statistical Commission⁵, which are

- ¹ The term "ECB statistics" refers to the statistical data regularly published by the ECB, e.g. in the euro area statistics section of the Monthly Bulletin, the Statistics Pocket Book or on the ECB website. Forecasts and qualitative surveys are not included.
- ² The term "fit for use or fit for purpose" denotes the requirement that the envisaged (indirect or direct) use of the statistics in the Eurosystem is what should determine their relevance, availability, timeliness, frequency, reliability and other quality characteristics. It also refers to the balance that must be struck between the merits of compiling additional statistics and the associated costs (to the Eurosystem and the economy as a whole), and the order of priority in which gaps are filled, with due regard to users' needs.
- ³ In the case of some data, compromises have to be made in terms of the high quality standards that the ECB adheres to. For transparency reasons these data are nevertheless made available to external users. To mark them clearly they are called "experimental data" (see <http://www.ecb.int/stats/intro/html/experiment.en.html>).
- ⁴ For more information, see "The ESCB's governance structure as applied to ESCB statistics" at <http://www.ecb.int/pub/pdf/other/escbsgovernancestructureappliedtostatistics200611en.pdf>.

used as a reference framework for most, if not all, existing statistical quality frameworks, and those in the related Principles Governing International Statistical Activities⁶. The SQF has many similarities with the European Statistics Code of Practice⁷ and the IMF Data Quality Assessment Framework⁸. Specific features of other models are taken into account as well.⁹ Finally, the SQF is fully in line with the ESCB's public commitment with respect to its statistical function¹⁰ but is more specific.

I THE OBJECTIVES AND ADDRESSEES OF THE SQF

The ECB compiles statistics, mainly on the basis of data supplied by the national central banks (NCBs) of the euro area. In turn, the NCBs receive data from reporting agents and, in some cases, from national statistical institutes (NSIs) and commercial data providers. Therefore, the quality of ECB statistics depends on the inputs received from national compilers¹¹ and other sources (e.g. commercial data providers) as well as on the ECB's internal processes. As a consequence, the SQF mainly applies to these internal processes although it also touches upon the coordinating role of the ECB in creating the preconditions for high quality input from NCBs.¹²

The SQF aims to introduce a harmonised definition of quality for statistics within the ECB and to establish core principles for the compilation and dissemination of ECB statistics. The quality assurance procedures in place for each principle are also listed.¹³

I.1 OBJECTIVES OF THE SQF

By establishing the SQF, the ECB aims to meet the following objectives:

1. Support the fulfilment of the ESCB objectives, as laid down in Article 105 of the Treaty on European Union.

2. Support the fulfilment of the ECB and Eurosystem Mission Statements¹⁴ which state *"we at the European Central Bank are committed to performing all central bank tasks entrusted to us effectively. In so doing, we strive for the highest level of integrity, competence, efficiency and transparency"* and *"in pursuing our objectives, we [in the Eurosystem] attach utmost importance to credibility, trust, transparency and accountability. We aim for effective communication with the citizens of Europe and the media. We are committed to conducting our relations with European and national authorities in full accordance with the Treaty provisions and with due regard to the principle of independence"*.

5 For more information, see: <http://unstats.un.org/unsd/methods/statorg/FP-English.htm>.

6 For more information, see: http://unstats.un.org/unsd/methods/statorg/Principles_stat_activities/principles_stat_activities.htm.

7 For more information, see: http://epp.eurostat.ec.europa.eu/pls/portal/docs/PAGE/PGP_DS_QUALITY/TAB47141301/VERSIONE_INGLESE_WEB.PDF. The SQF largely follows the European Statistics Code of Practice for the national and Community statistical authorities in its structure, its main principles and in the thrust of its elements/indicators. Deviations with respect to the precise content of some principles reflect in particular the different institutional setting and governance structure of the ECB on the one hand and the national and Community statistical authorities on the other.

8 For more information, see: <http://dsbb.imf.org/Applications/web/dqrs/dqrsdqaf/>.

9 For instance, the SQF shares various features with the OECD's Quality Framework and the Code of Conduct of the Bank of England.

10 For more information, see: <http://www.ecb.int/stats/html/pestats.en.html>.

11 The ECB's requirements are laid down in ECB guidelines, which legally bind Eurosystem NCBs, or in ECB regulations, which directly bind reporting agents. Regulations specify the collection methods allowed (e.g. sampling, cutting off the tail and census) but offer various options, as the ECB is in general not prescriptive about how the data are collected as long as they are of high quality in terms of timeliness, accuracy and conceptual compliance. Various ECB guidelines describe the compilation procedures allowed (e.g. estimation methods).

12 This is mainly achieved through the ESCB Statistics Committee, which consists of the heads of the statistical departments of the EU NCBs and is chaired by the ECB Director General Statistics, and through the working groups and task forces reporting to the Committee.

13 See "Quality assurance procedures within the ECB statistical function" for a detailed presentation.

14 For more information, see: http://www.ecb.int/ecb/orga/escb/html/mission_eurosys.en.html.

3. Provide a benchmark for quality to ECB staff working in the area of statistics. The SQF lists the quality principles which should guide statistics compilers in their work.
4. Contribute to maintaining the public's confidence in the ECB statistics upon which policy analysis and ultimately policy decisions are based. Objective, reliable and accessible statistics enhance the credibility of the analyses and policy decisions that are based on them. Hence, the ECB should ensure that the relevance, reliability and integrity of statistics are maintained and perceived to be so by the general public. The SQF explicitly and publicly declares the principles that govern ECB statistics.

1.2 ADDRESSEES OF THE SQF

The SQF is a comprehensive quality framework addressed to users, data suppliers and producers of statistics alike.

1. The users of ECB statistics consist of internal users, such as the Executive Board, Governing Council and General Council of the ECB, internal users within the ECB and ESCB, and external users (e.g. international and national organisations, authorities, academics, financial analysts, the media and the public at large). The needs of users of ECB statistics are wide ranging. The SQF sets out the main quality features users can expect from ECB statistics and, hence, strives to guarantee that they are fit for use.
2. Data providers: The ECB compiles statistics mainly from data supplied by the euro area NCBs and, in some cases, NSIs, which in turn receive the data from reporting agents.¹⁵ The SQF addresses data providers in three ways: (1) it incorporates the protection of confidential statistical information as a crucial general principle; (2) it aims to ensure that data providers are not overburdened with reporting obligations; and (3) it ensures that

data are provided according to well-established standards, concepts and definitions. The SQF may also further encourage data providers to ensure that the data they supply are of high quality.

3. ECB staff working in the area of statistics: Data quality essentially depends on the skills and ethical standards of the staff who are responsible for developing, collecting, compiling and disseminating statistics. The SQF contains the key principles and a practical framework for their work.

2 SQF: DEFINITIONS AND CONCEPTS

The SQF is based on two main components: the definition of quality and a set of quality principles. Each principle is accompanied by a set of practical elements. A more comprehensive presentation of the ECB quality assurance procedures is available in a separate document, entitled "Quality assurance procedures within the ECB statistical function".

2.1 SQF: DEFINITION OF QUALITY

Quality is a subjective notion that encompasses all aspects of how well a product meets users' needs. It is an inherently multi-faceted concept that cannot easily be defined; any definition is likely to be revised over time as users' needs evolve and new aspects gain importance. For instance, in statistics the focus was initially on the accuracy and reliability of statistical products but has been extended over time to include other attributes, such as relevance, timeliness and accessibility. As a consequence, quality frameworks should be sufficiently generic and any trade-offs that may be needed between the various aspects of quality should be made on a case-by-case basis.

¹⁵ Increasingly, data are collected from other sources, e.g. regulated exchanges and commercial data providers.

In standard No 8402 (1986, 3.1) issued by the International Organization for Standardization (ISO), quality is defined as “*the totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs*”.

Applied to statistics, a general benchmark of quality is whether they are fit for purpose. By using such a benchmark, quality is interpreted in a broad sense as encompassing all aspects of how well statistical processes and output fulfil key stakeholders’ expectations.

In this context, high quality statistics should: 1) meet users’ needs regarding the availability and information content of disseminated data, 2) respect the rights of reporting agents regarding the strict confidentiality of the non-public individual information provided, 3) address the concerns of reporting agents and compilers regarding the reporting burden, and 4) aim to promote the skills and ethical standards of statisticians.

2.2 SQF: QUALITY PRINCIPLES

The quality principles of the SQF refer to the ECB’s institutional environment, statistical processes and statistical output.

INSTITUTIONAL ENVIRONMENT

It is widely acknowledged that the institutional set-up in which statistics are produced has a significant impact on their quality. The institutional environment significantly affects the integrity and credibility of the production and dissemination of statistics. The SQF lists six principles that apply: 1) independence and accountability, 2) mandate for data collection, 3) impartiality and objectivity, 4) statistical confidentiality, 5) coordination and cooperation among the members of the ESCB and with European and international organisations, and 6) resources and efficiency.

Adherence to these six principles forms the basis of the quality commitment of the ECB in the area of statistics.

Principle I: Independence and accountability

In the context of the statistical work undertaken at the ECB, there are two parts to the notion of independence. First, the statutory independence of the ECB also applies to its statistical activities, i.e. in the performance of the statistical tasks conferred upon it by Article 7 of the Protocol on the Statute of the ESCB and of the ECB, it shall not “seek or take instructions from Community institutions or bodies, from any government of a Member State or from any other body”.

Second, the production of ECB statistics conforms to the criteria of scientific and professional independence.¹⁶

The ECB is accountable to the European Parliament and the public at large. It is transparent about its activities and takes full responsibility for the statistics that it compiles and disseminates.

Elements:

- The independence and accountability of the ECB are guaranteed by law.
- The ECB’s Directorate General Statistics (“ECB statistical function”) is in charge of the development¹⁷, collection, compilation and dissemination of ECB statistics.¹⁸

¹⁶ This is by analogy with Article 285 of the Treaty establishing the European Community, which refers to the production of Community statistics.

¹⁷ ECB statistics are developed in close consultation with users.

¹⁸ Since the ECB’s Directorate General Statistics has no legal personality, some of these principles are addressed to the ECB as an institution.

- The collection, compilation and dissemination of statistics are conducted according to scientific and professional statistical considerations.
- The ECB statistics work programme is regularly published and evaluated.
- When appropriate, the ECB comments publicly on statistical issues, including any misuse of official ECB statistics.

Relevant quality assurance procedures:

- Governance issues: the ECB legal framework (see Section A.1.1.); the ECB Code of Conduct and the guidance of the Ethics Adviser (see Section A.1.2.); the ESCB's governance structure as applied to ESCB statistics (see Section A.1.3.).
- Strategy, work programme and procedures to identify new user requirements and develop new statistics: the medium-term strategy (see Section 2.1); the annual work programme (see Section 2.2); the merits and costs procedure (see Section 2.3).
- Monitoring and reporting: the ECB Annual Report (see Section 8.2.1); annual quality reports and output quality indicators (see Section 8.2.2).

Principle 2: Mandate for data collection

The ECB has a clear mandate to collect statistical information from the competent national authorities or directly from economic agents in order to undertake the tasks of the ESCB. Moreover, it is empowered to impose sanctions on reporting agents which fail to comply with their obligations.

Elements:

- The mandate of the ECB to collect statistical information and its power to impose sanctions on reporting agents are guaranteed by law.

Relevant quality assurance procedures:

- Governance issues: the ECB legal framework (see Section 1.1.1); the ECB Code of Conduct (see Section 1.1.2); the ESCB's governance structure as applied to ESCB statistics (see Section 1.1.3); Memorandum of Understanding with Eurostat (see Section 1.2.2).

Principle 3: Impartiality and objectivity

The ECB shall compile and disseminate ECB statistics in an impartial and transparent manner. ECB statistics shall be equally accessible to all users in order to maintain public confidence in the integrity of the policy decisions based on them.

Elements:

- The choice of data sources and statistical techniques as well as decisions about the dissemination of ECB statistics are based on statistical considerations.
- Information on the sources, methods and procedures used to collect, aggregate and disseminate statistics is available to the public.
- Release calendars are made publicly available in advance. Any departure from the pre-announced schedules is publicly explained.
- Special press briefings are held to announce and explain major new statistical releases.
- Statistical releases are issued separately from any policy statement that refers to or makes use of the data.
- Commentaries in statistical releases and statements made in press conferences on statistical issues are objective and non-partisan.

- All ECB statistics are made available to all users. Any privileged pre-release access is limited, controlled and publicised.
 - Advance notice is given of major revisions or changes to methodologies, source data and techniques.
 - The professionalism of staff and their adherence to ethical standards are supported by clear and published guidelines.
 - Senior management declares in writing that ethical standards are fully adhered to and that procedures are in place to ensure that staff comply with these standards.
- Assessing and enhancing stakeholder satisfaction: Seminars on Statistics for ESCB users (see Section 8.1.2); user satisfaction monitoring (see Section 8.1.1).

Principle 4: Statistical confidentiality

The protection of confidential statistical information collected by the ECB, with the assistance of the NCBs, is guaranteed. Statistical information received from NSIs or the European Commission (Eurostat) is only used for statistical purposes. Moreover, the ECB shall take all regulatory, administrative, technical and organisational measures that are necessary to protect confidential statistical information from disclosure or unlawful use.

Relevant quality assurance procedures:

- Governance issues: the ECB legal framework (see Section 1.1.1); the ECB Code of Conduct and the guidance of the Ethics Adviser (see Section 1.1.2).
- Quality assurance procedures related to the collection of data: transmission calendar (see Section 4.1); compliance monitoring (see Section 4.2); metadata management (see Section 4.4).
- Quality assurance procedures related to the compilation and statistical analysis: revision studies (see Section 5.5); regular quality reporting (see Section 5.7).
- Quality assurance procedures related to the data accessibility and dissemination policy: adherence to the IMF Special Data Dissemination Standard (see Section 6.1); release calendar (see Section 6.2); press releases (see Section 6.3); regular ECB publications (see Section 6.4); online access via the ECB website (see Section 6.5).
- Monitoring and reporting: ECB Annual Report (see Section 7.2.1); annual quality reports and output quality indicators (see Section 7.2.2).

Elements

- The protection of confidential statistical information is stipulated by law and the necessary instructions and IT tools are given to staff.
- All rules and procedures (e.g. instructions, guidelines, IT tools) relating to the protection of confidential statistical information are documented, and this documentation is kept up to date and available to all staff. It is also publicly available.
- At least once a year the ECB decision-making bodies publish a report on the application of the principle of statistical confidentiality.

Relevant quality assurance procedures:

- Procedures to protect statistical confidentiality: legal requirements (see Section 3.1); IT infrastructure (see Section 3.2); rules and monitoring (see Section 3.3).
- Monitoring and reporting: auditing (see Section 7.1.2).

Principle 5: Coordination and cooperation among the members of the ESCB and with European and international organisations

The ECB shall promote coordination and cooperation among ESCB statistical experts and between the ESCB and European and international organisations to support the sharing of information and best practices as well as technical know-how for the continuous improvement of the quality and range of euro area statistics.

Elements:

- The ECB statistical function ensures effective and efficient coordination and cooperation among ESCB statistical experts.
- The ECB statistical function works in close cooperation with the European Commission (Eurostat), sharing responsibility for statistics at the European level.
- The ECB statistical function shares information with the IMF, the BIS, the OECD, the United Nations and other European and international institutions, and actively participates in conferences and meetings organised by them (and vice versa), and in the Irving Fisher Committee on Central Bank Statistics.
- The ECB statistical function regularly organises seminars on statistical issues for staff of the NCBs, the European Commission (Eurostat), the IMF, the BIS, the OECD, the United Nations and other European and international institutions, and participates in seminars organised by these institutions.

Relevant quality assurance procedures:

- Governance issues: the ESCB's governance structure as applied to ESCB statistics (see Section 1.1.3); the Statistics Committee and its sub-structures (see Section 1.2.1);

Memorandum of Understanding with Eurostat (see Section 1.2.2); participation in the meetings of the Statistical Programme Committee and its sub-structures (see Section 1.2.4); the Committee on Monetary, Financial and Balance of Payments Statistics and joint ECB (Directorate general statistics (DG-S)) and Commission (Eurostat) task forces (see Section 1.2.5); participation in work on international statistical standards (see Section 1.2.6); participation in the Committee for the Coordination of Statistical Activities (see Section 1.2.7).

- Assessing and enhancing stakeholder satisfaction: ESCB training courses (see Section 8.2.2).

Principle 6: Resources and efficiency

Human and financial resources, facilities and the IT infrastructure are used as efficiently as possible and are commensurate with the statistical work programme.

Elements:

- An appropriate methodology for priority-setting is in place.
- The ECB exploits all opportunities for efficiency gains in the production of its statistics. In particular, it ensures that major innovations in statistical processes or information technology are introduced in all steps of the collection, production and dissemination of statistics.
- The ECB encourages and facilitates the development of the professional competence of its statistical staff, for instance through active participation in training courses, conferences and international meetings.

Relevant quality assurance procedures:

- Strategy, work programme and procedures to identify new user requirements and develop new statistics: the medium-term strategy (see Section 2.1); the annual work programme (see Section 2.2); the merits and costs procedure (see Section 2.3).
- Monitoring and reporting: process management (see Section 7.1.1).
- Assessing and enhancing stakeholder satisfaction: assessment of staff satisfaction (see Section 8.3.2); information flow and knowledge sharing (see Section 8.3.1); training (see Section 8.3.3).

STATISTICAL PROCESSES

The processes used for the development, collection, processing and dissemination of statistics constitute the core of all statistical systems. The relevant principles are a sound methodology and appropriate statistical procedures, cost-effectiveness and non-excessive burden on reporting agents.

Principle 7: Sound methodology and appropriate statistical procedures

In developing and compiling statistics, the ECB shall use a sound statistical methodology based on ESCB and European Community legislation and standards, and/or internationally agreed standards, guidelines or best practice. Effective and efficient statistical procedures are implemented throughout the statistical production chain.

Elements:

- The methodological framework for ECB statistics complies with European and/or internationally agreed standards, guidelines and best practices.
- The conceptual and methodological framework applied to ECB statistics is

developed in agreement with the statistical functions of the NCBs and, when appropriate, with the European Commission (Eurostat) and other international organisations, and takes account of the views of ESCB users.

- The processes used for the development, collection, compilation and production of ECB statistics are well documented and regularly reviewed to assess their efficiency and effectiveness.
- Staff participates in training courses, conferences and international meetings to the extent necessary to keep their methodological knowledge up to date.
- The information systems dedicated to statistics are provided with the appropriate tools for all statistical activities.
- Major innovations in statistical processes or information technology are introduced in all steps of the production and dissemination of statistics.

Relevant quality assurance procedures:

- Governance issues: the ESCB's governance structure as applied to ESCB statistics (see Section 1.1.3); the Statistics Committee and its sub-structures (see Section 1.2.1); Memorandum of Understanding with Eurostat (see Section 1.2.2); participation in the meetings of the Statistical Programme Committee and its sub-structures (see Section 1.2.4); the Committee on Monetary, Financial and Balance of Payments Statistics and joint ECB (DG-S) and Commission (Eurostat) task forces (see Section 1.2.5); participation in work on international statistical standards (see Section 1.2.6); participation in the Committee for the Coordination of Statistical Activities (see Section 1.2.7).
- Quality assurance procedures related to the collection of data: data collection standards,

methods and tools (see Section 4.3); metadata management (see Section 4.4).

- Monitoring and reporting: auditing (see Section 7.1.2); process management (see Section 7.1.1).
- Assessing and enhancing stakeholder satisfaction: assessment of staff satisfaction (see Section 8.3.2); information flow and knowledge sharing (see Section 8.3.1); training (see Section 8.3.3).

Principle 8: Cost-effectiveness and non-excessive burden on reporting agents

The ECB shall set up appropriate procedures to enable users' requirements to be met while minimising the burden on reporting agents and without compromising the quality of ECB statistics. Moreover, it strives for cost-effectiveness in developing, collecting, producing and disseminating statistics.

Elements:

- The ECB sets up and implements cost-effective procedures throughout its statistical system.
- A cost-benefit analysis is carried out before new or substantially enhanced statistics are put into regular production.
- Existing statistics are regularly checked to ascertain whether they can be produced in a more cost-effective way or the burden on reporting agents can be reduced.

Relevant quality assurance procedures:

- Strategy, work programme and procedures to identify new user requirements and develop new statistics: the medium-term strategy (see Section 2.1); the annual work programme (see Section 2.2); the merits and costs procedure (see Section 2.3).

– Monitoring and reporting: process management (see Section 7.1.1).

- Assessing and enhancing stakeholder satisfaction: information flow and cooperation with data providers (see Section 8.2.1); Seminars on Statistics for ESCB users (see Section 8.1.2); user satisfaction (see Section 8.1.1).

STATISTICAL OUTPUT

Statistical output is deemed to be fit for use if it is relevant and complete, accurate and reliable, consistent, timely and accessible.

Principle 9: Relevance of the statistical output

ECB statistics shall meet stated or implied user needs. These needs may alter over time as a result of changes in the economic environment.

Elements:

- The ECB statistical function regularly consults its main users in order to identify new user requirements. In the same vein, it regularly monitors the usage of the statistics that it produces (in briefings, speeches and ECB publications and through website hits) and their relevance and usefulness in meeting users' needs.
- The views of users are sought when the production of new or substantially altered statistics is planned.
- The concepts, definitions and classifications used strike an adequate balance between real-world phenomena, economic theory, measurability and cost-effectiveness.
- User satisfaction is monitored on a regular basis.
- Users' needs are arranged in order of priority and the order is reflected in the annual work programme.

Relevant quality assurance procedures:

- Strategy, work programme and procedures to identify new user requirements and develop new statistics: the medium-term strategy (see Section 2.1); the annual work programme (see Section 2.2); the merits and costs procedure (see Section 2.3).
- Quality assurance procedures related to compilation and statistical analysis: (see Section 5).
- Assessing and enhancing stakeholder satisfaction: Seminars on Statistics for ESCB users (see Section 8.1.2); user satisfaction (see Section 8.1.1).

Principle 10: Accuracy and reliability (including stability) of the statistical output

ECB statistics shall accurately¹⁹ and reliably²⁰ assess the phenomenon they are intended to measure.

Elements:

- The ECB applies sound data collection systems, compilation procedures and estimation methods that are regularly assessed and validated.
- When one or more events has a substantial impact on the statistical output, the reasons for the presence of such outliers are explained, unless this is prevented by confidentiality considerations.
- The ECB regularly performs a revision analysis to assess the stability of ECB statistics.²¹
- The ECB follows a clear revision policy that is publicly available.
- The ECB explains the reasons for major revisions.

Relevant quality assurance procedures:

- Quality assurance procedures related to compilation and statistical analysis: revision studies (see Section 5.5); plausibility checks (see Section 5.6); regular quality reporting (see Section 5.7).
- Monitoring and reporting: annual quality reports and output quality indicators (see Section 7.2.2); auditing (see Section 7.1.2).

Principle 11: Consistency (or coherence²²) and comparability of the statistical output

ECB statistics shall be consistent (1) over time, (2) within the dataset that is published in a single release, (3) across datasets, and (4) across different frequencies for the same dataset. Furthermore, they shall enable international comparisons to be drawn.

Elements:

- Statistics are consistent or reconcilable over time.
- Statistics collected at different frequencies reflect the same reality, though the level of detail (e.g. breakdowns) may not be identical.

19 Accuracy can be defined as the closeness of the statistical output to the (unknown) true value of the variable that is measured.

20 Reliability refers to the closeness of revised estimations of a specific statistic to the initial value released.

21 Data which are not revised to the extent that users' assessments of the economic situation are changed as a consequence of such revisions, are perceived to be stable.

22 The consistency of statistical information means the degree to which it can be successfully brought together with other statistical information within a broad analytic framework and over time. The use of standard concepts, classifications and target populations promotes coherence, as does the use of a common methodology across surveys.

- Within one dataset, statistics are consistent vertically (e.g. accounting identities and other logical constraints are preserved) and horizontally (across institutional sectors). Moreover, flows and changes in stocks are reconcilable.
- Statistics for one variable, but which are published in different datasets, are consistent or reconcilable (i.e. consistency across datasets).
- Statistics are based on internationally agreed concepts and definitions, insofar as relevant, in order to enable international comparisons to be drawn. Conceptual differences, if any, are made public.

Relevant quality assurance procedures:

- Quality assurance procedures related to compilation and statistical analysis: internal consistency (see Section 5.2); consistency across frequencies of the same dataset (see Section 5.3); external consistency (see Section 5.3); regular quality reporting (see Section 5.7).
- Monitoring and reporting: annual quality reports and output quality indicators (see Section 7.2.2).

Principle 12: Timeliness (including punctuality) of the statistical output

ECB statistics shall be timely²³ and punctual²⁴.

Elements:

- ECB statistics are compiled in as timely a manner as possible in order to fulfil users' needs. As a minimum, they comply with the IMF Special Data Dissemination Standard requirements²⁵ and/or other internationally agreed standards regarding timeliness.
- Appropriate techniques and procedures are used to meet timeliness requirements

without unduly compromising other quality features.

- With the assistance of the NCBs, reporting timetables for the submission of data and the publication calendar for euro area statistics are established by the ECB on an annual basis, at least one month before the date scheduled in the calendar for the first release of statistics.
- The ECB monitors compliance of the NCBs with the reporting timetables.
- The statistical publication calendar is communicated to the public.
- The ECB releases data according to the statistical publication calendar.
- The ECB publicly announces and explains any delays in the release of data.
- All statistical releases are announced either by a press release or on the statistics page of the ECB website.

Relevant quality assurance procedures:

- Quality assurance procedures related to the collection of data: transmission calendar (see Section 4.1); compliance monitoring (see Section 4.2); data collection standards, methods and tools (see Section 4.3); metadata management (see Section 4.4).
- Quality assurance procedures related to the data accessibility and dissemination policy: Adherence to the IMF Special Data Dissemination Standard (see Section 6.1); release calendar (see Section 6.2); regular

²³ Timeliness refers to the lapse of time between the end of a reference period (or a reference date) and the dissemination of the data. Timeliness of the data is crucial; it is achieved when data are made available to policy-makers in time to be used in taking decisions.

²⁴ Punctuality refers to the time lag between the scheduled and actual release of data.

²⁵ See: <http://dsbb.imf.org/Applications/web/sddshome/>.



ECB publications (see Section 6.4); joint tables of euro area statistics and their national breakdowns on the websites of the ECB and the euro area NCBs (see Section 6.5.1).

Principle 13: Accessibility and clarity of the statistical output

Information on data and metadata shall be presented in a clear and understandable form and shall be easily and freely accessible to all users.

Elements:

- ECB statistics and the corresponding metadata are presented in a format that facilitates their proper interpretation.
- All statistical information is published in an appropriate and up-to-date electronic format. Key statistics are released by means of a press release. Excerpts of the most relevant series are released in paper publications.
- The ECB statistical function provides assistance to users in accessing and understanding the data.

Relevant quality assurance procedures:

- Quality assurance procedures related to the data accessibility and dissemination policy: release calendar (see Section 6.2); regular ECB publications (see Section 6.4); joint tables of euro area statistics and their national breakdowns on the websites of the ECB and the euro area NCBs (see Section 6.5.1); the statistical data warehouse (see Section 6.5.2); the statistics hotline (see Section 6.5.3); the Real Time Database (see Section 6.5.4).
- Monitoring and reporting: annual quality reports and output quality indicators (see Section 7.2.2.).

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