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EUROSYSTEM

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Contents

Summary

This biennial data quality report is a contribution to the European Central Bank (ECB) Statistics Quality Framework (SQF)[1]. It relates to statistics produced by the European System of Central Banks (ESCB) and focuses on the collection, compilation and dissemination of monetary and financial statistics (MFS) relevant for the euro area in 2015 and 2016. Following the basic principles set out in the "Public commitment on European statistics by the ESCB"[2], this report provides descriptive and quantitative quality indicators. It is divided into three sections: Section 1 – Institutional environment – highlights the recently implemented regulatory updates, Section 2 – Statistical processes – presents the main operational undertakings since 2015 and Section 3 – High output quality – provides the quantitative results of the data quality analysis.

With regard to the institutional environment, following the introduction of the new European System of National and Regional Accounts (ESA 2010), the ECB reviewed and expanded its legal framework considerably in 2013 and 2014 to enable the production of new and enhanced MFS. New Regulations were adopted in the area of monetary financial institution (MFI) balance sheet and interest rate statistics as well as in relation to statistics on the assets and liabilities of non-money market investment funds (IFs) and financial vehicle corporations engaged in securitisation transactions (FVCs). Production and publication of the new statistics started in summer 2015. To ensure comparability with data reported in accordance with previous methodologies, several time series were revised backwards.

Important steps forward were made in the period covered on the analytical credit datasets (AnaCredit). On 18 May 2016 the Governing Council of the ECB adopted Regulation ECB/2016/13 on the collection of granular credit and credit risk data establishing the first stage of a shared database for the ESCB. The "go-live" of the first stage of AnaCredit is scheduled for 1 September 2018, and the cut-off date for the first data transmission will be 30 September 2018.

The creation of the Single Supervisory Mechanism (SSM) introduced new data demands for the Register of Institutions and Affiliates Database (RIAD), whose scope had to be extended to cover monetary policy, financial stability and supervisory purposes. The forthcoming RIAD Guidelines (one for the ESCB and another for the SSM) will allow the definitions of the existing attributes to be fine-tuned in order to better serve various purposes.

On 9 January 2015 the new Regulation on statistical reporting requirements for insurance corporations entered into force. This Regulation provides a legal basis for a more robust steady-state approach for compilation of more detailed, higher-quality data on the insurance sector and superseded the earlier "short-term" approach to

1 See The ECB Statistics Quality Framework and quality assurance procedures

2 See Public commitment on European Statistics by the ESCB

these statistics. Data requirements are further set out in the amended MFS Guideline published on 1 April 2016. In the field of pension fund statistics, the work being carried out in close cooperation with the European Insurance and Occupational Pensions Authority (EIOPA) towards a steady-state approach is still in progress. In the meantime new statistical requirements aligned with the ESA 2010 have been included in the MFS Guideline of 4 April 2014.

With regard to statistical processes, the collection, processing and dissemination of MFS went smoothly in 2015 and 2016. Overall, the data published remained of a very high quality and fit for policy needs. In this context, major endeavours are mentioned below.

To better capture developments in MFI lending to the real economy the ECB now adjusts loan series for the effects of two operations which can impede the informational capacity of this data for monetary policy analysis. Loan series were adjusted for loan sales and securitisation from September 2015 and for notional cash pooling activities from July 2016.

In November 2015 the results were published of a survey, launched in 2013, on national practices for compiling MFI balance sheet items (BSI). Since publication the ESCB has undertaken major conceptual work aimed at further improving harmonisation in areas where different national approaches were identified.

On the basis of Regulation ECB/2013/34 concerning statistics on interest rates applied by MFIs, MFI interest rate (MIR) statistics have as of December 2014 included further information on renegotiated loans agreements that permits new agreements to be distinguished from renegotiated existing loans. In connection with the start of the enhanced reporting, new quality controls have been introduced in the reporting of MIR statistics to monitor the behaviour of interest rates and volumes of renegotiated loans. During the first half of 2014, a quality assurance survey on MIR statistics was conducted with the objective of assessing the adequacy and effectiveness of the control and governance processes related to the production of MIR statistics. Recommendations were made, mainly concerning the extension of quality controls and dissemination that are currently being implemented.

On 1 July 2016 the ECB started to collect transaction-level money market data at a daily frequency based on the Regulation concerning statistics on the money markets (ECB/2014/48). Automated data quality checks validate on average 45,000 transactional records per day received from the 52 largest euro area credit institutions. Publication of aggregated data is foreseen in 2017.

Implementation of the Single Euro Payments Area (SEPA) and other developments in the payments market in Europe have had a significant impact on the methodology applied and the new indicators required from payment statistics. This led the ESCB to introduce enhancements in annual payments statistics as of the reference year 2014. New legal obligations were laid down in Regulation ECB/2013/43 on payments statistics and in the recast Guideline ECB/2014/15 on monetary and financial statistics.

The aforementioned enhancements in the MFS statistics, new reporting requirements and updated legal acts have also led to updates in methodological frameworks, namely of various manuals. The manuals on MFI interest rate statistics, investment funds statistics and AnaCredit have been updated or will be updated in the near future.

Turning to “high output quality”, analyses of revisions were performed to evaluate the reliability of the first releases of euro area monetary aggregates, including the broad aggregate M3, and of the euro area aggregates for MFI interest rate indicators.

According to the analysis, the impact of revisions on the month-on-month growth rates of the three main euro area monetary aggregates (M3, M2 and M1) continues to be very limited. Overall, at least 61% of all revisions received up to October 2016 had an impact lower or equal to 5 basis points (b.p.) (0.05 percentage point or p.p.) on any of the three growth rates published since 2005. If only the revisions received since the end of 2014 are considered, the ratio increases to 75%. The impact of revisions after one year on any growth rate is on average lower than +/- 0.91 b.p. since 2005 and 0.88 b.p. since the end of 2014.

In summary, the impact of revisions is sufficiently small that the month-on-month growth rates are fit for policy needs on their initial publication. The revisions received since the end of 2014 have also had a smaller impact on growth rates than revisions in all previous years since 2005 taken together.

Turning to MIR statistics, around 88% of all revisions to MIR indicators were between -5 b.p. and 5 b.p. The absolute mean of revisions to the euro area aggregates for MIR indicators is 0.2 b.p. overall, and the average is 1.1 b.p. with all time lags taken into account. It should also be highlighted that the number of revisions is very small compared with the number of indicators used for the analysis (106) and the potential number of reference periods revised (from September 2016 back to January 2003 with a monthly frequency).

Overall, in comparison with the number of observations, the number and size of revisions for the MFI interest rate statistics at the euro area level are small, which demonstrates their reliability. These results are of particular relevance, as during the period under analysis in this report new reporting requirements for MFI interest rate statistics were introduced as a result of the entry into force of Regulation ECB/2013/34 and Guideline ECB/2014/15. The number of exceptional and ad-hoc revisions, as opposed to “ordinary” revisions, shows that MFI interest rate statistics are being continuously updated, which in turn plays an important role in the continuous improvement of the accuracy of these statistics.

Introduction

In line with the mission statement of the Eurosystem,[3] the ECB is committed to adhering to values such as credibility, trust, transparency and accountability, which underpin the integrity of the statistical function provided by the Treaty on the Functioning of the European Union (Article 5 of the Statute of the European System of Central Banks and of the European Central Bank[4]). Adherence to high-quality statistical standards is a key factor in maintaining the public's confidence in ESCB statistics, upon which monetary policy decisions and other Eurosystem tasks are based. It also ensures the comparability of euro area and national statistics at international level. In the performance of its statistical function, the ESCB is committed to good governance and the highest ethical standards, as well as to executing its tasks in a spirit of cooperation and teamwork.

This report complies with the "Public commitment on European statistics by the ESCB", which stipulates the common set of principles that govern ESCB statistics. The main principles and elements guiding the production of ECB statistics are also contained in the Statistics Quality Framework and quality assurance procedures. Accordingly, the report has been organised into three sections: the ESCB's institutional environment, statistical processes and statistical output. Section 1 describes the regulatory framework that applies to the data collection necessary for the production of euro area MFS; Section 2 highlights the processes governing their production and gives an overview of selected quality improvement initiatives; and Section 3 is dedicated to specific data analyses in the context of quality assessment of the statistical output.

The ESCB statistical function collects all relevant data in order to produce and disseminate reliable, timely, consistent and accessible statistics in the areas under the ESCB's responsibility. The main purpose of euro area MFS is to support the monetary policy of the ECB and other tasks of the Eurosystem and the ESCB. They also support other policies of the European Union. These statistics comply with European and internationally agreed standards, guidelines and good practices. The data collection frameworks for euro area MFS cover inter alia national central banks (NCBs), credit institutions, insurance corporations, pension funds, money market funds (MMFs), IFs and FVCs. They provide statistics on MFI balance sheet items, and on insurance corporations, pension funds, FVCs and IFs. MIR statistics are also provided, as are statistics on payments with and issuance of electronic money in the euro area.

Statistics on MFI balance sheet items are among the core statistics used by the ECB for the conduct of monetary policy. They provide crucial information on monetary developments in the euro area (e.g. monetary aggregates) and on the business of

[3] The Eurosystem is the central banking system of the euro area. It comprises the ECB and the national central banks of the EU Member States that have adopted the euro. The mission statement of the Eurosystem.

[4] Protocol of the Statute of the European System of Central Banks and of the European Central Bank.

MFIs in general (e.g. outstanding loans to and deposits of households and non-financial corporations (NFCs)). MIR statistics are important for the analysis of the monetary policy transmission mechanism and pass-through of official and market interest rates to retail bank interest rates. They also provide information on the degree of integration of the retail banking markets in the euro area. As regards data accessibility and dissemination, the main indicators of monetary developments are published on a monthly basis in pre-announced press releases[5] and regular ECB publications such as the Economic Bulletin[6]. They are also made available with additional details in the Statistical Data Warehouse (SDW)[7] on the ECB's website. High-quality euro area MFS have been compiled and published since the start of Stage Three of Economic and Monetary Union in 1999; in 2015 and 2016, around 60 statistical press releases were issued each year in a timely and punctual manner in line with the advanced release calendar.

5 For further details, see: https://www.ecb.europa.eu/press/calendars/statscal/mfm/html/ index.en.html.

6 See Economic Bulletin.

7 Please see Statistical Data Warehouse.

1 Institutional environment

1.1 Current regulatory framework

The concepts underlying the main elements of the statistical requirements for MFI balance sheet and interest rate statistics are set out in international statistical standards, namely the globally used System of National Accounts and the European system of national and regional accounts (of which respectively the SNA 2008 and the ESA 2010 are the latest versions). Adherence to these standards fosters international comparability of national and euro area statistics, and ensures a sound methodological background for the aggregation of data.

The existing regulatory framework was adapted in 2014 to reflect the ESA 2010. In particular, new regulations were adopted in the area of MFI balance sheet and interest rate statistics and statistics on the assets and liabilities of IFs and FVCs. The current regulatory framework comprises Regulation (EU) No 1071/2013 of 24 September 2013 concerning the balance sheet of the monetary financial institutions sector (ECB/2013/33) , Regulation (EU) No 1073/2013 of 18 October 2013 concerning statistics on the assets and liabilities of investment funds (ECB/2013/38), Regulation (EU) No 1075/2013 of 18 October 2013 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (ECB/2013/40), Regulation (EU) No 1072/2013 of 24 September 2013 concerning statistics on interest rates applied by monetary financial institutions (ECB/2013/34) and Guideline ECB/2014/15 of 4 April 2014 on monetary and financial statistics. The publication of the new statistics started in summer 2015. To ensure comparability with data reported in accordance with previous methodologies, several time series were revised backwards.

In addition, the legal obligations related to payment statistics are set out in Regulation (EU) No 1409/2013 of 28 November 2013 on payments statistics (ECB/2013/43), which establishes new reporting requirements. The Regulation entered into force in January 2014 and statistics were collected and published for the first time in autumn 2015 starting with reference period July 2014.

The legal obligations regarding insurance statistics are contained in the Regulation (EU) No 1374/2014 of 28 November 2014 on statistical reporting requirements for insurance corporations (ECB/2014/50), which is in line with EIOPA's work in the context of the Solvency II Directive. The collection of data under the new Regulation started in summer 2016. It is planned to update the Regulation in order to cover other user requirements such as balance sheet information on insurance groups, statistics on capital adequacy ratios and certain profit and loss information.

Furthermore, to enhance the short-term approach for pension funds statistics, additional statistical requirements have been included in Guideline ECB/2014/15. The additional requirements are in line with the ESA 2010; data started to be collected on this basis in January 2016.

1.2 New regulation on analytical granular credit and credit risk data (AnaCredit)

On 18 May 2016 the Governing Council of the ECB adopted Regulation ECB/2016/13 on the collection of granular credit and credit risk data (AnaCredit) establishing the first stage of a shared database for the European System of Central Banks (ESCB) as of September 2018. AnaCredit will be a new dataset containing detailed information on individual bank loans in the euro area, which will be implemented in a stepwise approach. In Stage 1, AnaCredit will comprise outstanding credit granted by credit institutions to legal entities, covering the following types of credit: deposits other than reverse repurchase agreements, overdrafts, credit card debt, revolving credit other than overdrafts and credit card debt, credit lines other than revolving credit, reverse repurchase agreements, trade receivables, financial leases, and other loans.

AnaCredit will be fed by existing national credit registers, as maintained by NCBs, and similar granular data collections to achieve a harmonised database that supports several central banking functions, such as decision-making in monetary policy and operations, micro and macroprudential supervision, research and statistics. AnaCredit will be based on harmonised concepts and definitions and provide complete coverage for (at least) all euro area countries, ensuring comparability. It will therefore significantly improve the statistical information basis for the Eurosystem.

The main idea underlying this initiative is that good policy decisions are based on good data. The need for better and more detailed statistics was revealed with the recent financial crisis, where different economic sectors, as well as individual corporations and households in the different euro area countries, reacted in very different ways to economic shocks. The ESCB – for its policy purposes – has to be aware of, understand and monitor such developments.

The ECB, NCBs and other authorities of the euro area have taken on new tasks in terms of macroprudential supervision. New tasks require new instruments and knowledge. Initially, AnaCredit is designed to deliver the necessary additional information for monetary policy and financial stability tasks. At a later stage, additional needs for banking supervision may also be considered.

The “go-live” of the first stage of AnaCredit is scheduled for 1 September 2018, and the cut-off date for the first data transmission will be 30 September 2018.

The Regulation focuses on Stage 1 of AnaCredit; future stages are foreseen on the basis of a decision by the Governing Council. Enhancements could include an extension of the reporting population to non-deposit-taking institutions and other financial corporations, an extension of the instruments to be reported (e.g. to include derivatives and off-balance-sheet items such as financial guarantees), the requirement to report on a consolidated basis, and the inclusion of persons other than legal persons in the population of counterparties.

1.3 Enhancement of the Register of Institutions and Affiliates Database (RIAD)

The ESCB has set up a central repository to collect, manage and disseminate reference data describing organisational units that appear as counterparties in various business contexts: the Register of Institutions and Affiliates Database (RIAD).

RIAD is a system operated by the ECB and jointly maintained by all members of the ESCB and/or national competent authorities (NCAs). It integrates the collection, dissemination and publication of several sets of reference data on (financial) institutional units that are essential for statistical departments and other user areas. On the basis of RIAD the ECB publishes on its website various lists of financial institutions such as MFIs, IFs, FVCs and insurance corporations (ICs) and has information on holding companies and head offices.

These lists represent the authoritative definition of several relevant reporting populations. In addition, RIAD allows demographic developments in these different populations to be monitored. Further, as RIAD processes information on (ownership) relationships between entities, it has become a pivotal tool for the analysis of various types of banking groups and financial conglomerates.

NCBs currently act as the main gateway to RIAD for data on financial institutions. However, RIAD also allows other organisations to take over the responsibility for subsets of data. For instance, NCAs are technically able to link up to RIAD. An important factor in maintaining RIAD is the fact that each NCB has set up a national “hub” to ensure local coordination of updates and overall consistency regarding the sourcing and management of reference data.

In the near future RIAD will also be used as the single repository of supervised institutions and contain a comprehensive set of banking supervision-related reference data. Indeed, with a few exceptions, the credit institutions of relevance for supervisory information, significant institutions (SIs) or less significant institutions (LSIs), are a subset of the financial institutions relevant for monetary statistics. Several reference data attributes that are required for supervisory purposes are already collected for statistical purposes (e.g. name, start date of an entity, end date of an entity). Consequently, they needed to be fine-tuned in their definitions so as to be properly used by all stakeholders. A new set of attributes has been also added to fully cover the banking supervision needs in terms of reference data.

Another important milestone in 2016 was the launch of the expansion of the RIAD IT system, which will allow reference data, collected via the AnaCredit regulatory framework, to be stored on a an extremely large number of counterparties.

In addition to the enhancement of the IT platform, the ESCB is working on the transposition of the RIAD governance framework into two new ECB guidelines (one addressed to the ESCB and another to the SSM). These two guidelines will help to create a level playing field for the sourcing, maintenance and quality monitoring of

the reference data. Definitions of the existing attributes will be fine-tuned to better serve the various uses of this register.

Like all other statistical processes, RIAD is subject to regular reviews by the ESCB internal audit function.

1.4 New regulation on insurance corporations

The ECB has published quarterly euro area statistics on assets and liabilities of insurance corporations and pension funds (ICPFs) based on available national data (under the "short-term approach") since June 2011. As the quality, coverage, breakdowns and type of data published were insufficient to fulfil user needs, the ESCB initiated the development of a "steady-state approach" for insurance corporations, whereby user needs would be met by harmonised statistics based on an ECB Regulation. On 28 November 2014 the Governing Council of the ECB adopted Regulation ECB/2014/50 on statistical reporting requirements for insurance corporations (the "IC Regulation"), which was published in the Official Journal of the European Union (OJ) on 20 December 2014[8] and entered into force on 9 January 2015.

On 4 December 2015 the Governing Council of the ECB adopted Guideline ECB/2015/44 amending Guideline ECB/2014/15 on monetary and financial statistics (the "MFS Guideline"). The amending Guideline was published in the OJ on 1 April 2016.[9] Article 26a of the MFS Guideline sets out the statistics on insurance corporations to be transmitted as of 2016 from NCBs to the ECB. The data consist of (i) summary balance sheet information on outstanding amounts for the fourth quarter of 2015, (ii) detailed quarterly balance sheet information in terms of outstanding amounts, revaluation adjustments and reclassification adjustments, starting with data for the first quarter of 2016 and (iii) annual information on premiums written, claims incurred and commissions, starting with data for 2016.

In order to minimise the reporting burden on the insurance industry, the IC Regulation allows NCBs to derive the statistical requirements, to the extent possible, from data reported for supervisory purposes. To further simplify the reporting process from ICs to the NCBs, all requirements (supervisory requirements and statistical requirements not covered by the supervisory data) have been integrated into one reporting process with a common XBRL taxonomy set up by EIOPA (using "unofficial reporting templates including ECB add-ons").

1.5 Enhancement of pension fund reporting

Harmonised reporting templates on pension funds (PFs) for supervisory purposes may be developed on the basis of the update of the Institutions for Occupational

8 OJ L366, 20.12.2014, pp. 36 ff.

9 OJ L86, 1.4.2016, pp. 42 ff.

Retirement Provision, or pension funds, Directive (the IORP Directive). However, this Directive may not contain any provisions on harmonised reporting requirements. To allow further cooperation between the ECB and EIOPA to be pursued in the domain of PFs, there is work in progress towards a steady-state approach based on an ECB Regulation on pension funds statistics. In the meantime, the reporting requirements on PFs continue to follow a “short-term approach”.

To enhance the short-term approach to better serve PF statistics users, new statistical requirements have been meanwhile included in Guideline ECB/2014/15. The new reporting scheme defined for PFs in the Guideline is aligned with the ESA 2010. Collection of these new PF data started in January 2016, in full synchronisation with the collection of insurance corporation data under Regulation ECB/2014/50.

2 Statistical processes

2.1 Adjustments to loans series in balance sheet item statistics

Monitoring developments in lending from MFIs to the real economy is a key element of the ECB's monetary analysis. However, there are some banking operations which impede the measurement of lending on the basis of MFI balance sheet statistics, the main source for such data. For this reason the ECB has since December 2008 published loans series which are adjusted for loan sales and securitisation. There have been two recent methodological changes to these headline adjusted loans series: first, an enhancement to the data on loan sales and securitisation; and second, an adjustment for the impact of "notional cash pooling" positions that result from cash management services provided by certain banks to corporate groups.

New statistics on loan sales and securitisation, released from September 2015, provide more comprehensive information on loans granted by euro area MFIs but no longer recorded on their balance sheets. The headline loans series are adjusted on the basis of these data, which show the outstanding amounts and repayments of loans that have been derecognised from MFI balance sheets. The adjusted series provide a more comprehensive view of loans to the real economy originated by euro area banks and improve the comparability of country-level data, regardless of the accounting practices applying to loan transfers.[10]

An adjustment for notional cash pooling was incorporated into the adjusted loans series in July 2016. These services are very common in the Netherlands, where they have been subject to specific data collection since December 2014. The notional positions which are built up through these cash pools affect loans and deposits, particularly vis-à-vis the NFC sector, and can show sharp reversals.[11] Besides its limited informational value when analysing credit to the euro area private sector, notional cash pooling brings volatility to month-on-month loan transactions and annual growth rates. Therefore in July 2016 the ECB began adjusting its headline loans series by excluding notional cash pooling positions based on available data from December 2014 onwards.

[10] Prior to the release of September 2015, loans series were adjusted for the impact on MFI balance sheets of (net) transfers of loans off-balance sheet in the period in which the transfer took place, but derecognised loans were not taken into account after the transfer. Historical data on a basis comparable to the new methodology have been compiled in order to provide greater consistency in statistical series on loans adjusted for sales and securitisation over time (i.e. adjusted annual growth rates for loans to the private sector starting from September 1998, and for loans to households and non-financial corporations from January 2004).

[11] For further information on types of cash pooling and the implications for MFI balance sheets, see Colangelo, A. (2016), "The statistical classification of cash pooling activities", *Statistics Paper Series*, No 16, ECB, Frankfurt am Main, July.

Further information on these methodological changes to adjusted loans series can be found in an explanatory note on the ECB's website.[12]

2.2 Survey of national practises in balance sheet item statistics

The ECB, together with the NCBs, launched a survey in late 2013 to gather information on national practices for compiling BSI statistics, with the primary objective of documenting and enhancing transparency on compilation approaches across euro area countries, as well as highlighting sources of divergence. An improved understanding of the national data collection process among ESCB statisticians serves to increase the overall quality of ESCB statistical output. The exercise was also aimed at enabling statistical users to better interpret the statistics.

The results of the survey were published in November 2015,[13] and incorporated any substantial changes in national practices occurring between the launch of the survey and June 2015, for example in the context of the implementation of Regulation ECB/2013/33. Since the publication of the results, the ESCB has undertaken major conceptual work aimed at further improving harmonisation in areas where different national approaches were identified. The main areas in which inconsistent reporting practices were identified were the following: time of recording for loans and securities; holdings of own securities; recording of transactions related to repurchase agreements and similar operations; negotiable but not actively traded debt securities; securities (deposits) with embedded derivatives; bonds convertible into shares, preference shares; issuance of global depository receipts; deposits frozen at a premium; fiduciary deposits; margin deposits; the classification of central counterparties (CCPs) and tri-party repo operations with CCPs.

2.3 Implementation of new splits in MFI interest rate statistics

As of the reference period December 2014, MIR statistics include further information on renegotiated loans agreements that permits new agreements to be distinguished from renegotiated existing loans.[14] In particular, on the basis Regulation ECB/2013/34, separate information is now collected on the volume of loans granted to households (broken down by the purpose of the loan) and corporations that are renegotiated during the reference period. Together with the existing indicators on new business, these data allow the amount of the gross flow of new loans to be estimated. Corresponding information on interest rates is also available.[15] The

12 See Explanatory note on adjusted loans series.

13 See Survey of national practices regarding MFI balance sheet statistics.

14 Within the framework for MIR statistics, new business means any new agreement between the household or non-financial corporation and the reporting agent. New business consists of: a) all financial contracts, terms and conditions that specify for the first time the interest rate of the deposit or loan, and b) all new negotiations of existing deposits and loans.

15 The interest rates on renegotiated loans are reported on a best efforts basis based on Guideline ECB/2014/15.

availability of this information makes it possible to disentangle the interest rates on new contracts, expected to be close to the advertised rates, from the interest rates on new business as a whole.

In connection with the start of the enhanced reporting, new quality controls have been introduced in the reporting of MIR statistics to monitor the behaviour of interest rates and volumes of renegotiated loans. These data are monitored across euro area countries by comparing the behaviour of the indicators with the development of the corresponding breakdowns of new business, which comprises both new loans and agreements that have been renegotiated.

2.4 MIR quality assurance

During the first half of 2014 a quality assurance survey was conducted to gauge the adequacy and effectiveness of the control and governance processes related to the production of MIR statistics in the Eurosystem/ESCB.

The quality assurance covered the processes related to the selection of the reporting population from which each NCB collects the MIR statistics (by means of either a census or a sampling approach) as well as the collection, aggregation and dissemination of the MIR statistics at both NCB and ECB level. Data quality controls applied in MIR statistics deserved particular attention, including the internal checks and the rights of the NCBs and of the ECB to verify the information provided by the reporting agents (in particular when an MFI included in the reporting population does not fulfil the minimum standards for transmission, accuracy, conceptual compliance and revisions). Furthermore, a subset of general IT controls, including systems, applications and end-user computing, was audited, as they related to the IT systems supporting MIR statistics processes hosted at both the NCBs and the ECB. Generic ESCB IT components were beyond the scope of the audit.

As an outcome, recommendations were made, mainly concerning the extension of quality controls and dissemination, which are currently being implemented.

2.5 Money market statistical reporting

Since 1 July 2016, following a three-month testing period, transaction-level money market data have been collected at a daily frequency by the ECB on the basis of the Regulation concerning statistics on the money markets (ECB/2014/48).[16] The new dataset comprises daily transactional data on euro money market instruments in relation to four market segments: secured, unsecured, foreign exchange swaps and overnight index swaps. These new statistics are required in order to obtain relevant and timely information on the transmission mechanism of monetary policy.

[16] Regulation (EU) No 1333/2014 of 26 November 2014 (ECB/2014/48).

From April 2016 to March 2017 more than 10 million transactional records were collected, and on average 42.000 transactional records are reported per day. A set of automated data quality checks to validate the data are applied to the individual transaction records immediately after the reporting. A significant number of records were rejected in the initial weeks of the reporting. However, the rejection rate has strongly declined and is currently persistently below 1%. In addition to regular checks, outliers of extreme values, for example for transaction nominal amounts and interest rates, are being monitored to further improve the data quality.

The reporting population currently consist of the 52 largest credit institutions in the euro area, i.e. those credit institutions which have total main balance sheet assets greater than 0.35% of the total main balance sheet assets of all euro area MFIs. The publication of aggregated data, which is foreseen to start in 2017, will provide market participants with an additional understanding of market developments and patterns, thereby facilitating their decision-making.

2.6 Enhanced data collections on insurance corporations and pension funds

The first reporting of insurance corporation statistics by NCBs to the ECB in line with the relevant ECB Regulation and MFS Guideline took place in early July 2016 and included data on the fourth quarter of 2015 and the first quarter of 2016. Data for the second quarter of 2016 were transmitted to the ECB by the end of September 2016. The IC data transmitted from NCBs to the ECB in line with the MFS Guideline cover quarterly balance sheet information broken down into four types of insurers: reinsurance undertakings, life insurance undertakings, non-life insurance undertakings and composite insurance undertakings.

The requirements for IC statistics consist of (i) summary balance sheet information on outstanding amounts for the fourth quarter of 2015 and (ii) detailed quarterly balance sheet information in terms of outstanding amounts, revaluation adjustments and reclassification adjustments as of the first quarter of 2016. Regarding the transmission deadlines, data for the fourth quarter of 2015 and the first quarter of 2016 had to be transmitted to the ECB by 7 July 2016, and data for the second quarter of 2016 had to be transmitted by 29 September 2016. The majority of NCBs transmitted the data on time, with a few exceptions. A set of consistency checks have been implemented. These checks were also transmitted to the NCBs, which were invited to implement them at national level. In addition to outstanding amounts, NCBs transmit to the ECB data on adjustments (reclassification and revaluation adjustments).

With a view to further assessing the overall quality of the IC data across the euro area, NCBs were asked to fill in a national data quality assessment questionnaire. They were asked to provide scores (1=very low quality; 5=very high quality) for totals and breakdowns transmitted for each of the balance sheet instruments, separately identifying the quality for stocks and revaluation adjustments. The data were assessed relatively positively in the majority of countries, with the average score

ranging, in the case of stocks, from 3.1 to 4.2 for assets and from 3.1 to 3.9 for liabilities. In the case of revaluation adjustments, the average score ranges from 3.1 to 3.8 for assets and from 2.4 to 3.9 for liabilities.

The ECB continued to receive the “short-term” quarterly data on insurance corporations in the framework of insurance corporation and pension fund statistics (“ICPF-IC data”), in parallel to the new IC data reported under Regulation ECB/2014/50. Both IC and ICPF-IC data have been provided by NCBs for the reference periods 2015Q4 to 2016Q2. Looking first at the difference between IC and ICPF-IC data at the euro area aggregate level, total assets are 5% higher in the new IC data. The relatively small difference in the euro area aggregate balance sheet total masks some larger differences between IC data and ICPF-IC data among balance sheet items which are mainly due to new valuation/compilation methods applied with the introduction of Solvency II.

The reporting of the short-term ICPF data has now been discontinued and IC statistics for the third quarter of 2016a will rely on the new IC data. Euro area aggregates will initially focus on selected euro area series for that reference quarter. EIOPA and the ECB will intensify cooperation regarding data quality assessment. The publication of IC data will be further expanded in the second half of 2017 following further data quality improvements.

The ECB has received the new quarterly pension fund statistics (“PF data”), collected under the “short-term approach” and reported under Guideline ECB/2014/15, since June 2016 (first data for the first quarter of 2016). An analysis and a comparison of the PF and ICPF data received and allowed the ECB, in close cooperation with NCBs, to assess the coverage, quality and potential breaks in the PF statistics.

Although the PF data quality achieved is already satisfactory, further improvements may still be needed prior to the publication of the new statistics. These improvements mainly concern (i) the overall coverage in some countries and (ii) the data on transactions. Finally, it is planned, with the publication of PF data for the third quarter of 2016, to increase the breakdowns and to add selected high-quality data series with greater timeliness.

2.7 Enhanced payment statistics

The compilation of annual payments statistics by the ESCB was enhanced as of the reference year 2014. Prior to that, the reporting relied on the assumption that most payments to and from residents of one country were carried out by payment service providers resident in the same country; however, this assumption is no longer valid in the light of the implementation of SEPA and other developments in the payments market in Europe. These developments have a significant impact on payments statistics, both in terms of the methodology applied and the new indicators required. New legal obligations, applying to data from 2014 onwards, were thus laid down in

Regulation ECB/2013/43 on payments statistics and in the recast Guideline ECB/2014/15 on monetary and financial statistics.

The methodology applied to the enhanced reporting has been aligned with the definitions given in the relevant EU legislation, such as the Payment Services Directive[17] and the Electronic Money Directive[18]. Furthermore, there is a differentiation between SEPA and non-SEPA payments for credit transfers and direct debits: for the total number of credit transfers and direct debits, the sub-category "of which non-SEPA" is reported in order to provide information on payments with niche products using non-SEPA standards.

The coverage of payments statistics has improved with the implementation of the enhanced reporting framework, as the reporting population previously consisted mainly of credit institutions, and the data could be derived from external data sources. Under the new Regulation, all payment service providers resident in the euro area are obliged to report directly to their NCB.

2.8 Updates in methodological frameworks

Manual on MFI interest rate statistics

The Manual on MFI interest rate statistics was originally published in October 2003. Its purpose is to provide a common understanding of the reporting requirements concerning statistics on interest rates applied by monetary financial institutions by further clarifying and illustrating these requirements, mainly through the use of extended definitions, explanations of the underlying concepts and examples. It contains no requirements in addition to those included in the relevant legal acts and has no binding legal status.

Since its original publication, Regulation ECB/2001/18 concerning statistics on interest rates applied by monetary financial institutions to deposits and loans vis-à-vis households and non-financial corporations was amended three times,[19] and was finally recast by Regulation ECB/2013/34 (amended by Regulation ECB/2014/30).

The important enhancements in MIR statistics introduced through these amendments called for the publication of an updated version of the MIR Manual on the ECB website. This updated version was published on 17 January 2017.[20]

In addition to changes resulting from the amended reporting requirements, the MIR Manual was further enhanced as a follow-up to the MIR audit that took place in spring 2014, in particular with the inclusion of new chapters on validation rules and

17 Directive 2007/64/EC

18 Directive 2009/110/EC

19 Regulations ECB/2004/21; ECB/2009/7 and ECB/2010/7.

20 See Manual on MFI interest rate statistics.

revision policy. In addition, some enhancements have been made to the existing content, especially in the chapter on specific instruments and national products. There are also a number of editorial changes and clarifications.

Manual on investment fund statistics

The Manual on investment fund statistics was published in May 2009. Like the MIR manual, is not legally binding, and it contains no additional requirements that extend the reporting obligations of IFs as laid down in Regulation ECB/2007/8, or of NCBs as laid down in Guideline ECB/2007/9. The purpose of the IF Manual is to elaborate on the requirements in the relevant legal texts, clarify the treatment of certain entities or financial products and give illustrative examples.

Recently, both legal texts were recast, by Regulation ECB/2013/38[21] on the assets and liabilities of investment funds and Guideline ECB/2014/15[22] on monetary and financial statistics. Because of these updates and the new reporting requirements which were introduced by them, it has also become necessary to update to IF Manual. The work on this started in 2015 and an updated version is expected in the first half of 2017. Besides a number of editorial changes and clarification, the updated version of the IF Manual will include additional chapters on the new reporting requirements and the amendments which were made owing to the change to ESA 2010.

Manual on AnaCredit

The Manual provides detailed information and guidance on AnaCredit reporting requirements. It does not contain any additional requirements and has no binding legal status. The AnaCredit Regulation is the sole legally binding act. The Manual is made up of three parts.

Part I explains the general AnaCredit methodology and provides information about the various steps involved in determining the reporting population and the credit instruments subject to reporting and setting up the reporting, including a general description of the underlying data model. It also explains the reduced data requirements stipulated by Article 7 of the AnaCredit Regulation and the application of derogations for small reporting agents. Part II describes all datasets and data attributes of AnaCredit data collection in detail and provides specific reporting instructions. Part III presents various case studies and in particular covers special scenarios that require more in-depth explanations. Finally, the annexes provide additional information relevant for reporting agents, such as certain data validation rules. Currently, only Part I is available to the public. Parts II and III are not yet complete and will be made available in due course.

[21] OJ L 297, 7.11.2013, p. 73.

[22] OJ L 340, 26.11.2014, p.1.

2.9 RIAD quality assurance

In the first quarter of 2015 the STC identified a number of actions to stabilise the RIAD system and enhance the dataset, some of which were carried out in 2016. However, full implementation of a governance framework for RIAD will take time, in view of the large number of stakeholders involved. A “Data Provision and Data Quality Management Framework” has been agreed, but many details need to be fully clarified. Furthermore several actions depend on the capability of all involved business teams to prepare and implement other RIAD releases. Finally general IT infrastructure projects will support the enhancements of the RIAD system.

3 High output quality

The Public commitment on European Statistics by the ESCB and the Statistics Quality Framework set forth concepts that underlie the high output quality of the statistical data collected by the ECB. ”High output quality” has the following characteristics: relevance, accuracy and reliability (including stability), timeliness (including punctuality), consistency and comparability, and accessibility and clarity.

The ECB’s internal compilation procedures include a wide range of quality checks on the national contributions received and on the euro area aggregates compiled with the aim of detecting potential problems in the national data which may have a negative effect on the quality of the output statistics. These quality checks can be grouped into four main categories: (1) completeness[23], internal and intra-period consistency[24]; (2) plausibility checks; (3) external consistency[25]; and (4) revision studies to monitor the magnitude of data revisions, in particular for the monetary aggregates and monetary interest rates.

This section focuses on presenting the results of the quantitative checks performed to analyse the magnitude of the data revisions affecting the compilation of monetary aggregates and monetary interest rates. Since the last quality report, covering periods from October 2012 to October 2014, various additional quality checks have been added to the MFI balance sheet statistics as a response to the new ECB Regulation (ECB/2013/33) concerning MFI sector. New reporting requirements introduced some additional revisions at the beginning, mostly in December 2014 and January 2015. However, the overall quality of published data has remained very high and stable over time. This ensures that collected statistical data contributed reliable information for the ECB’s policy needs in 2015 and 2016.

3.1 Quality measures based on revisions to MFI balance sheet and interest rate statistics

The revision analysis in this section evaluates the reliability of first releases. This is an important quality feature, alongside the compliance with harmonised definitions, the timely incorporation of methodological changes and the consistency with other statistics. It should be noted that a low level of revisions of first estimates is not necessarily an indicator of accurate measurement; revisions are primarily intended to improve statistics. They also tend to mitigate the impact of trade-offs between

[23] Completeness check: enables missing series to be detected.

[24] Internal consistency checks: verify that all linear constraints are correctly applied in the data received e.g. that the balance sheet balances and the totals and sub-totals add up; intra-period consistency checks: verify, for example, that the sum of the monthly transaction values equals the quarterly values and that end-year stocks equal end-December stocks.

[25] External consistency checks: compare, for example, the balance sheet statistics received by the ECB on the cross-border positions of euro area banks with similar data collected by the Bank for International Settlements (BIS).

different output quality characteristics (e.g. timeliness and accuracy of the reported data).

The revision practice for MFI balance sheet and MIR statistics allows data to be revised at any release in order to keep the statistics up to date and relevant. The only restriction is that revisions to the monthly BSI data have to be submitted by NCBs when quarterly MFI balance sheet statistics are submitted, in order to ensure consistency between the monthly and the quarterly statistics. BSI data collected on a quarterly basis provide more detailed breakdowns and can thus, in principle, lead to the detection of errors in the monthly BSI data and to corresponding revisions. Exceptional revisions, owing for example to reclassifications and improved reporting procedures, can be made at any release.

A distinction is made between “ordinary” and “exceptional” revisions. Data are generally considered “provisional” at first release; therefore, ordinary revisions can be expected in the next monthly update at t+1. Exceptional revisions, owing for example to reclassifications and improved reporting procedures, can be made at any release and can go back as far as 2003 depending on the indicators.

3.1.1 Revision analysis of the euro area MFI balance sheet statistics

In the following analysis, the vintages in the ECB’s SDW covering data for the reference periods June 2005 to August 2016 have been used to analyse how the monthly revisions received between August 2005 and October 2016 at t+1, t+3, t+6 and t+12 months have cumulatively impacted the monetary aggregates and their components after their initial publication in press releases.[26]

This revision analysis updates that presented in the 2014 Quality Report by extending the data range by 24 months.

3.1.1.1 Revisions of euro area monetary aggregates

In general, the impact of the cumulative revisions on all published monetary aggregates, including the broad aggregate M3, continue to be very small/unnoticeable in the monthly growth rates of the monetary aggregates. Moreover, the impacts of the revisions received (measured by root mean square as defined below) from November 2014 to October 2016 continue to be smaller for all monetary aggregates in comparison with the reception period from August 2005 to October 2016.

As growth rates are published with a precision of one decimal, changes lower than 0.05 p.p. (percentage point) do not affect the published figures in practice. In that

[26] The cut-off date for the analysis was the end of October 2016. The most recent data available are therefore for the reference period September 2016 (data are received with a one month time lag). As revisions may at best apply to data from the previous month, the most recent reference period available for this analysis is August 2016.

regard, approximately 63% of all M3 month-on-month growth rates remained practically unchanged for all revisions received from August 2005 as their cumulative impact at t+12 was lower than 0.05 p.p. in absolute terms (see Table 1). This is an increase of 4 percentage points in comparison with the period from August 2005 to October 2014 covered in the previous quality report. Considering the same reception period, 88% and 97% of the initially published growth rates saw changes à posteriori below 0.10 p.p. and 0.20 p.p. respectively.

Interestingly, the revisions were substantially lower for the reception period from November 2014 to October 2016, as 79%, 92% and 100% of the initially published M3 growth rates were impacted by changes below, respectively, 0.05, 0.10 and 0.20 p.p. (see Table 1). In comparison with the period November 2012 to October 2014 this represents an increase of 12, 4 and 0 p.p., respectively.

Using the same 0.05 p.p. metric, at time lag t+1, the figure for unchanged M3 growth rates is 75% since August 2005 (83% since August 2014). At time lag t+3, the figure for unchanged growth rates is 63% since August 2005 (75% since June 2014). And at time lag t+6, the figure for unchanged growth rates is 62% since August 2005 (79% since March 2014).

With regard to revisions received since August 2005, the bias (simple average) vis-à-vis the early estimates for the month-on-month M3 growth rates[27] varies between -0.005 p.p. at time lag t+1 and -0.009 p.p. at t+12 (see Table 1), which are negligible values.

The root mean square (RMS) of the total impacts on the M3 growth rate varies between 0.064 p.p. at time lag t+1 and 0.074 p.p. at time lag t+12. This is also small, as an RMS impact of 0.074 p.p. represents 15.0% of the RMS differences observed between monthly growth rates during the same reception period (i.e. with reference periods from June 2005 to September 2015).[28]

It is worth noting that the impacts of the cumulative revisions received from November 2014 had in general a smaller effect on the M3 growth rate than in previous years, namely the RMS impact at t+12 is 0.051 p.p. versus 0.074 p.p. for all revisions received from August 2005. This lower number is not directly related to the M3 growth rates being smaller in the last four years, as the RMS of the differences between the monthly M3 growth rates has remained stable overall: for revisions received since November 2014, the RMS of differences is 0.426 p.p. versus 0.492 p.p. for revisions received since August 2005 (on the t+12 corresponding ranges). This improvement is apparent in the RMS impact of cumulative revisions (up to t+12) received since November 2014 when compared with the RMS differences observed between growth rates during the corresponding reference period (from October 2013 to September 2015), resulting in a ratio of 11.9%. This ratio of 11.9% is to be compared with the 15.0% ratio above. Both figures are too small to hinder a proper

[27] The average monthly growth rate is calculated as $agg = \left(\sqrt[84]{\frac{Stock_{Jul16}}{Stock_{Aug09}}} - 1\right) * 100$.

[28] Regarding the time range that corresponds to the time lag t+12 (wherein the impact of all revisions up to the time lag t+12 can be analysed), the RMS of the differences between the monthly M3 growth rates was 0.492 p.p., which is 6.6 times the RMS impact of cumulative revisions.

analysis and interpretation of the monthly variations seen in month-on-month M3 growth rates.

Table 1

Impact of cumulative revisions on the initially released M3 growth rates

(hundredth of percentage points)

Time lag (months)	T+1	T+3	T+6	T+12
Monthly revisions received from August 2005 to October 2016				
Number of months	135	133	130	124
Average impact	-0.48	-1.08	-0.95	-0.91
Standard deviation (n-1)	6.38	7.31	7.51	7.33
RMS impact	6.38	7.37	7.54	7.36
Maximum impact	24.94	25.56	25.01	24.20
Minimum impact	-22.80	-31.18	-30.57	-30.39
| Impacts | <= 0.01 p.p.	26.7%	18.8%	14.6%	16.1%
| Impacts | <= 0.05 p.p.	74.8%	63.2%	61.5%	62.9%
| Impacts | <= 0.10 p.p.	87.4%	86.5%	86.9%	87.9%
| Impacts | <= 0.20 p.p.	98.5%	97.7%	97.7%	96.8%
Monthly revisions received from November 2014 to October 2016				
Number of months	24	24	24	24
Average impact	-0.50	-1.37	-1.06	-0.88
Standard deviation (n-1)	6.22	5.83	5.68	5.11
RMS impact	6.11	5.87	5.66	5.08
Maximum impact	17.65	7.69	8.60	10.08
Minimum impact	-19.69	-19.50	-17.52	-16.78
| Impacts | <= 0.01 p.p.	37.5%	25.0%	25.0%	37.5%
| Impacts | <= 0.05 p.p.	83.3%	75.0%	79.2%	79.2%
| Impacts | <= 0.10 p.p.	91.7%	91.7%	91.7%	91.7%
| Impacts | <= 0.20 p.p.	100.0%	100.0%	100.0%	100.0%

Regarding the development of revisions over time, one would expect that the initial revisions should usually take place early, most often within the first three months following the initial release, and that no significant further revisions would then be received in the subsequent periods. This situation is verified in practice, as depicted in Charts 1 and 2. It is more prominent for the revisions received from November 2014 (see Chart 2), which shows a narrowing of the distribution compared with the situation when all revisions since August 2005 are considered.

Chart 1

Impact of cumulative revisions received monthly from August 2005 to October 2016 on initially released M3 growth rates

(x-axis: hundredth of percentage point change to initial release; y-axis: number of occurrences averaged over 100 months)

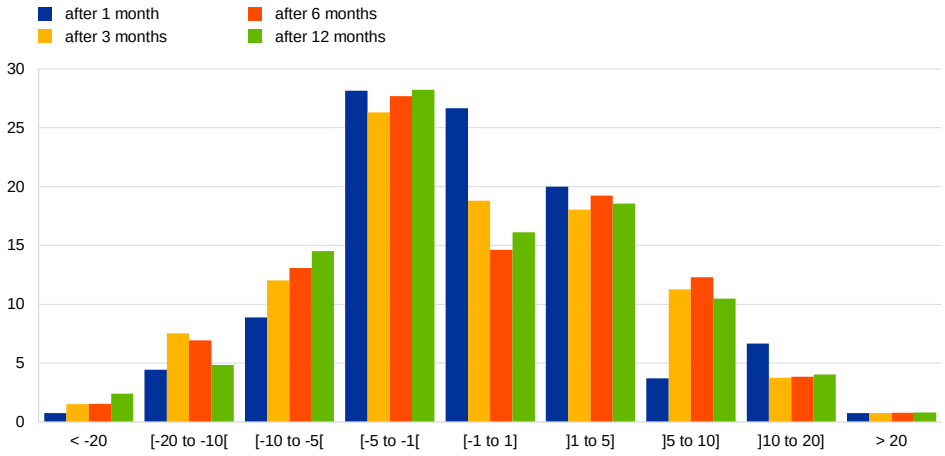
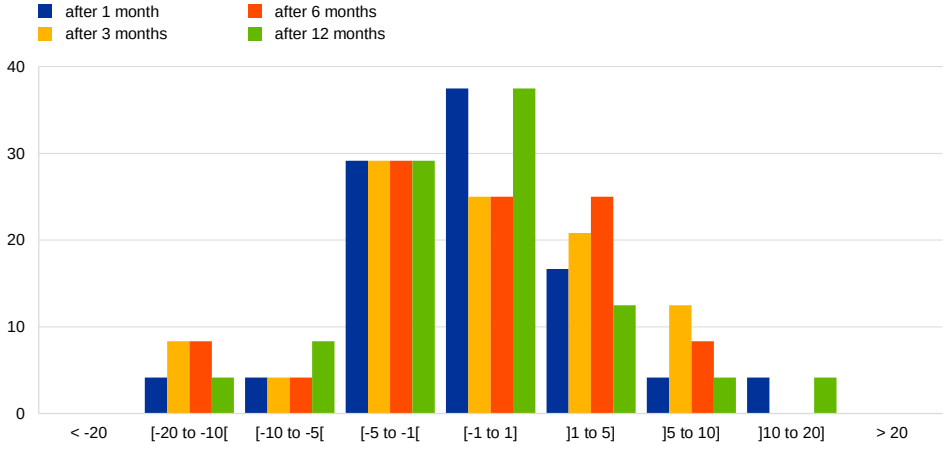


Chart 2

Impact of cumulative revisions received monthly from November 2014 to October 2016 on initially released M3 growth rates

(x-axis: hundredth of percentage point change to initial release; y-axis: number of occurrences averaged over 100 months)



As shown hereafter, similar conclusions can be drawn with regard to the M1 and M2 growth rates. While the M1 growth rates show overall behaviour similar to that of the M3 growth rates, M2 growth rates are less impacted by revisions than M3 growth rates.

Regarding the month-on-month M2 growth rate, the RMS impacts of the cumulative revisions received from August 2005 vary between 0.045 p.p. at time lag t+1 and 0.055 p.p. at time lag t+12 (Table 2). These figures are smaller (i.e. better) than the RMS impacts measured on the M3 growth rate. Regarding the revisions received from November 2014, the RMS impacts are 0.035 p.p. at t+1 and 0.046 p.p. at t+12,

which are even smaller. All in all, the impact of revisions to the month-on-month M2 growth rates has been marginal.

Table 2

Impact of cumulative revisions on the initially released M2 growth rates

(hundredth of percentage points)

Time lag (months)	T+1	T+3	T+6	T+12
Monthly revisions received from August 2005 to October 2016				
Number of months	135	133	130	124
Average impact	0.53	0.47	0.31	0.43
Standard deviation (n-1)	4.52	5.01	5.45	5.51
RMS impact	4.53	5.01	5.44	5.51
Maximum impact	17.82	21.58	21.13	20.38
Minimum impact	-20.90	-22.43	-22.11	-18.25
| Impacts | <= 0.01 p.p.	45.2%	32.3%	25.4%	21.8%
| Impacts | <= 0.05 p.p.	88.1%	82.7%	76.9%	75.8%
| Impacts | <= 0.10 p.p.	92.6%	94.0%	93.1%	91.1%
| Impacts | <= 0.20 p.p.	99.3%	98.5%	98.5%	99.2%
Monthly revisions received from November 2014 to October 2016				
Number of months	24	24	24	24
Average impact	1.09	0.61	0.60	0.17
Standard deviation (n-1)	3.41	3.91	4.47	4.68
RMS impact	3.51	3.88	4.42	4.58
Maximum impact	13.56	12.36	16.32	17.73
Minimum impact	-4.23	-8.45	-8.57	-6.52
| Impacts | <= 0.01 p.p.	45.8%	41.7%	37.5%	33.3%
| Impacts | <= 0.05 p.p.	91.7%	87.5%	87.5%	87.5%
| Impacts | <= 0.10 p.p.	95.8%	95.8%	95.8%	95.8%
| Impacts | <= 0.20 p.p.	100.0%	100.0%	100.0%	100.0%

As shown in Chart 3, there are usually no significant further revisions impacting the M2 growth rates after the initial release. This is even more evident when looking at the cumulative revisions received since November 2014, as the revisions with impacts higher than 10 b.p. almost disappear (Chart 4). Furthermore, impacts at t+6 are not significantly different from impacts at t+3. Impacts at t+12 are very similar to impacts at t+6.

Chart 3

Impact of cumulative revisions received monthly from August 2005 to October 2016 on the initially released M2 growth rates

(x-axis: hundredth of percentage point change to initial release; y-axis: number of occurrences averaged over 100 months)

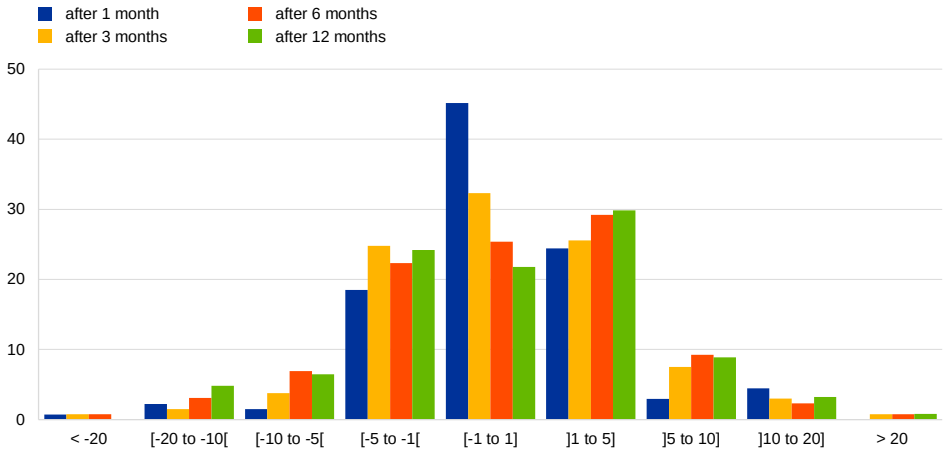


Chart 4

Impact of cumulative revisions received monthly from November 2014 to October 2016 on the initially released M2 growth rates

(x-axis: hundredth of percentage point change to initial release; y-axis: number of occurrences averaged over 100 months)

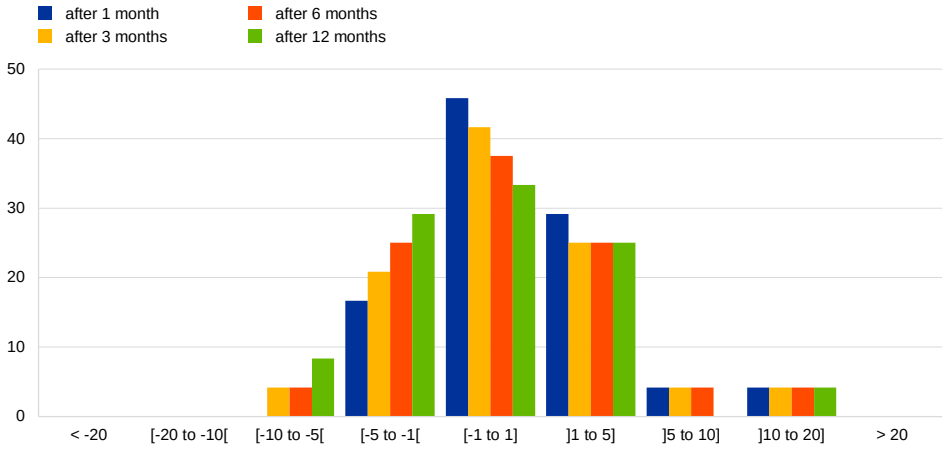


Table 3 summarises the impacts of cumulative revisions on the month-on-month M1 growth rate. Regarding the revisions received since August 2005 with a time lag of t+12 that impacted the growth rate by in excess of 0.10 p.p. in absolute terms, a larger percentage can be observed for the M1 growth rate than for the M2 or M3 growth rates. Indeed the figures are respectively 17%, 9% and 12% for M1, M2 and M3 growth rates. The situation is improved when only the revisions received from November 2014 are considered: then the figures are respectively 13%, 4% and 8% for M1, M2 and M3 growth rates.

A significant improvement concerns the RMS impact, which is 0.089 p.p. when considering all cumulative revisions up to t+12 from August 2005, as it drops to 0.051 p.p. when the same observation is made for revisions from November 2014.

Table 3

Impact of cumulative revisions on the initially released M1 growth rates

(hundredth of percentage points)

Time lag (months)	T+1	T+3	T+6	T+12
Monthly revisions received from August 2005 to October 2016				
Number of months	135	133	130	124
Average impact	0.64	0.59	0.39	0.53
Standard deviation (n-1)	7.09	7.97	8.64	8.88
RMS impact	7.09	7.96	8.62	8.86
Maximum impact	43.60	40.53	42.25	41.91
Minimum impact	-35.16	-37.57	-37.57	-32.36
| Impacts | <= 0.01 p.p.	37.0%	24.1%	17.7%	17.7%
| Impacts | <= 0.05 p.p.	75.6%	66.9%	63.1%	61.3%
| Impacts | <= 0.10 p.p.	91.9%	85.7%	82.3%	83.1%
| Impacts | <= 0.20 p.p.	97.0%	97.0%	95.4%	94.4%
Monthly revisions received from November 2014 to October 2016				
Number of months	24	24	24	24
Average impact	1.05	0.42	0.44	-0.23
Standard deviation (n-1)	3.44	4.47	4.55	5.17
RMS impact	3.53	4.40	4.47	5.07
Maximum impact	10.44	9.14	9.58	12.30
Minimum impact	-4.47	-13.69	-13.88	-11.25
| Impacts | <= 0.01 p.p.	37.5%	29.2%	12.5%	12.5%
| Impacts | <= 0.05 p.p.	79.2%	79.2%	83.3%	75.0%
| Impacts | <= 0.10 p.p.	95.8%	95.8%	95.8%	87.5%
| Impacts | <= 0.20 p.p.	100.0%	100.0%	100.0%	100.0%

The improvement in the impact of revisions to the M1 growth rate that can be observed since November 2014 can also be seen by comparing Chart 5 and Chart 6.

Chart 5

Impact of cumulative revisions received monthly from August 2005 to October 2016 on the initially released M1 growth rates

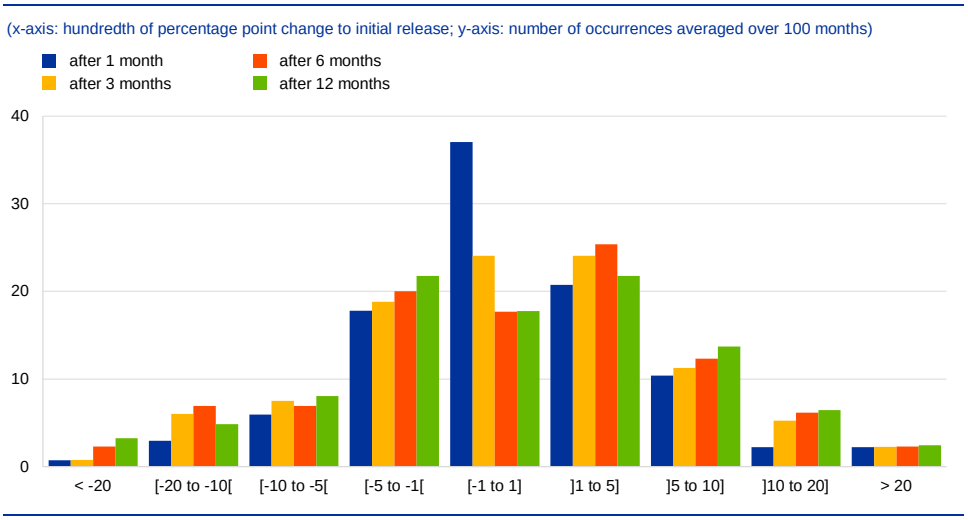
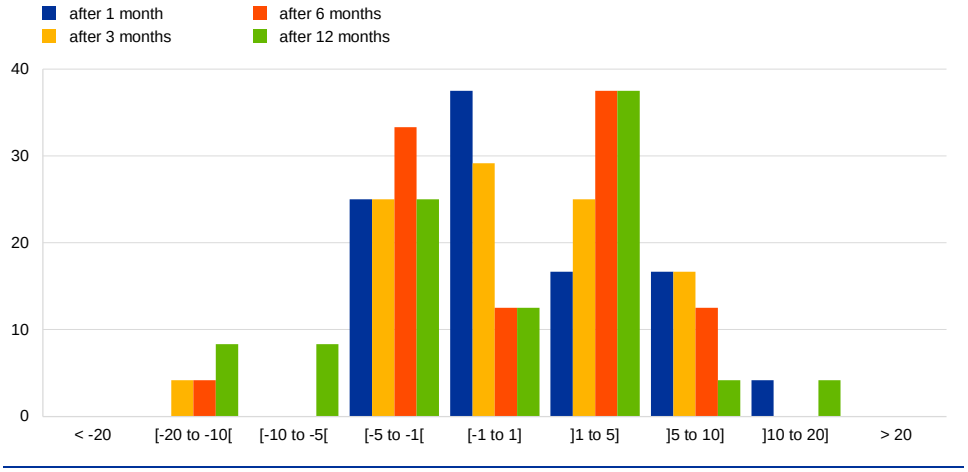


Chart 6

Impact of cumulative revisions received monthly from November 2014 to October 2016 on the initially released M1 growth rates



3.1.1.2 Revisions of components of euro area monetary aggregates

The following graphs present the cumulative impacts of revisions to the components of the euro area monetary aggregates as they develop over time.

In order to keep the presentation concise, only the impacts of the revisions at time lags t+3 and t+12 are shown. Because no more significant revisions are expected after t+3, the cumulative impacts of all revisions at t+12 are not expected to bring additional change to the revisions, which is indeed the case as shown in the

following graphs (Chart 7 to Chart 9): all lines plotted at t+3 and at t+12 for the same components are very close.

The same reference period is used for all graphs, namely from January 2008 to August 2016. This time range was selected to provide a clear picture of the overall trend in the impacts of revisions on the growth rates. It shows that impacts have generally decreased since 2011.

Chart 7 shows the impact of revisions distributed over the two components of the M1 monetary aggregate, namely “currency in circulation” and “overnight deposits”. As expected, there are almost no revisions of currency in circulation. On the other side, revisions of overnight deposits are more prominent and in period from November 2014 to August 2016 mostly stem from revisions due to the new MFI balance sheet Regulation (positive peak in December 2014) and cash pooling activities (negative peak in October 2015). Remaining revisions were confirmed as ordinary revisions, which are revisions provided after one month to adjust figures initially released as provisional”.

Chart 7

Impacts of revisions to M1 components at T+3 and T+12 months

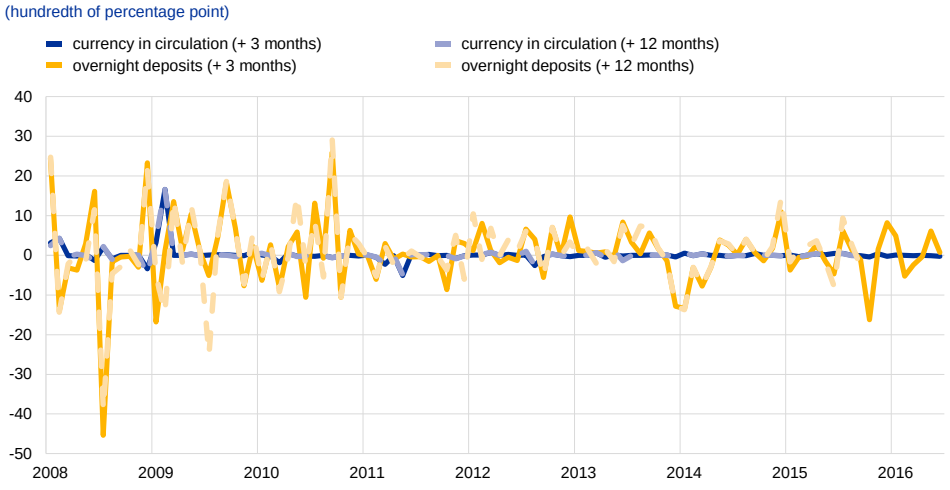


Chart 8 shows the impact of revisions distributed over the two components of M2-M1, namely “deposits with an agreed maturity of up to two years” and “deposits redeemable at notice of up to three months".

With regard to revisions for reference periods after November 2014, only December 2014 was impacted with significant revisions following implementation of the new Regulation.

Chart 8

Impacts of revisions to M2-M1 components at T+3 and T+12 months

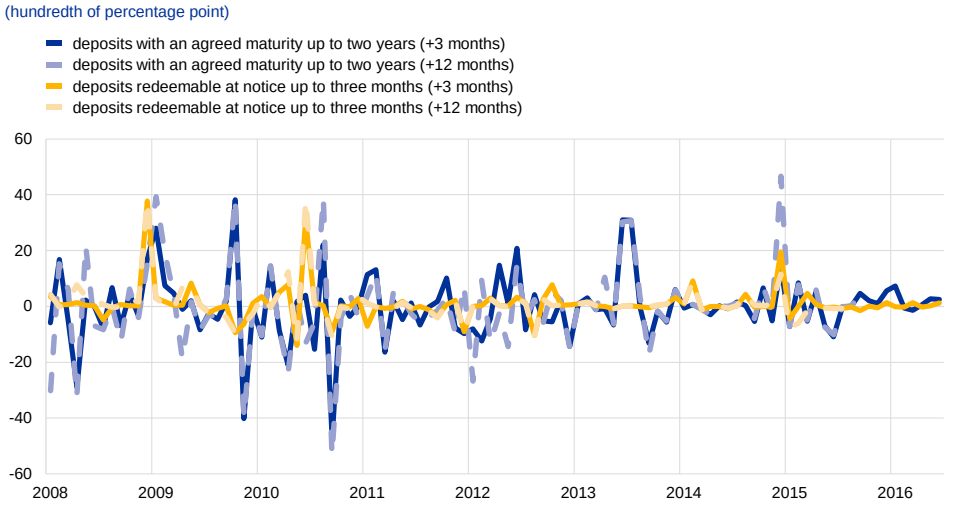


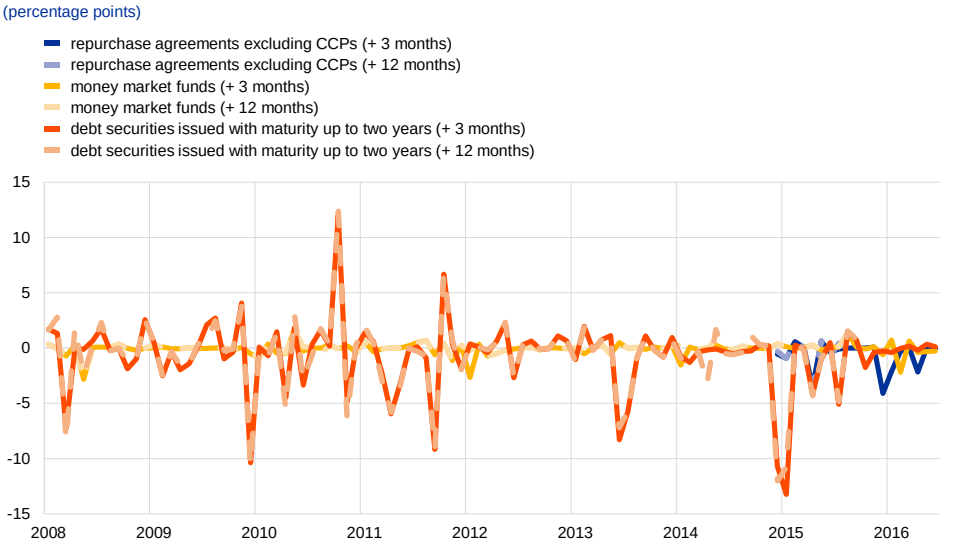
Chart 9 shows the impact of revisions distributed over the three components of M3-M2, namely “debt securities issued with a maturity of up to two years”, “money market funds” and “repurchase agreements excluding repos with central counterparties”. The latter component was introduced with the new Regulation in 2014 and replaced the old series on “repurchase agreements”. This is also why these series start only in December 2014.

With regard to revisions after November 2014, the reference periods December 2014 and January 2015 were impacted by significant “non-ordinary” revisions affecting the component “debt securities issued with a maturity of up to two years”, which were mainly due to the implementation of new Regulation requirements. Of the three series, “money market funds” is typically the least revised, followed by “repurchase agreements excluding CCPs”, which is revised more often and for larger values than the old series “repurchase agreements”. These revisions must also be seen in the context of relatively large flow movements and relatively small outstanding amounts in the underlying series.[29] This leads to volatile month-on-month component growth rates with ultimately little impact on the growth rate of the broad M3 monetary aggregate.

[29] Attention must be given to the ranges of the impact scale of revisions displayed in the graphs. For (M3-M2), the range goes up to 14.0 p.p., for (M2-M1), it goes up to 0.4 p.p. and for M1 to 0.25 p.p.

Chart 9

Impacts of revisions to M3-M2 components at T+3 and T+12 months

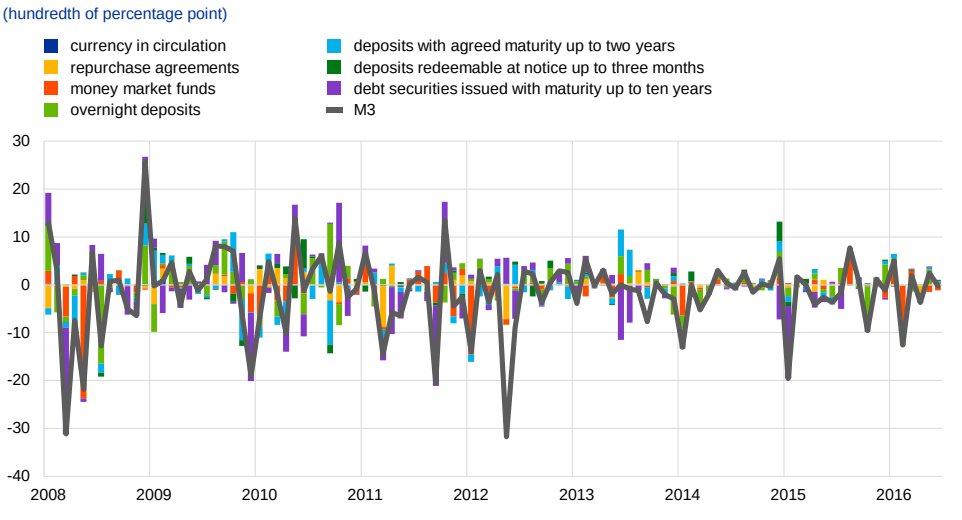


3.1.1.3 Contributions of revisions in instruments to overall M3 revisions

In order to assess the contributions of individual instruments to the revisions of M3, the share of each instrument in the aggregate needs to be taken into account. Chart 10 shows that the largest contributions to the overall M3 revisions are primarily from “debt securities issued with a maturity of up to two years”, “overnight deposits” and “money market funds shares/units”.

Chart 10

Break down of contributions to M3 revisions



3.1.1.4 Overall assessment of revision analysis of the BSI statistics

The analysis shows that revisions to the month-on-month growth rates of both M3 and M2 for the euro area continue to be very limited. Overall, for M3 at t+1, 75% of all revisions received since August 2005 have had an impact lower or equal to 0.05 p.p. on the growth rates, which is the metric for an unchanged growth rate. This ratio is 83% for all revisions received since November 2014. However, this figure is 9 percentage points lower than figure for period November 2012 to November 2014, when it was 92%. This decrease is mostly result of large revisions received for the reporting periods December 2014 and January 2015 due to implementation of the new Regulation. At time lag t+3, the ratio for unchanged growth rates is 63% for revisions received since August 2005 (75% for those received since November 2014). At time lag t+6, the ratio is 62% for revisions received since August 2005 (79% for those received since November 2014), and at time lag t+12 the ratio is 63% (79% for revisions received since November 2014). Furthermore, the average impact of revisions after one year on the M3 growth rate is -0.0091 p.p. for those received since August 2005 and -0.0088 p.p. for those received since November 2014.

The concentration of revisions to the M1 month-on-month growth rate between -0.05 and +0.05 p.p. is 76% at t+1 and 61% at t+12 for those received since August 2005 (respectively 79% and 75% for those received since November 2014). Although a larger number of revisions exceeding 0.20 p.p. in absolute terms could be observed for M1 than for M2 or M3 for those received since August 2005, this is no longer an issue for those received since November 2014. Among the M3 components, revisions to debt securities issued are most frequent, but have little impact on M3 owing to the fact that the share of this instrument in broad money is below 1%.

3.1.2 External consistency of the MFI balance sheet statistics with balance of payments statistics

In this series of checks, the BSI data is compared with the series derived from balance of payments (b.o.p.) statistics. This analysis follows the same comparison conducted in the euro area b.o.p./international investment position (i.i.p.) quality reports.[30] The comparison of the two datasets is done yearly on an alternating basis, featuring this year in this report and next year in the b.o.p. report.

Even though, in principle, both the BSI and b.o.p. statistics comply with international statistical standards, a number of differences can be identified with regard to the practical implementation of these standards, including the use of different statistical sources, differences in the timeliness of the data reporting and simplifications in reporting systems to reduce the reporting burden. In terms of compilation systems, the b.o.p. transactions of the MFI sector are reported directly by MFIs in some countries, whereas, in the BSI data, transactions are derived from differences in stock data (adjusted for reclassifications, foreign exchange rate changes and price revaluations). In practice, this may give rise to a number of differences in the

[30] 2015 quality report on euro area balance of payments and international investment position statistics.

resulting net transactions data, in particular if a large proportion of transactions are denominated in foreign currencies and if the volatility of exchange rates or securities prices is high.

In general, the methodological differences between the b.o.p. data and the transactions derived from the MFI balance sheets are limited, and issues such as the different treatment of (i) borderline cases between loans and securities, and between securities and financial derivatives, (ii) inter-company financing, (iii) short-selling and reverse transactions, and (iv) reinvested earnings and the accrued interest that should be reported together with the asset to which it relates, have been partly resolved with the introduction of the ESA 2010, that has influenced the updated (recast) BSI Regulation (ECB/2013/33).

The quality indicators used in this report compare the differences between BSI and b.o.p. transactions for the “other MFIs” sector (i.e. MFIs excluding the Eurosystem) for three types of financial instrument, namely (i) net transactions (assets minus liabilities) in loans and deposits combined, (ii) transactions in equity securities assets and (iii) transactions in debt securities assets.

Table 4 shows the average of absolute differences and the average of (ordinary) differences, per type of financial instrument, for overlapping intervals of three years. These indicators give an idea of the development of the differences over time. For example, looking at the average of absolute differences, it is clear that systematic, but relatively minor, discrepancies exist for equity securities assets. Furthermore, a clear decreasing trend is observed in the case of (the larger) differences for net loans and deposits. In the case of debt securities assets, the trend is not so clear. Note that the largest differences, observed across all instrument categories in the period 2008-2010, were on account of the implementation in June 2010 of the old BSI Regulation, where the adjustments introduced to the reporting were not consistent for the datasets.

Table 4

Differences between b.o.p. and BSI transactions for euro area "other MFIs" (BSI minus b.o.p)

(average over the period, EUR billions)

	Period	Net loans and deposits	Equity securities assets	Debt securities assets
Average of absolute differences	2008-2010	8.25	2.92	10.29
	2009-2011	9.76	2.42	7.00
	2010-2012	10.56	2.32	7.16
	2011-2013	9.27	2.02	6.83
	2012-2014	8.87	2.28	9.03
	2013-2015	7.15	3.07	7.99
	2014-2016*	4.72	3.32	5.41
Average of differences	2008-2010	-0.46	-1.34	-0.27
	2009-2011	-0.13	-0.50	1.43
	2010-2012	-0.35	0.05	0.93
	2011-2013	0.09	-0.50	0.10
	2012-2014	-0.20	-0.64	0.33
	2013-2015	-0.95	-1.49	-0.20
	2014-2016*	-0.36	-1.68	-0.83

Source: ECB.
*Data until June 2016.

3.1.3 Revision analysis of the euro area MFI interest rate statistics

In the following revision analysis for MFI interest rate statistics, monthly data received from euro area NCBs between October 2014 and October 2016 covering reference periods from January 2003 to September 2016 have been used to analyse revisions to euro area aggregates. Only revisions equal to or greater than 1 b.p. have been considered for the purpose of the analysis, as revisions of less than 1 b.p. are not visible in the published data.

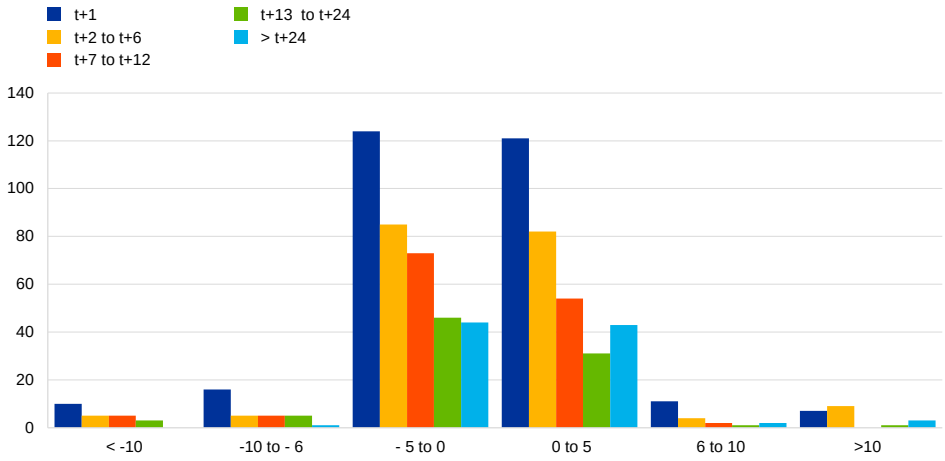
As shown in Chart 11, revisions to the euro area aggregates for MFI interest rate indicators are generally very small and follow the expected shape of a higher concentration of revisions in the lower range (-5 to +5 b.p.) and with a short time lag (t+1). [31] This means that after an initial revision has taken place, which usually happens in the month after the first release, there are usually not many significant revisions in the subsequent periods.

[31] The distribution of revisions of euro area aggregates of MFI interest rate statistics that is displayed in Chart 11 does not include ad-hoc revisions.

Chart 11

Revisions of euro area aggregates of MFI interest rate statistics

(x-axis: size of the revision in hundredth of percentage point; y-axis: number of occurrences over the period)



Around 88% of all revisions are concentrated between -5 b.p. and 5 b.p. (see Table 6). With respect to the time lag, a substantial number of revisions happen in the month after the initial release (ordinary revisions).[32] Other revisions can be divided as follows: 41% correspond to the period of 2 to 12 months preceding the current reference month, 11% of revisions refer to the period of the previous 13 to 24 months, and 12% are revisions to statistics that extend to beyond 24 months from the reference month (see Table 5), thus showing that as the time lag increases, the number of revisions decreases. In addition, several NCBs have sent (i) revisions due to changes in the grossing up methodology introduced in ECB Guideline ECB/2014/15 covering a significant number of reference periods (i.e. at least 12 reference periods for one indicator revised in a single monthly data transmission) and (ii) revisions of several time series by reporting agents with an impact on euro area aggregates for at least 12 reference periods in a single monthly transmission. The two aforementioned categories of revisions are considered as ad-hoc in this analysis, owing to the exceptional reasons for their occurrence and their very particular characteristics, including a one-off agreed change in the methodology for compiling MIR statistics.

[32] The revision policy set out in Article 17 of Guideline ECB/2014/15 recognises that NCBs may need to revise the previous reference month's data. It provides that revisions applied to data prior to the previous reference period, which are considered exceptional, should always be accompanied by explanatory notes.

Table 5

Number of revisions per time lag

Time lag	Number of revisions	Total number of revisions (%)	Number of ad-hoc revisions	Total number of revisions excluding ad-hoc revisions (%)
t+1	319	11	30	36
t+2 to t+12	760	25	431	41
t+13 to t+24	564	19	477	11
> t+24	1380	46	1287	12

Table 6

Number of revisions per range

Range (in b.p.)	Number of revisions	Total number of revisions (%)	Number of ad-hoc revisions	Total number of revisions excluding ad-hoc revisions (%)
-5 to +5	2465	82	1762	88
-10 to -6 and +6 to +10	321	11	269	7
<-10 and > +10	237	8	194	5

The absolute mean of revisions to the euro area aggregates for MIR indicators is 0.2 b.p. overall, and the average is 1.1 b.p. with all time lags taken into account.

The number of revisions is actually very small compared with the number of indicators used for the analysis (106)[33] and the potential number of reference periods revised in the analysis (from September 2016 back to January 2003 with a monthly frequency). Furthermore, it is worth noting that 6% of the indicators in the study were not revised during the period under analysis.

Overall, in comparison with the number of observations, the number and size of revisions to the MFI interest rate statistics at the euro area level are small, which demonstrates their reliability. These results are of particular relevance in the light of the fact that during the period under analysis new reporting requirements for MFI interest rate statistics were introduced owing to the entry into force of Regulation ECB/2013/34 and Guideline ECB/2014/15. The number of exceptional and ad-hoc revisions, as opposed to ordinary revisions, shows that MFI interest rate statistics are being continuously updated, and thus their accuracy is continuously improving.

[33] The analysis covers the 117 rate indicators defined in Regulation ECB/2013/34 and Guideline ECB/2014/5. Of these, 11 indicators – which are totals or aggregates of sub-indicators – have been removed so as to avoid double-counting of revisions.

3.2 Quality measures under preparation

3.2.1 Comparing SHS with BSI and IF statistics

Recently, there have been two initiatives to use the available granular data on securities holdings (provided in the Securities Holdings Statistics Database, SHSDB) to cross-check them with the relevant positions in monetary and financial statistics. This exercise started in 2015 with a comparison of the asset side of the MFI balance sheet on the basis of BSI statistics and was extended to the holdings of euro area NCBs in 2016 in the context of the discussion on the Agreement on Net Financial Assets (ANFA). Both exercises proved to be very useful, and the comparison yielded a higher quality in both BSI and SHS data as some discrepancies in the datasets were identified and corrected.

To further extend the analysis, the Working Group on Monetary and Financial Statistics (WG MFS) was presented at its November 2016 meeting with an analysis of investment funds securities positions, on both the assets and liabilities sides. This analysis focused on comparing IF statistics and SHS data at the euro area level. As a follow up, the NCBs will receive a detailed breakdown of these figures by country together with a questionnaire, which investigates the differences between the two data collections. The aim of this exercise is to enhance the data quality of IF statistics, with a special focus on the liabilities side, and to prepare the publication of additional data. In addition, the comparison between BSI statistics and SHS data will be extended to the liability side. These data are relevant for the adjustment of M3 and are currently only collected as memorandum items in BSI statistics on a best efforts basis. It is therefore important to investigate whether the available SHS data can be used to improve the quality of these data.

3.2.2 MIR statistics – synthetic mean absolute error

Following the entry into force of Guideline ECB/2014/15, the synthetic mean absolute error (MAE) was introduced as a measure of sample quality in MIR statistics. In particular, if an NCB applies sampling when selecting the reporting population and selects the largest institutions in each stratum, the actual synthetic MAE should not exceed a time-varying MAE threshold assuming a 10 b.p. error difference in each stratum and indicator. The maximum random error is used as a measure of the sample quality if the NCB applies random sampling in the selection of reporting institutions, and should not exceed 10 b.p. on average at a confidence level of 90%.

According to the provisions set out in the Guideline, NCBs should check the representativeness of their sample at least once a year. If there are significant changes in the reference reporting population, these must be reflected in the sample. Moreover, at intervals of at most three years, NCBs must carry out a regular review of the sample. A new estimate of the sample quality is provided after each round of maintenance of the sample.

Abbreviations

AnaCredit	analytical granular credit and credit risk datasets
b.o.p./i.i.p.	balance of payment/international investment position
b.p.	basis points, the unit for the arithmetic difference between two percentages in hundredths of a percentage point (e.g. the increase from 1.5% to 2.4% is 90 b.p.)
BPM6	sixth edition of the Balance of Payments and International Investment Position Manual published by the IMF in 2009
CIs	credit institutions
CSDB	centralised securities database, holds exhaustive information on all individual securities relevant for the statistical purposes of the ESCB (contains non-published information on over 5 million debt securities, equities and mutual fund shares issued by residents of EU Member States)
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority, EU financial regulatory institution established in 2010
ESA	European System of National and Regional Accounts, sets out the harmonised methodology to be used for the production of national accounts data in the EU (consistent with the System of National Accounts, or SNA)
ESCB	European System of Central Banks
EU	European Union
FVCs	financial vehicle corporations engaged in securitisation transactions
IAC	ESCB Internal Auditors Committee
ICPFs	insurance corporations and pension funds
ICs	insurance corporations
IFRS	International Financial Reporting Standards, developed by the International Accounting Standards Board (IASB)
IFs	non-money market investment funds
ISIN	International Securities Identification Number, a 12-character alpha-numerical code defined in ISO 6166 that uniquely identifies a security (e.g. bond, commercial paper, stock, warrant)
IT	information technology
LSIs	less significant institutions
M1	narrow monetary aggregate, comprises currency (i.e. banknotes and coins) and balances immediately convertible into currency or usable for cashless payments (i.e. overnight deposits)
M2	intermediate monetary aggregate, comprises M1 and deposits with an agreed maturity of up to two years and deposits redeemable at a period of notice of up to three months
M3	broad monetary aggregate, comprises M2 and certain marketable instruments issued by the MFI sector (such as MMF shares/units and repurchase agreements)
MAE	synthetic mean absolute error
MFIs	monetary financial institutions, includes central banks, credit institutions and other deposit-taking corporations, and MMFs
MFS	monetary and financial statistics
MIR	MFI interest rates
MMFs	money market funds
MMSR	money market statistical reporting
NCAs	national competent authorities
NCBs	national central banks
NFCs	non-financial corporations, excludes holding companies (not engaged in management) and similar captive financial institutions (ESA 2010)
OFIs	other financial intermediaries, includes holding companies but excludes MFIs, IFs and ICPFs
p.p.	percentage points, the unit for the arithmetic difference between two percentages (e.g. the increase from 1.5% to 2.6% is 1.1 p.p.)
PFs	pension funds
RIAD	Register of Institutions and Affiliates Database, provides an up-to-date and complete view of the population of MFIs operating in the EU, published daily
RMS	root mean square
SDW	Statistical Data Warehouse, provides all euro area statistics published by the ECB
SEPA	Single Euro Payments Area, the EU payment-integration initiative for easing bank transfers denominated in euro
SHS	securities holdings statistics
SHSDB	Securities Holdings Statistics Database, provides the ESCB with quarterly information on holdings of securities by euro area sectors and by selected reporting banking groups (non-published)
SIs	significant institutions
SNA	System of National Accounts, provides the international statistical standards for national accounts (adopted by the United Nations Statistical Commission)
STC	ESCB Statistics Committee

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